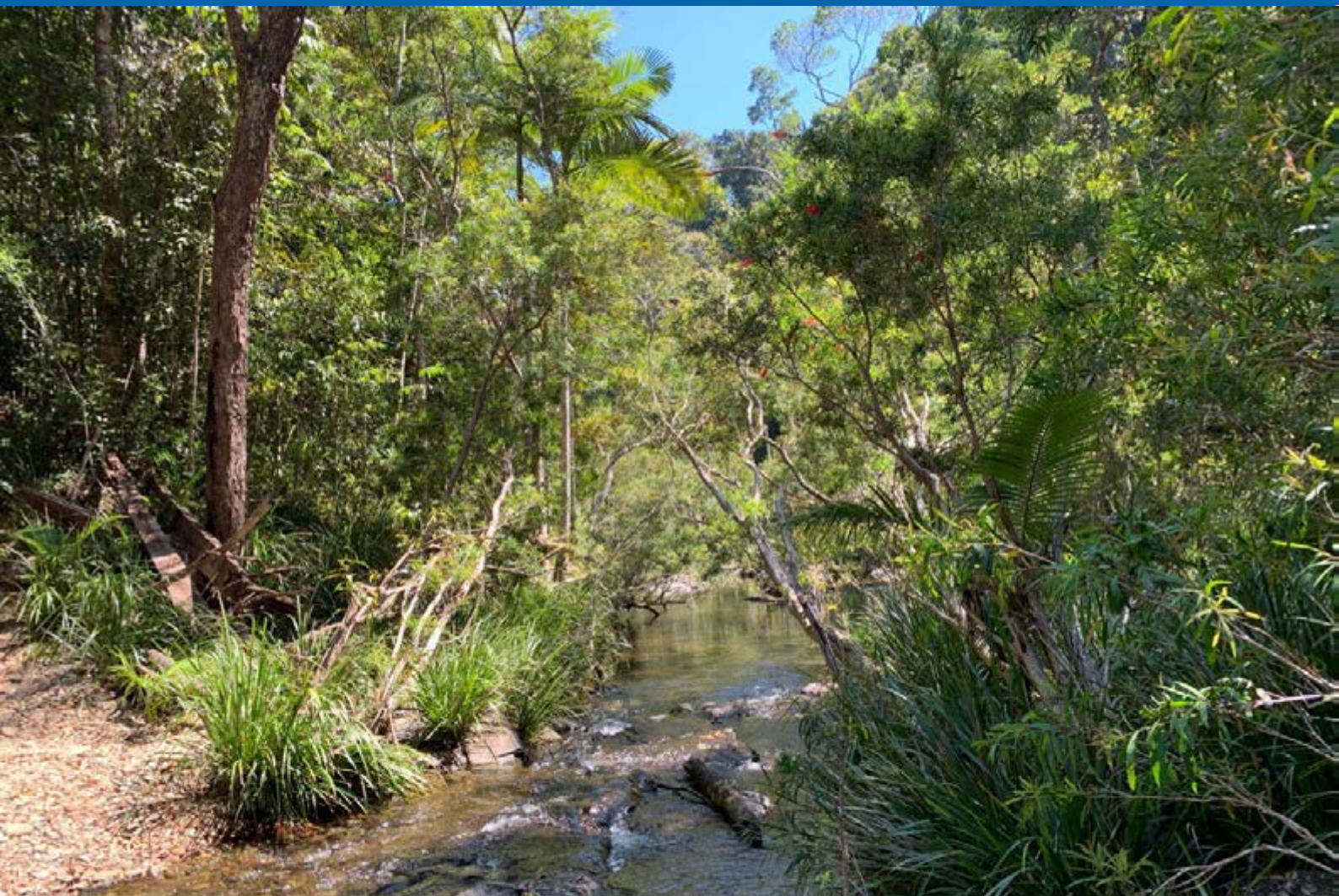




Department of State Development, Tourism, and Innovation

**Wangetti Trail South Section A Development Application for a Material Change of
for an Environmental Facility and Nature Based Tourism within Douglas Shire
Council**

January 2022



Abbreviation and acronyms

Abbreviation/acronym	Definition
ASS	Acid Sulfate Soils
AWTGS	Australian Walking Track Grading System
CEMP	Construction Environmental Management Plan
CESCP	Concept Erosion and Sediment Control Plan
CMD	Coastal Management District
DAF	Department of Agriculture and Fisheries
DATSIP	The Department of Aboriginal and Torres Strait Islander Partnerships'
DEMP	Department of the Environment – Environmental Management Plan
DES	Department of Environment and Science
DNRME	former Department of Natural Resources Energy and Mines (now Department of Resources)
DR	Department of Resources (previously referred to as Department of Natural Resources Energy and Mines)
DSC	Douglas Shire Council
DTIS	Department of Tourism, Innovation and Sport (previously referred to as Department of State Development, Tourism and Innovation)
DTMR	Department of Transport and Main Roads
EMP	Environmental Management Plan
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESCP	Erosion and Sediment Control Plan
GBO	General Biosecurity Obligation
GHD	GHD Pty Ltd
ha	Hectare
HAT	Highest astronomical tide
HEV	High Ecological Value
IECA	International Erosion Control Association
ILUA	Indigenous Land Use Agreement
km	Kilometre
LGA	Local government area
m	Metre
MCU	Material change of use
MNES	Matters of national environmental significance
MSES	Matters of state environmental significance
MTBA TRDS	Australian Mountain Bike Trail Guidelines Trail Difficulty Rating System

Abbreviation/acronym	Definition
NC Act	<i>Nature Conservation Act 1992</i>
Planning Scheme	<i>Douglas Shire Planning Scheme 2018</i>
PMST search	Protected Matters Search
QPWS	Queensland Parks and Wildlife Service
RLRPA	Regional landscape and Rural Production Area
SARA	State Assessment Referral Agency
SDAP	State Development Assessment Provisions
TDPD	Tourism Development Projects Division
TMP	Preliminary Traffic Management Plan
Wet Tropics	Wet Tropics of Queensland
WPDMP	Weed, Pest and Disease Management Plan
WTMA	Wet Tropics Management Authority
WTWHA	Wet Tropics World Heritage Area

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Appendix A – Pre-lodgement Advice

Appendix B – Assessment of State Development Assessment Codes

Appendix C – Planning Report for Wangetti South Section A in Wangetti to support an Operational Works Development Application for works in a Coastal Management District

Appendix D – Wangetti Trail Construction Manual

Appendix E – Wangetti Trail Project Consultation Report

Appendix F – Yirrganydji Gurabana Aboriginal Corporation Letter of Support

Appendix G – DA Form

Appendix H – Landowners consent

Appendix I – Watercourses intersected by Wangetti South A

Appendix J – Design Drawing Register for the Wangetti South Section A

Appendix K – Environmental Management Plan

Appendix L – Assessment of Douglas Shire Regional Council Planning Codes

1. Introduction

1.1 Purpose of this report

GHD Pty Ltd (GHD) on behalf of the Department of Tourism, Innovation and Sport (DTIS) - Tourism Development Projects Division (TDPD)¹ has prepared this Planning Report in support of a Material Change of Use (MCU) development permit for an 'Environmental Facility' and 'Nature-Based Tourism' to establish the use a shared use trail and public camping area within Wangetti South Section A which is located within Wangetti within the Douglas Shire Council local government area (LGA). This application is made in accordance with Chapter 3, Part 2, Division 2 of the *Planning Act 2016*.

The development application triggers the following State referrals under the *Planning Regulation 2017*:

- Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material Change of Use of premises near a State transport corridor triggers the Department of Transport and Main Roads (DTMR) as a referral agency, via the State Assessment Referral Agency (SARA). Parts of the trail are located within in Captain Cook Highway road reserve. The proposed works within the state-controlled road reserve have been discussed with the DTMR during a pre-lodgement meeting and they have provided their support of the proposed works in Appendix A. The proposed uses are considered consistent with the intent of the road reserve. The development application has been assessed against the State Development Assessment Provisions (SDAP), State code 1: Development in a state-controlled road environment in Appendix B.
- Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational works that is tidal works or work in a coastal management district triggers SARA as a referral agency. Parts of the trail are located within in state coastal land within the Coastal Management District (CMD). Assessment against the SDAP State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in a separate report in Appendix C and forms part of the development application package.

The proposed works are associated with the Wangetti Trail Project – Wangetti South Section A (refer to as Wangetti South Section A and the project. Wangetti South Section A has been developed in partnership between Douglas Shire Council (DSC), Cairns Regional Council, DES and the TDPD. The development application package specifically applies to the alignment located within DSC LGA. The proposed works are associated with the Wangetti Trail Project – Wangetti South Section A; being for a shared use trail and public camping node to be used by mountain bikers and hikers.

¹ Formerly Department of State Development, Tourism and Innovation (DSDTI) – Tourism Development Project Division

1.2 Background

1.2.1 Wangetti Trail

The DSDTI - TDPD is proposing to establish the Wangetti Trail, which is to extend from south of Mowbray River to Palm Cove. The Wangetti Trail has been divided into two sections (refer to Table 1.1 below).

Table 1.1 Component Overview

Component	Details	Map Reference
Wangetti North Section	An approximately 54 kilometre (km) shared use trail to accommodate both mountain bike users and hikers from south of the Mowbray River and the intersection of Captain Cook Highway road reserve to Wangetti, ending at Lot 2 SP309094.	Figure 1-1 Wangetti Trail Locality Plan – Wangetti North Section
Wangetti South Section A and B	<p>A 29.7 km shared use trail to accommodate both mountain bike users and hikers from Lot 2 SP309094 in the township of Wangetti, to Palm Cove.</p> <p>Wangetti South Section is further divided into two sections – Wangetti South Section A within Douglas Shire Council LGA and Wangetti South Section B within the Cairns Regional Council LGA.</p>	<p>Figure 1-2 Wangetti Trail Locality Plan – Wangetti South Section</p> <p>Note – Wangetti South Section A is the focus of this report and is highlighted in blue</p>

The Wangetti Trail has been designed such that it is responsive to the natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland. The project is being delivered by TDPD as part of an adventure-based ecotourism development in north Queensland. The shared use trail will provide walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including the Wet Tropics of Queensland (Wet Tropics) and national parks.

The focus of this development application is Wangetti South Section A within the Douglas Shire Council LGA.

A summary of the development aspects associated with the various components of the Wangetti South Section A are provided in Section 4. A construction methodology manual has been developed for the proposed works for Wangetti South Section A is included in Appendix D. The Wangetti South Section A has been designed such that it is responsive to natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland.

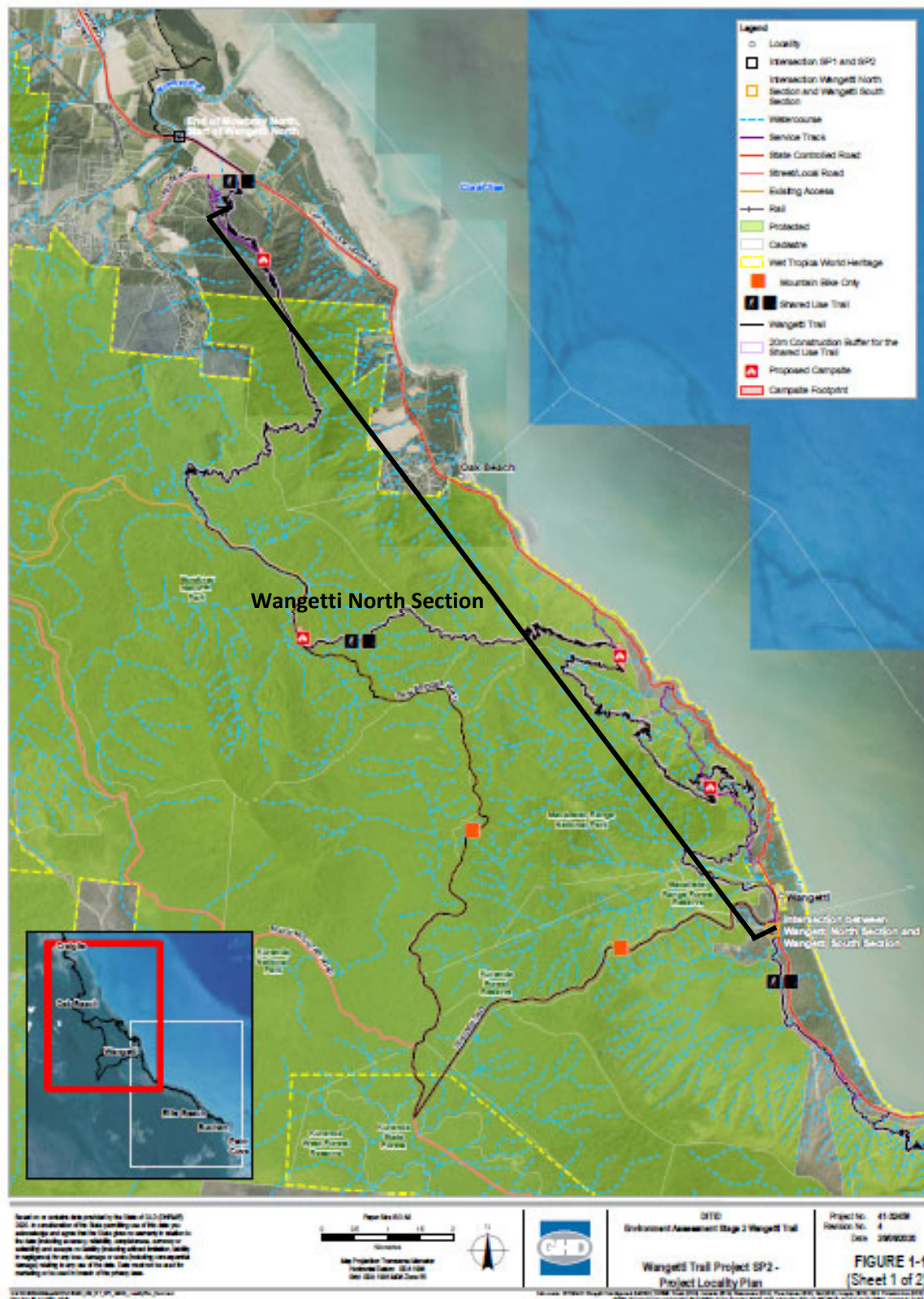
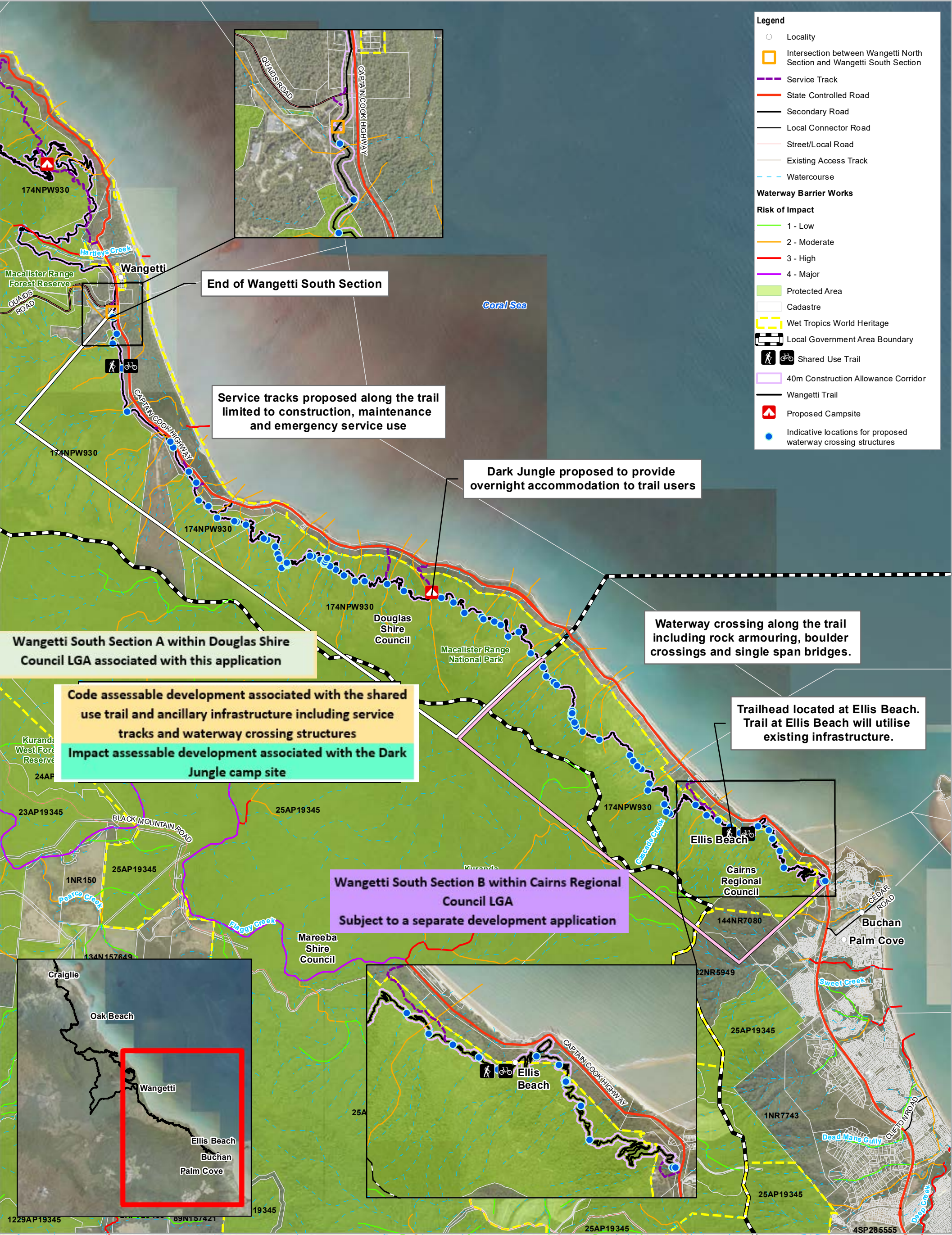


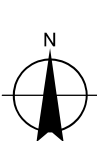
Figure 1-1 Wangetti Trail Locality Plan – Wangetti North Section



Based on or contains data provided by the State of QLD (DNRME) 2020. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

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Paper Size ISO A3
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Kilometres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



DITID
Environment Assessment Stage 2 Wangetti Trail

Wangetti Trail Project Locality Plan
Wangetti South Section A

Project No. 41-32458
Revision No. 0
Date 16/12/2020

FIGURE 1-2

Data source: DITID/GHD: Wangetti Trail Alignment (11/2020); DNRME: Roads (2019); Cadastre (2019); Watercourse (2014); Place Names (2016); Rail (2016); Imagery (2016); Local Government Area Boundary (2018); DAF: Waterway Barrier Works (2016) DES: Protected Area (2018); WTMA: Proposed Campsite (2020); Zoning Boundary (2019); GHD: Section Intersections - Wangetti North, Wangetti South (2020); Service Tracks (2020); 40m Construction Allowance Corridor (2020); Indicative Waterway Crossing Locations (2020). Created by: xlee

1.2.2 Wangetti South Section A

Wangetti South Section A, the subject of this Development Application, is located within the Douglas Shire Council LGA and comprises approximately 17.7 km of the 29.7 km Wangetti South Section, from Red Cliff Point to Wangetti.

The Wangetti South Section A comprises the following components:

- Approximately 17.7 km of shared use trail to accommodate both mountain bike users and hikers, consisting of natural ground and surface treatments, which will be a maximum of 1.5 m wide. The 1.5m wide trail will be located within a 40 m survey corridor, referred to as the construction allowance corridor, to allow flexibility for the placement of infrastructure during the construction phase. The trail has been designed to be a 'Mountain Biking – intermediate' trail (blue square with blue outline) as defined in the Australian MTBA TDRS and grade 3 for hikers, as defined in the AWTGS, which also equates to Class 3 in the Australian Standard for Walking Tracks, Part 1: Classification and Signage (AS 2156.1-2001). The trail will have an average gradient of <10% and a maximum gradient no greater than 15% (for short distances only). Built structures proposed as part of the trail include gully crossings, bridges, staircases, platforms, rock armouring and signage, where appropriate and required. The trail head proposed at Ellis Beach is to be situated on Lot 31 SP129117. Refer to Table 1 in Appendix D for more information.
- Dark Jungle (public camping node and amenities block) which will have a footprint of 0.25 hectares (ha) and will comprise of:
 - 10 x 4 m diameter elevated camping decks (126 m²)
 - 1 x toilet block (12.50m²)
 - 1 communal gathering area including bike rack, table and seating, bench area and shelter (27.90m²)
 - Interconnecting pathways, boardwalks and access tracks within Dark Jungle footprint
- A number of waterway crossings along the shared use trail that will comprise of the following: rock armouring and low-level bridge (minor water crossing).
- The formalisation of existing access tracks into service tracks to provide restricted access to the shared use trail for construction purposes, operational purposes, maintenance purpose and for emergency purposes.

1.3 Application components

The Wangetti Trail – South Section is located across two LGAs, being Douglas Shire Council (Section A) and Cairns Regional Council (Section B). In accordance with advice from Cairns Regional Council and Douglas Shire Council, two applications will be lodged for Wangetti South to split across the two LGAs. Therefore, this application is subject to the portion of the Wangetti South Section A that is located within Douglas Shire Council LGA. A separate application will be lodged to Cairns Regional Council for the balance of the Wangetti South Section B.

1.4 Development application components

This development application triggers the following:

- Development permit for a Material Change of Use (impact assessable) for an Environmental Facility and Nature-Based Tourism to establish the shared use trail and the public camping node within the project area
- Development permit for Operational Works (Code Assessable) for works within a Coastal Management District to construct the trail within State coastal land within the coastal management district (addressed in a separate report in Appendix C).

The development application also triggers referral agency assessment for development within 25m of a state-controlled road, being the Captain Cook Highway.

The assessment manager for this application is the Douglas Shire Council, with the SARA as a referral agency.

This development application is accompanied by the following supporting information:

- Appendix A – Pre-lodgement advice
- Appendix B – Assessment of State Development Assessment Codes
- Appendix C – Planning Report for Wangetti South Section A in Wangetti to support an Operational Works Development Application for works in a Coastal Management District
- Appendix D – Wangetti Trail Construction Manual
- Appendix E – Wangetti Trail Project Consultation Report
- Appendix F – Yirrganydji Gurabana Aboriginal Corporation Letter of Support
- Appendix G – Development Application Form
- Appendix H – Landowners consent from DNRME²
- Appendix I – Watercourses intersected by Wangetti South
- Appendix J – Design Drawing Register for the Wangetti South project area
- Appendix K – Environmental Management Plan
- Appendix L – Assessment of Douglas Shire Regional Council Planning Codes.

1.5 Pre-lodgement advice

Pre-lodgement advice has been sought from DSC, Cairns Regional Council, SARA and relevant technical agencies on the following dates: Pre-lodgement advice dated 20 September 2019 and 17 June 2020 Reference: 1908-12771 SPL. Refer to Appendix A.

An overview of the project was discussed including Wangetti North and Wangetti South Sections. The approval triggers and exemptions associated with project were confirmed including the application requirements. They included the following:

- Native vegetation clearing
- Constructing or raising waterway barrier work
- State transport corridor

² Now Department of Resources (DR)

- Owners consent requirements
- Tidal works or work a coastal management district
- Environmental offsets
- Tenure advice
- *Water Act 2000* provisions.

1.6 Engagement and stakeholders

In April 2018, the [then] Hon Kate Jones MP, Minister for Innovation and Tourism Industry Development and Minister for Cross River Rail announced the Queensland Government's support for the Wangetti Trail Project – Queensland's first public-led, purpose-built, 94 km shared use eco-trail stretching from Palm Cove to Port Douglas.

The project is being delivered by the DTIS in partnership with the DES, Queensland Parks and Wildlife Service (QPWS) and the Traditional Owners of the country on which the trail traverses. The trail is expected to deliver approximately 150 jobs, attract over 11,000 visitors per annum and yield up to \$300M in direct benefits to the region.

DTIS is committed to delivering its projects with transparency and integrity. Throughout the project lifecycle, there has been extensive engagement with the local community, tourism industry, Councils and regional organisations and conservation interest groups. The Wangetti Trail Project Team maintains a project website and e-newsletter which is updated regularly with all project updates³. DTIS have prepared the Wangetti Trail Project Consultation Report (Appendix E) which provides an account of the various community and stakeholder engagement activities at and across certain phases of the project. The report also articulates how the proposed trail alignment and infrastructure has responded dynamically to community concerns, expert advice, market feedback and engagement with the Traditional Owners of the country. A copy of the Wangetti Trail Project Consultation Report is included in Appendix E and a copy of Yirrganydji Gurabana Aboriginal Corporation Letter of Support is included in Appendix F.

1.7 Disclaimer

This report has been prepared by GHD for behalf of the DSDTI - TDPD and may only be used and relied on by TDPD for the purpose agreed between GHD and the TDPD as set out in Section 1.1 of this report. GHD otherwise disclaims responsibility to any person other than the DSDTI arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report.

³ Project website: <https://www.dtis.qld.gov.au/our-work/qld-ecotourism-trails/wangetti-trail>

2. Summary of application package – Wangetti South Section A

Key development application details associated with Wangetti South Section A are summarised in Table 2.1.

Table 2.1 Key application details

Components	Details	Reference in the report
Applicant	The State of Queensland acting through Department of State Development, Tourism and Innovation C/- GHD Pty Ltd	Refer to DA Form 1 provided in Appendix G.
Real Property Descriptions	Lot 31 on SP129117 Lot 39 on SP309107 Lot 6 on SP309107 Lot 2 on SP309094 Lot 174 on NPW930 Captain Cook Highway Road Reserve	Property descriptions are provided in Section 3.1.
Name of Landowners	Tenure and land ownership details are provided in Section 3.2.	Tenure and land ownership details are provided in Section 3.2.
Site Area	The project area extends approximately 17.7 km and is constrained by the Pacific Ocean to the east and the Macalister Ranges to the west and is almost entirely located within the Macalister Range National Parks and the Wet Tropics World Heritage Area (WTWHA).	Refer to Section 3 for further details of the site characteristics.
Current Land Use	Undeveloped land reserve. Lot 174 on NPW930: undeveloped national conservation park Captain Cook Highway: road reserve	Current land use is addressed in Section 3.3.
Local Government Area	Douglas Shire Council	Refer to Section 3.3 for further details.
Planning Scheme	<i>Douglas Shire Planning Scheme 2018</i>	Refer to Section 6 for more details.
Proposal	DSDTI - TDPD is proposing to establish the Wangetti trail – Wangetti South Section A, a 17.7 km shared use trail to accommodate both mountain bike users and hikers in Wangetti. The Wangetti South Section A will comprise the following components: <ul style="list-style-type: none"> 17.7 km shared use trail from to accommodate both mountain bike users and hikers, 	Refer to Section 4 of this report for more details.

	<p>consisting of natural ground and surface treatments</p> <ul style="list-style-type: none"> • Dark Jungle public camp site (0.25 ha). • A number of waterway crossings along the shared use trail that will comprise of rock armouring and low-level bridge (minor water crossing) • The formalisation of existing service tracks into service tracks to provide restricted access to the shared use trail and the camp sites for construction purposes, operational purposes, maintenance purpose and for emergency purposes. 	
Development components	<p>Development Permit for a Material Change of Use for an 'Environmental Facility' and 'Nature-Based Tourism'.</p> <p><u>Definition under the planning scheme:</u></p> <p>Environmental facility = Shared use trail, waterway crossings and service tracks.</p> <p>Environmental facility (Shared use trail, waterway crossings and service tracks) within conservation zone triggers code assessable development under the planning scheme.</p> <p>This planning report has addressed the following planning codes:</p> <ul style="list-style-type: none"> • Conservation zone • Acid sulfate overlay • Access, parking and servicing • Bushfire hazard overlay • Hillslopes overlay • Environmental performance • Filling and excavation • Infrastructure works • Landscape • Vegetation management <p>Refer to Section 6 in this report.</p> <p><u>Category of assessment under the planning scheme:</u></p> <p>Nature-based tourism = Dark Jungle public camp site</p>	Refer to DA Form 1 provided in Appendix G.

	<p>Nature based tourism (Dark Jungle campsite) within conservation zone triggers impact assessable development under the planning scheme.</p> <p>This planning report has addressed the following planning codes:</p> <ul style="list-style-type: none"> • Conservation zone • Acid sulfate overlay • Access, parking and servicing • Bushfire hazard overlay • Hillslopes overlay • Environmental performance • Filling and excavation • Infrastructure works • Landscape • Vegetation management <p>Refer to Section 6 in this report.</p> <p>The proposed works has also been assessed against Council's Strategic Intent of the Planning Scheme – Environment and landscape theme and Economy theme. Refer to Section 6 in this report.</p> <p>The proposed works has been assessed against the Far North Queensland Regional Plan and State Planning Policies (refer To Section 7).</p> <p>Figure 1-2 and the plans in Appendix J shows the proposed works that are code assessable and impact assessable.</p>	
State referral triggers	<p>State referral triggers:</p> <ul style="list-style-type: none"> • Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material Change of Use of premises near a State transport corridor. Parts of the trail are located within in Captain Cook Highway road reserve. The proposed works within the state-controlled road reserve have been discussed with DTMR and they have provided their support of the proposed works. The proposed uses are considered consistent with the intent of the road reserve. The development application has been assessed against State code 1: Development in a state-controlled road environment in Appendix B. • Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational Work that is tidal works or work 	Refer to Section 7.

	<p>in a coastal management district - Parts of the trail are located within in state coastal land within CMD. Assessment against the current State Development Assessment Provisions, State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in Appendix C.</p> <ul style="list-style-type: none"> Refer to DA Form 1 provided in Appendix G 	
Level of Assessment	<p>Impact assessment for the Material Change of Use for an 'Environmental Facility and Nature-Based Tourism</p> <p>Code assessment for Operational Works for works within a Coastal Management District and for development within 25m of a state-controlled road</p>	Refer to Section 6 for further information.
Assessment manager	Douglas Shire Council	Refer to Section 1 for further information.
Referral agencies	State Assessment and Referral Agency	Refer to Section 7 for more details.
Advice agencies	<p>Department of Environment and Science</p> <p>Department of Transport and Main Roads</p>	Refer to Section 1.5 for pre-lodgement advice.
Contact details for application	<p>Sarah Wilson (GHD)</p> <p>Address: Level 13 – The Rocket, 203 Robina Town Centre Drive, Robina, QLD 4226</p> <p>Phone number: 07 5413 8133 and 0459 813 589</p> <p>Email: sarah.wilson@ghd.com</p>	Refer to Section 1.5 for pre-lodgement advice.

3. Site characteristics – Wangetti South Section A

3.1 Site location

Wangetti South Section A is located within Douglas Shire Council LGA from Red Cliff Point to Wangetti in Far North Queensland. The majority of the Wangetti South Section A is located within the Macalister Range National Park which forms part of the Wet Tropics World Heritage Area (WTWHA) and is protected under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Wet Tropics Management Plan 2020.

Wangetti South Section A and B are considered to involve undertaking an action which has, will have, or is likely to have, an impact on a Matters of National Environmental Significance (MNES). Therefore, EPBC Referral (Reference: EPBC 2020/8722) was lodged to the Commonwealth Department of Agriculture, Water and Environment (DAWE) in 2020 and TDPD is currently responding to requests for additional information for assessment as Preliminary Documentation. Furthermore, TDPD has been secured a Wet Tropics Permit from the Wet Tropics Management Authority for both Wangetti North and Wangetti South Section. Refer to Section 8 for more information.

The land parcels associated with Wangetti South Section A are displayed below (Table 3.1).

Table 3.1 Land parcel details

Lot/Plan	Property description	Ownership details	Tenure details
Lot 31 on SP129117	Captain Cook Highway, Wangetti	State of QLD (Department of Natural Resources, Mines and Energy (DNRME)) Trustee Douglas Shire Regional Council	Reserve for recreation
Lot 6 on SP309107	Captain Cook Highway, Wangetti	State of QLD (DNRME) Trustee Douglas Shire Regional Council	Reserve
Lot 39 on SP309107	Captain Cook Highway, Wangetti	State of QLD (DNRME) Trustee Douglas Shire Regional Council	Reserve
Lot 2 on SP309094	Captain Cook Highway, Wangetti	Wangetti Aboriginal Land Trust.	Freehold land under the <i>Aboriginal Land Act 1992</i>
Lot 174 on NPW930	Macalister Range National Park	State of QLD – DES	National Park
Road Reserve	Captain Cook Highway	Managed by DTMR	Road Reserve

The project area of Wangetti South Section A extends approximately 17.7 km and is constrained by the Pacific Ocean to the east and the Macalister Ranges to the west and is

almost entirely located within the Macalister Range National Parks and the WTWHA, refer to Figure 1-2.

Largely, the Wangetti South Section A alignment traverses the eastern slopes of the Macalister Ranges and intersects an array of different vegetation types, including rainforests and open woodland ecosystems. The trail intersects an array of different vegetation types, including rainforests, mangroves and open woodland ecosystems. The landscape contains volcanic mountain ranges and a mix of permanent and semi-permanent waterways, with topography ranging from sea level to 250 m AHD.

3.2 Site tenure and land ownership

3.2.1 Land ownership and encumbrances by leases and easements

Land ownership details for the properties that the proposed alignment intersects are identified in Table 3.1.

Landowner's consent has been obtained from the former DNRME (now DR) has been obtained for the following properties associated with Wangetti South Section A:

- Lot 31 SP129117 – State Reserve
- Lot 6 SP309107 – State Reserve
- Lot 39 SP309107 – State Reserve
- Lot 2 SP309094 – Freehold

Refer to Appendix H.

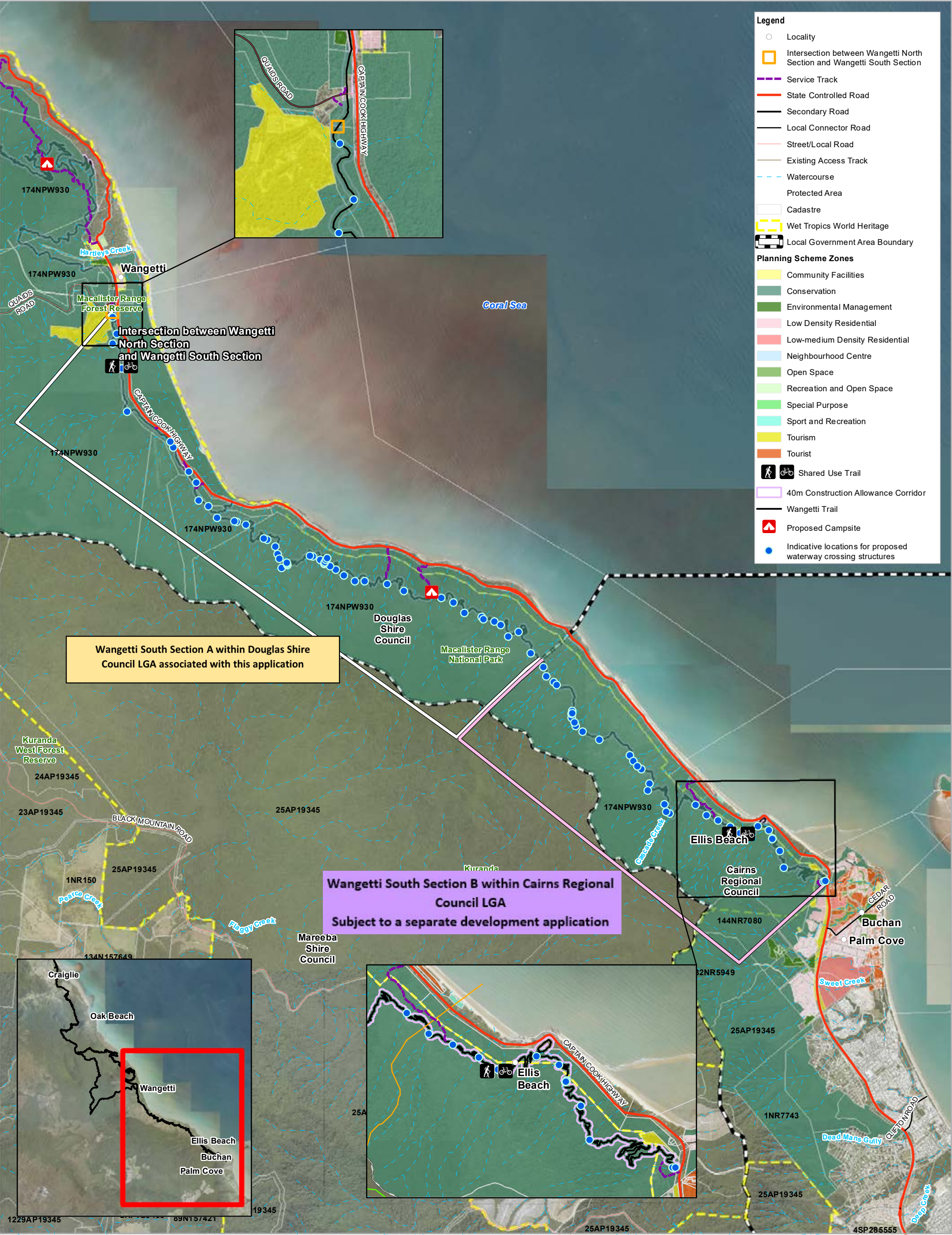
Lot 174 on NPW930 is Macalister Range National Park and the Department of Environment and Science have provided consent for works to occur within the national park.

The road reserve for Captain Cook Highway is managed by DTMR. Based on the outcomes from the pre-lodgement meeting, DTMR has no objections to the proposed alignment intersecting the State-controlled road reserve.

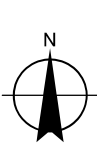
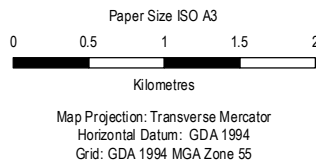
3.3 Existing environment

Land use, land tenure, special areas

The Wangetti South Section A is located within the Douglas Shire Council LGA. The Wangetti South Section A alignment is wholly mapped within the *Douglas Shire Planning Scheme 2018* and managed by the Wet Tropics Management Authority (WTMA) (as shown in Figure 3-1). This zoning is representative of the Macalister Range National Park, a Wet Tropics World Heritage area in which the trail is located.



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Environment Assessment Stage 2 Wangetti Trail

Wangetti South Section A Land Use Map

Project No. 41-32458
Revision No. 0
Date 16/12/2020

FIGURE 3-1

Protected areas

The Wangetti South Section A impacts 2.45 ha of protected area referred to as Macalister Range National Park and described as Lot 174 NPW930. Macalister Range National Park is protected under the *Nature Conservation Act 1992* and *Wet Tropics World Heritage Protection and Management Act 1993*.

There are three areas within Wangetti South Section A that are located outside of the Macalister Range National Park and they are mapped as conservation zone under the Douglas Shire Planning Scheme and as State controlled road reserve (refer to Figure 3-12). Pre-lodgement advice provided by Douglas Shire Council indicated that works within the state protected areas would still form part of the MCU development application for an environmental facility and nature – based tourism would still require assessment under the Douglas Planning Scheme.

Wangetti South Section A and Section B has been approved (Wet Tropics Permit No: WTMA20001a) and a permit issued under Part 4, Division 1, Section 45 of the Wet Tropics Management Plan 1998 (superseded 3rd July 2017) (*Wet Tropics World Heritage Protection Management Act 1993*) to allow for the proposed works to occur within the Wet Tropics Management Zone. While the project was assessed in accordance with the Wet Tropics Management Plan 1998 plan, the project is considered to comply with the intent of the Wet Tropics Management Plan 2020.

An assessment has been undertaken against the provisions of the Wet Tropics Management Plan 1998 (superseded 3rd July 2017) and is presented in Table 3.2.

Table 3.2 Assessment against the provisions of the Wet Tropics Management Plan 1998

Wet Tropics Management Plan 1998	Response
<p>Zone B – Zone B is comprised of land that is mostly of high integrity but not necessarily remote from disturbance.</p> <p>It is intended that, in Zone B, land be undergoing recovery or rehabilitation towards its natural state or becoming remote from disturbance by activities associated with modern technological society; and a visitor may expect opportunities for solitude in a natural area requiring a degree of self-reliance; and management presence be limited mainly to activities required for the recovery or rehabilitation of the area.</p>	<p>The majority of the project is located within Zone B under the Wet Tropics Management Plan 1998.</p> <p>The proposed trail is considered to meet the intent of Zone B by providing opportunities to connect with nature and to be surrounded by nature along the trail. The trail will allow for winding around natural obstacles and integrating within the natural environment. Vegetation disruption, including canopy cover, is minimised.</p> <p>The Wangetti South Section has been designed to minimise built structures like bridges, boardwalks and viewing platforms. These built structures pose a number of challenges:</p> <ul style="list-style-type: none">• They are normally constructed from imported materials and can be intrusive in the natural environment• They can burn during bushfires or prescribed burns• They can be difficult to construct in remote areas, due to the challenges of importing the materials• They increase the maintenance burden.

Wet Tropics Management Plan 1998	Response
<p>The management purpose of Zone B is, to the greatest possible extent—</p> <ol style="list-style-type: none"> a. To protect and enhance the integrity of land in the zone b. If the land is disturbed— <ol style="list-style-type: none"> (i) To restore land in the zone to its natural state, as opportunities arise (ii) To include the land in zone A once it is sufficiently recovered or rehabilitated. 	<p>Where built structures are required, the design and finish will prioritise the use of local timbers and other materials that will age gracefully with time. Above all, the materials must be durable enough to withstand the harsh tropical climate and natural environment. Any built structures must be designed and engineered to be fit-for-purpose, to have minimal impact to the surrounding environment, to have minimal maintenance requirements and will need to take a minimalistic approach to materials given the remote nature of the trail, resulting in a minimal impact on the scenic beauty of the Wet tropics.</p>
<p>Zone C – Zone C is comprised of land on which, or adjacent to which, there is disturbance associated with community services infrastructure.</p> <p>It is intended that, in Zone C—</p> <ol style="list-style-type: none"> c. Land be mostly natural, but with some disturbance associated with community services infrastructure (community services infrastructure means infrastructure for community services such as, for example, transport services, electricity supply, water supply and telecommunications services), other community facilities and visitor facilities d. A visitor may expect various low-key opportunities for nature appreciation and social interaction in a natural setting, but with some 	<p>Where the trail is located within Zone C land, it is considered to meet the intent of Zone C areas, being, land be mostly natural, but with some disturbance associated with community services infrastructure.</p> <p>The Wangetti South Section has been designed to minimise built structures like bridges, boardwalks and viewing platforms. These built structures pose a number of challenges:</p> <ul style="list-style-type: none"> • They are normally constructed from imported materials and can be intrusive in the natural environment • They can burn during bushfires or prescribed burns • They can be difficult to construct in remote areas, due to the challenges of importing the materials • They increase the maintenance burden. <p>Where built structures are required, the design and finish will prioritise the use of local timbers and other materials that will age gracefully with time. Above all, the materials must be durable enough to withstand the harsh tropical climate and natural environment. Any built structures must be designed and engineered to be fit-for-purpose, to have minimal impact to the surrounding environment, to have minimal maintenance requirements and will need to take a minimalistic approach to materials given the remote nature of the trail, resulting in a minimal impact on the scenic beauty of the Wet tropics.</p>

Wet Tropics Management Plan 1998	Response
<p>disturbance by activities associated with modern technological society</p> <p>e. Management presence may be obvious.</p>	
<p>The management purpose of Zone C is—</p> <p>f. To accommodate community services infrastructure, other community facilities and visitor facilities; but (b) to the greatest possible extent—</p> <p>(i) To ensure any adverse impact of activities carried out in the zone on the area's integrity is minimal and acceptable under this plan</p> <p>(ii) To otherwise protect and enhance the integrity of land in the zone.</p>	

Wet Tropics Strategic Plan 2020 – 2030

The Wet Tropics Strategic Plan 2020 – 2030 provides a 10 year policy framework to guide decision-making under the *Wet Tropics World Heritage Protection and Management Act 1993*. The primary purpose of the Wet Tropics Strategic Plan 2020 – 2030 is to enable the identification, protection, and conservation of the Wet Tropics for future generations. It states the desired outcomes that will be delivered and outlines the actions that will achieve this. An assessment has been undertaken against the provisions of the Wet Tropics Strategic Plan 2020 – 2030 with respect to Wangetti South Section and is outlined in Table 3.3.

Table 3.3 Assessment against the provisions of the Wet Tropics Strategic Plan 2020 – 2030

Wet Tropics Strategic Plan 2020 – 2030	Response
<p>2. Climate change and other threats</p> <p>Respond to the impacts of climate</p>	<p>To response to climate change and other threats within the Wangetti South Section A, mitigation measures have been developed to be implemented during the construction and operational phases of the project and they are outlined in the following management plans that have been developed for the project:</p>

Wet Tropics Strategic Plan 2020 – 2030	Response
change and priority cross-tenure threats to the area	<ul style="list-style-type: none"> • Preliminary Environmental Management Plan (EMP) • Preliminary Construction Environmental Management Plan (CEMP) • Concept Erosion and Sediment Control Plan (CESCP) • Preliminary Weeds, Pest and Diseases Management Plan (WPDMP) • Preliminary Traffic Management Plan (TMP) <p>A summary of the controls measures that been developed in response to climate change include:</p> <ul style="list-style-type: none"> • Fire management plan is to be developed for the construction phase of the project, in conjunction with WTMA. The nominated construction contractor of the trail and public campsites will be required to develop a bushfire management plan as part of their contract. • No burning of any substances, including wooden debris or products, will be undertaken as part of this project. • Toolbox talks with the construction crew will occur prior construction to educate them about bushfire management, bushfire hazards and evacuation routes. • Working during the fire season, ensure that each team has at least one team member who has been trained in basic bushfire awareness. • During the fire season, chainsaw work to be scheduled to take place early in the morning, when fire danger risk is lowest. • All signage installed with the project area must have a unique 'location identification number' on it, to be quoted in case of emergency. Emergency responders would be provided with GPS coordinates corresponding to each 'location identification number' and instructions about the most direct and reliable routes of access to that point. <p>Where built structures are required, the design and finish will prioritise the use of local timbers and other materials that will age gracefully with time. Above all, the materials must be durable enough to withstand the harsh tropical climate and natural environment. Any built structures must be designed and engineered to be fit-for-purpose, to have minimal impact to the surrounding environment, to have minimal maintenance requirements.</p>
3. Support Rainforest	During the development of the trail, cultural heritage representatives were engaged to provide advice regarding the significant Aboriginal

Wet Tropics Strategic Plan 2020 – 2030	Response
<p>Aboriginal Peoples</p> <p>Promote and incorporate the rights, interests and aspirations of Rainforest Aboriginal Peoples</p>	<p>areas, significant Aboriginal objects and or evidence, of archaeological or historic significance along the trail.</p> <p>As part of the Project, TDPD has been engaging with Traditional Owners regarding the proposed works and to avoid impacts on cultural heritage values.</p>
<p>4. Involve the community</p> <p>Optimise community participation and connection with the area through innovative interpretation, with a focus on education, volunteering and social inclusion</p>	<p>The Wangetti South Section A experience will be uniquely Australian, emphasising the culture, history and way of life of the Traditional Owners, the Yirrganydji people. It will encourage a sense of exploration and a spirit of adventure. It will foster an appreciation of the natural environment and the diversity of flora and fauna within it.</p> <p>The Project will provide economic, cultural and educational benefits to the community, as summarised below.</p> <p><i>Economic</i></p> <p>Wangetti South Section A has the potential to diversify the tourism product offering in North Queensland, involve Traditional Owners and increase jobs by utilising Queensland's natural assets. The construction phase of the Project will provide an opportunity for the creation of local jobs and employment through the sourcing of material and equipment or through manual labour, while the operational phase of the Project will increase visitors to the area, supporting the local economies of Cairns, Wangetti and Port Douglas.</p>
<p>5. World-class tourism and recreation</p> <p>Enhance the World Heritage presentation and support opportunities for natural and cultural tourism and recreation</p>	<p>The Wangetti South Section A will provide access to a World Heritage listed assets –the WTWHA, which will create value for money experiences for tourists and provide opportunities for tourism operators to extend their offerings and capture markets that are seeking access to unique nature-based experiences (PWC, 2018).</p> <p><i>Cultural and spiritual</i></p> <p>The Wangetti South Section A supports a healthy wellbeing and lifestyle by encouraging the physical, mental, and spiritual activity of participants. Contact with nature can enhance spiritual health, which underpins all other aspects of health (PWC, 2018).</p> <p><i>Educational</i></p> <p>The Wangetti South Section A will create several educational opportunities, including the community, schools and universities to increase their knowledge and understanding around wildlife and conservation in WTWHA, with the opportunity to develop education programs to help teach and upskill students (PWC, 2018).</p>
<p>6. Minimise impacts</p>	<p>Wangetti South Section A has received a WTMA permit and the proposed works were considered to be consistent with the intent of the zones. WTMA was consulted during the design phase of the project</p>

Wet Tropics Strategic Plan 2020 – 2030	Response
Manage activities that may have been an impact on the area appropriately through permit and zoning system.	and provided advice regarding the: location of the proposed works, extent of footprints, environmental controls and types of material proposed. Wangetti South Section was adjusted accordingly based on the advice from WTMA.



Figure 3-2 State protected areas within Wangetti South Section A

Table 3.4 Zoomed in section of Wangetti South Section A within State Protected Areas

Inset	Comments
	<p>Part of the shared use trail is located within State protected area- Macalister Range National Park.</p>
	<p>Part of the shared use trail, service tracks and Dark Jungle are located within State protected area- Macalister Range National Park.</p>

World heritage

The Wangetti South Section A alignment project area traverses the Wet Tropics World Heritage Area, which is recognised as a world heritage property and national heritage place for both natural and Indigenous values. Refer to Section 3.3.9.

Surrounding land uses

Land uses surrounding Wangetti South Section A are outlined in Table 3.5.

Table 3.5 Surrounding land uses

Direction	Land use
North	<p>Wangetti South Section A is surrounded by the following land uses in the north:</p> <ul style="list-style-type: none">Wangetti Town – Wangetti is located to the north east of the Wangetti South Section A and is a coastal town in Far North Queensland with a population of approximately 50 people. Wangetti's main attraction is Hartley's Crocodiles Adventures (Australian native animal zoo and farm). Wangetti is located approximately 43 km north west of Cairns, a major commerce centre for Far North Queensland. Tourism plays a major part to Cairns' and the region's local economy.
South	<p>South of the subject site contains the Macalister Range National Park and Cairns Regional Council LGA. The Wangetti Trail continues south / south east to Cairns Regional Council LGA.</p> <ul style="list-style-type: none">Macalister Range National Park - Macalister Range National Park protects a rugged, forested range along the far northern coastline of Queensland. A picturesque park, rising steeply from the shoreline, it overlooks the tropical islands and waters of the Great Barrier Reef Marine Park. Mount Charlie, the park's highest point, reaches 880 m. It is near this peak that the crest of the Great Dividing Range is at its closest point to the Australian coastline (apart from its northern extremity at Cape York Peninsula). It is part of the WTWHA and contains a number of existing access tracksCaptain Cook Highway – State Controlled Road – Captain Cook Highway carries a moderately high amount of traffic, as it is the main road linking Cairns and Port Douglas. Townships located along the Captain Cook Highway include Palm Cove, Ellis Beach, Wangetti and there are limited tourist services such as accommodation, hospitality and attractions along the highway.
East	<p>Wangetti South Section A is surrounded by the following land uses in the east:</p> <ul style="list-style-type: none">Captain Cook Highway – State Controlled RoadCoral Sea – The Coral Sea is located to the north and east of the site, rich in marine habitats and reef systems. The Coral Sea contains the Great Barrier Reef, which attracts locals and tourists for water activities including snorkelling, scuba diving and helicopter flights.
West	<p>Wangetti South Section A is surrounded by the following land uses in the west:</p> <ul style="list-style-type: none">Macalister Range National Park

3.3.1 Existing infrastructure within project area

Pedestrian and Cycle Infrastructure

According to Douglas Shire Council infrastructure maps (2018) the project area for Wangetti South Section A is not currently serviced by pedestrian and cycle infrastructure as it is located within the Macalister Range National Park.

Telecommunications

According to Douglas Shire Council infrastructure maps (2018), the project area for Wangetti South Section A is not currently serviced by telecommunications infrastructure as it is located within the Macalister Range National Park.

Water and Stormwater infrastructure

According to Douglas Shire Council infrastructure maps (2018), the project area for Wangetti South Section A is not currently serviced by water and stormwater infrastructure as it is located within the Macalister Range National Park.

Electricity

According to Douglas Shire Council infrastructure maps (2018), there is currently no electricity or telecommunication infrastructure located along the Wangetti South Section A alignment as there is no uses operating along the alignment.

Sewerage and Waste Infrastructure

According to Douglas Shire Council infrastructure maps (2018), there is currently no municipal infrastructure located along the Wangetti South Section A alignment for water, sewer or stormwater as there is no uses operating along the alignment.

Stormwater currently follows existing natural drainage flows.

3.3.2 Soils and topography

Topography

The Wangetti South Section A alignment is comprised of coastal floodplains, volcanic mountain ranges and estuarine mudflats. The alignment intersects coastal plains of 5 m – 30 m AHD before traversing the eastern slopes of the Macalister Ranges (Department of Resources, 2021). Largely, the alignment follows the eastern edge of the Macalister Ranges, at a topography of 110 – 250 m AHD (Department of Resources, 2021).

Soil

The location of the trail on the slopes of the Macalister range, has a high probability of erosion and sedimentation. According to the Australian Atlas of Soils (CSIRO, 2013), the project area consists of three major soil groups:

- **Dermosols** – these soils generally have a well-structured surface and are usually non-dispersive due to the low sodium content, therefore erosion risk is reduced. These soils are present in the northern section of the trail alignment
- **Ferrosols** – are typically well-drained and have good ability to produce vegetation. This soil type is present in the southern portion of the trail alignment
- **Kurosols** – these soils typically have poor infiltration due to their hard-setting surface. This results in a large proportion of water running off and causing erosion. These soils can be

dispersive in the subsoil and contain high salt levels which can lead to erosion. These soils are present in the central portion of the trail alignment.

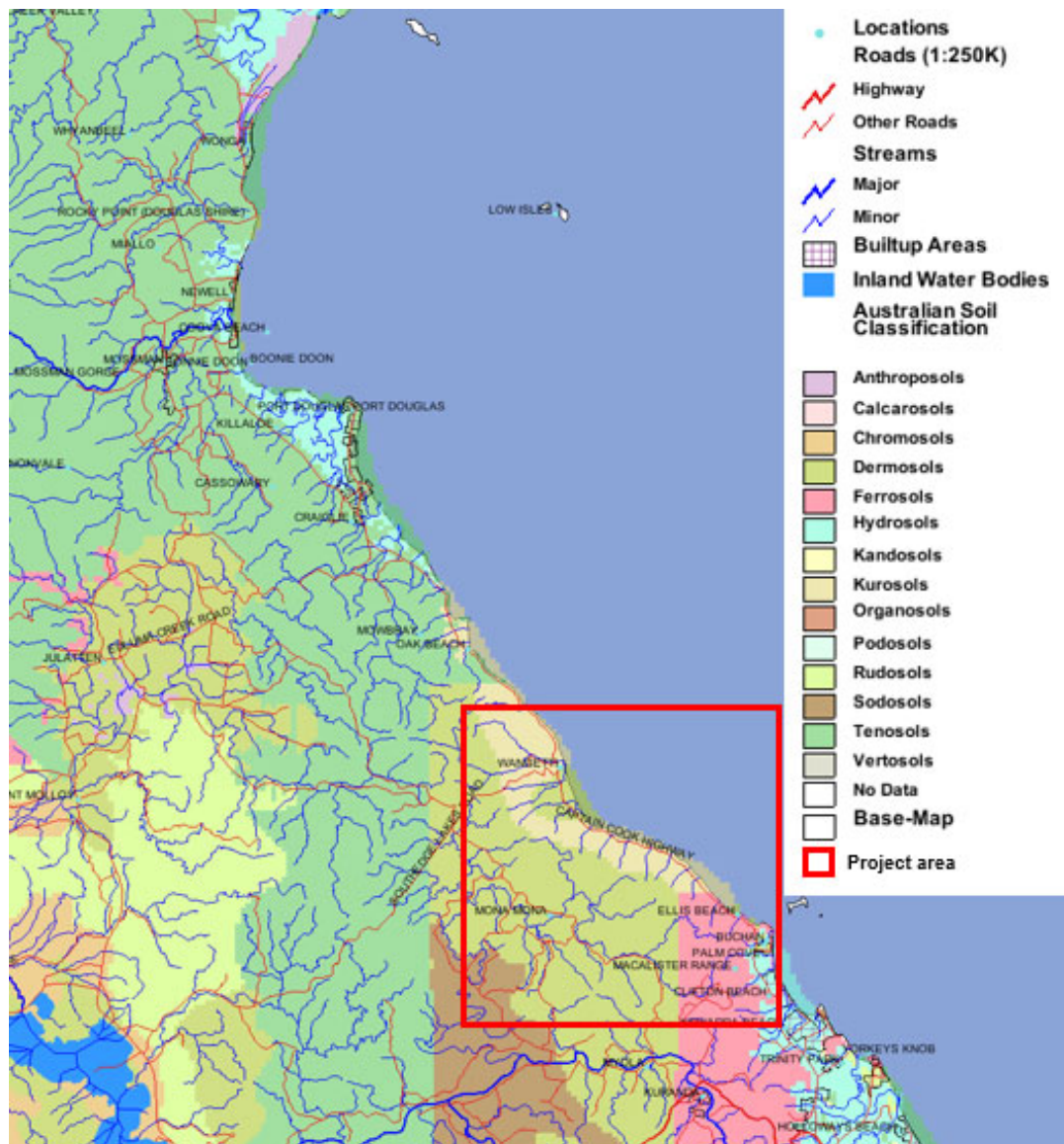


Figure 3-3 Soil types (ASRIS 2012)

Acid sulfate soils

In Queensland, coastal areas lower than 5 m AHD are likely to have acid sulfate soils (ASS) present. ASS can also be found buried beneath newer soils at elevations below 20 m AHD.







Portions of the Wangetti South Section A are mapped as occurring below 5 m AHD or between 5 and 20 m AHD under the Douglas Shire Council ASS overlay. Therefore, ASS may be present in these areas.

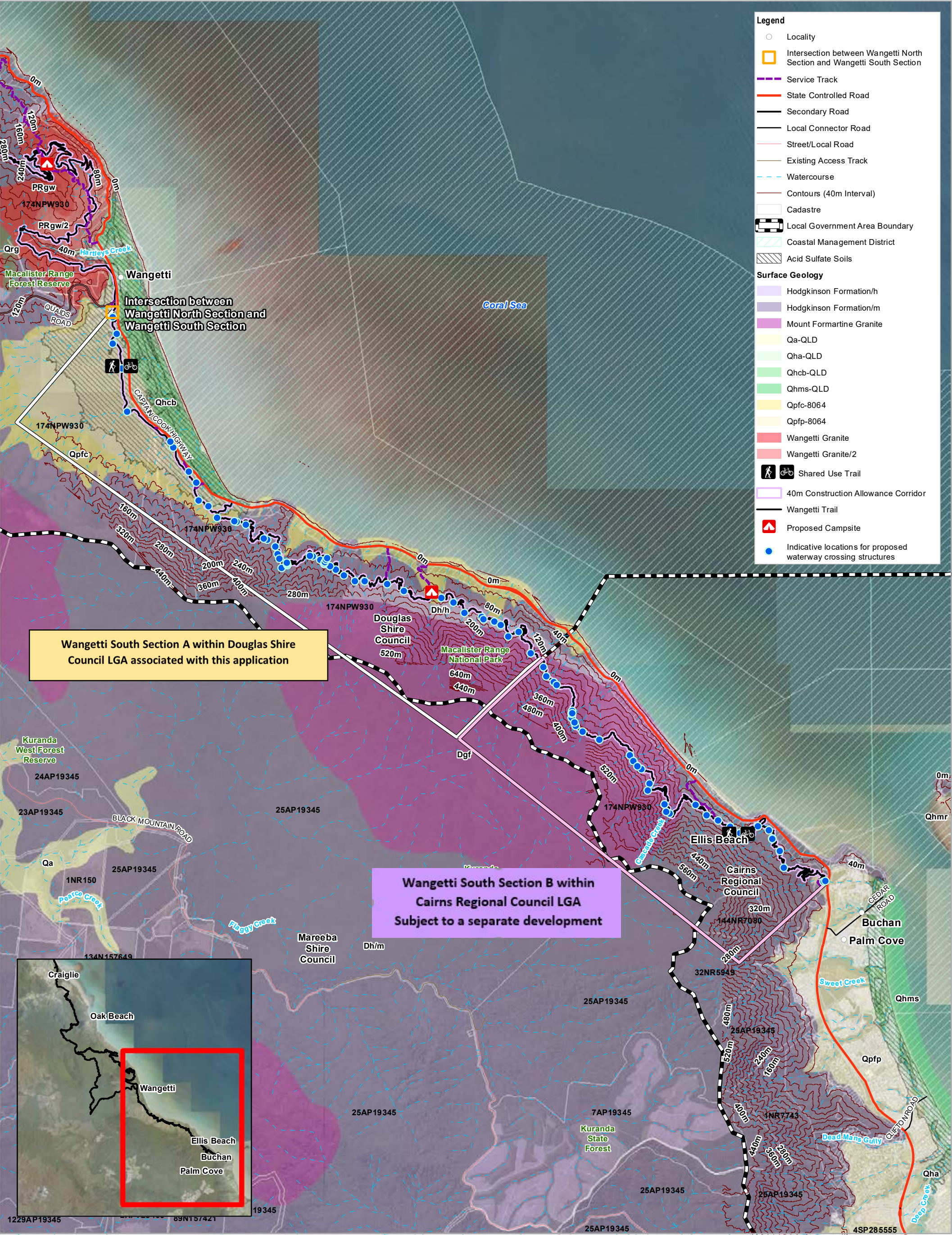
The ASS overlay indicates the northern section of the Wangetti South Section A project area, from Wangetti to 4 km (Red Cliff Point) is mapped as being between 5 and 20 m AHD and/or less than 5 m AHD. This area contains the highest likelihood of containing ASS. No detailed ASS investigations have been undertaken to date for the Wangetti South A project area as this will be the responsibility of the nominated design and construction contractor.

Geology

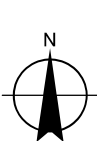
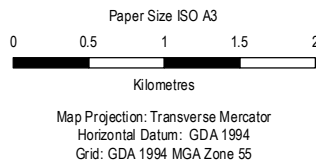
The Queensland Globe 1:100,000 Detailed Surface Geology dataset indicates a varied surface geology within the project area. The surface geology is summarised in Table 3.6 and Figure 3-4 Wangetti South Section A and B Surface Geology and Acid Sulfate Soils.

Table 3.6 Summary of surface geology

	Rock unit	Lithological summary	Dominant rock	Rock type	Age
	Hodgkinson Formation (Hdm)	Mainly dark grey, thin bedded, mudstone, subordinate thin to thick bedded arenite beds, minor chert and basalt	Mudrock	Stratified unit (including volcanic and metamorphic)	Early Devonian – late Devonian
	Mount Formative Granite (Dgf)	Muscovite-biotite granite, strongly foliated and sheared	Granitoid	Intrusive unit	Late Devonian
	Hodgkinson Formation (Dh/h)	Hornfelsed / metasomatised arenite and mudstone	Arenite – mudrock	Stratified unit (including volcanic and metamorphic)	Early Devonian – late Devonian
	Qhcb	Moderately well sorted, fine to coarse grained quartzose to shelly sand and some gravel: beach ridges and cheniers	Sand	Stratified unit (including volcanic and metamorphic)	Holocene
	Qpfp	Silty gravel grading to gravelly clay, clay and silt; gentle to very gentle coalescing alluvial fans	Alluvium	Stratified unit (including volcanic and metamorphic)	Pleistocene
	Qpfc	Coarse boulder deposits (on granites), silty and clayey gravel (on metasediments); steep alluvial and colluvial fans, cones and aprons	Alluvium	Stratified unit (including volcanic and metamorphic)	Pleistocene



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Environment Assessment Stage 2 Wangetti Trail

**Wangetti South Section A Surface
Geology and Acid Sulfate Soils**

Project No. 41-32458
Revision No. 0
Date 16/12/2020

FIGURE 3-4

3.3.3 Flora and fauna

Four ecological field surveys were undertaken for the Wangetti Trail Project (Wangetti South and Wangetti North) in 2019 during the design development phase in order to gather information about the environmental values associated with the existing environment, confirm the presence of threatened, near threatened and special least concern flora and fauna species, and record any key ecological features that should be avoided or considered during the construction of the proposed works.

Timing of the ecological field survey events allowed for assessment over two seasons, namely autumn and spring. Field surveys were undertaken on the following dates:

- 11 to 15 March 2019: This field survey focused on areas between south of Mowbray River to Campsite 5, area near Campsite 3, near Hartleys Creek and along Ellis Beach
- 8 to 12 April 2019: This field survey focused on areas between Hartleys Creek and Buchan Point
- 26 to 30 August 2019: This survey focused on the coastal, mountainous sections from Hartley's Creek to Turtle Cove and also covered Simpson Point and Ellis Beach
- 2 to 6 September 2019: This field survey focused on the western part of the alignment (from Tresize Road to Turtle Cove) and any remaining areas surveyed from Slip Cliff Point to Redcliff Point

A MSES report was prepared to outline the MSES and other State environmental matters under the *Fisheries Act 1994*, *Water Act 2000*, *Nature Conservation Act 1992*, *Environmental Protection Act 1994* and *Coastal Protection and Management Act 1995* and *Planning Act 2016* which are likely to be impacted by the proposed works associated with the Wangetti South Section A. A summary of key findings from the MSES report is outlined in the section below.

Threatened flora species

According to desktop searches (presented in Appendix D), the EPBC Act Protected Matters search predicted 17 MSES flora species that have the potential to occur within the Wangetti South Section.

The NC Act status and data source of species identified during desktop searches are provided in Table 3.9.

Table 3.7 MSES flora species identified by the desktop assessment for Wangetti South Section

Scientific name	Common name	NC Act status	Data source
<i>Archontophoenix myolensis</i>	Myola palm	E	PMST
<i>Anoectochilus yatesiae</i>	Marbled jewel orchid	NT	WildNet; Essential Habitat
<i>Canarium acutifolium</i>	-	V	PMST
<i>Dendrobium bigibbum</i> (Also known as <i>Vappodes phalaenopsis</i> and also known as <i>Dendrobium phalaenopsis</i> and recognised as <i>Dendrobium bigibbum</i> by the Queensland Flora Census 2019)	Cooktown orchid	V	WildNet; Essential Habitat

<i>Dendrobium fellowsii</i>	-	V	WildNet;
<i>Dendrobium mirbelianum</i>	Dark-stemmed antler orchid	E	PMST
<i>Diplazium cordifolium</i>	-	V	PMST
<i>Diplazium pallidum</i>	-	E	PMST
<i>Myrmecodia beccarii</i>	Ant plant	V	PMST
<i>Phaius australis</i>	Lesser swamp-orchid	E	PMST
<i>Phaius pictus</i>	-	V	PMST
<i>Phalaenopsis amabilis</i> subsp. <i>rosenstromii</i>	Native moth orchid	E	PMST
<i>Polyscias bellendenkerensis</i>	-	V	PMST
<i>Randia audasii</i>	-	NT	WildNet
<i>Rhomboda polygonoides</i>	-	V	WildNet
<i>Toeckima pterocarpum</i>	Orange tamarind	E	PMST; WildNet; Essential Habitat
<i>Zeuxine polygonoides</i> (Also known as <i>Rhomboda polygonoides</i>)	Velvet jewel orchid	V	PMST

Key to table: PMST – Protected Matters Search Tool; E – endangered; V – vulnerable; NT – near threatened; SL - Special least concern.

No MSES flora species were recorded within the Wangetti South survey area during the field surveys. During the field survey the survey potential habitat within the Wangetti South Section was recorded for six threatened flora species:

- *Anoectochilus yatesiae* ((Marbled jewel orchid)
- *Dendrobium bigibbum* (also known as *Vappodes phalaenopsis* and also known as *Dendrobium phalaenopsis* and recognised as *Dendrobium bigibbum* by the Queensland Flora Census 2019)
- *Myrmecodia beccarii* (Ant plant)
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toeckima pterocarpum* (Orange tamarind)

MSES flora species predicted to occur within the Wangetti South Section have been addressed in Appendix F, inclusive of species-specific habitat requirements, distribution ranges and relevance to the project.

To minimise impacts to protected flora species, pre-clearance surveys will be undertaken during the construction phase prior to any vegetation clearing and will involve an appropriately qualified ecologist/botanists. Trail routing will take place along the alignment of least disturbance and trail watercourse crossing points should be sited where there is minimal disturbance to stream banks and riparian vegetation and preferably over exposed bedrock. Manual construction methods will be encouraged over mechanised methods and only existing access roads are to be utilised, with no new access roads constructed.

In addition, the Wangetti South Matters of National Environmental Significance flora pre-clearance survey methodology has been developed and outlines the pre-clearance survey methodology to be adopted before starting construction works. It also outlines how protected flora species will be identified and managed as part of the project.

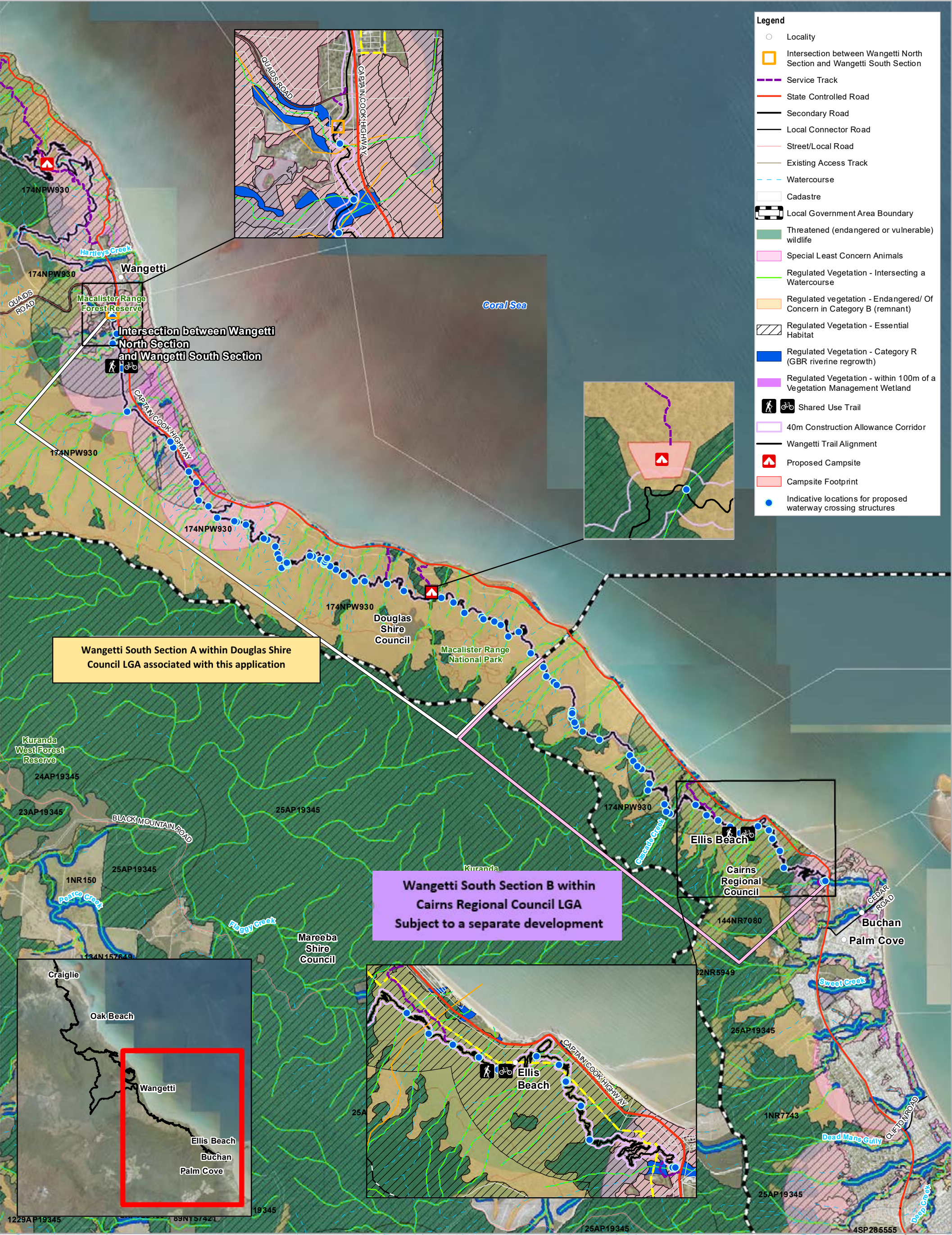
Regulated vegetation

Regulated vegetation is mapped over Wangetti South Section A. The regulated vegetation mapped within the Wangetti South Section A is outlined below and displayed in Figure 3-5:

- 8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)
- 8d Regulated Vegetation - Essential habitat
- 8e Regulated Vegetation - intersecting a watercourse.

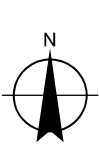
The *Vegetation Management Act 1999* does not apply to any native vegetation clearing within a protected area (this includes Macalister Range National Park) under the NC Act.

Furthermore, under Schedule 21, Part 1, Item 1 (19) of the Planning Regulation 2017, an exemption applies to clearing of native vegetation for constructing or maintaining infrastructure stated in Schedule 5 of the Planning Regulation, where the infrastructure is government supported transport. Wangetti South Section A has been determined to be government supported transport.



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Paper Size ISO A3
0 0.4 0.8 1.2 1.6
Kilometres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



DITD
Environment Assessment Stage 2 Wangetti Trail

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Ecological features of Wangetti
South Section A

FIGURE 3-5

Regional ecosystems

Regional ecosystems (RE) that area mapped and were observed during the field surveys within Wangetti South Section A and they are in Table 3.7 and Table 3.8.

Table 3.8 Mapped REs within Wangetti South Section

RE code (version 11.1)	VMA status	Regional ecosystem description
7.3.8b	LC	Melaleuca viridiflora open forest to open woodland with eucalypt emergents (or sparse eucalypt overstorey) of species such as Corymbia clarksoniana , Eucalyptus platyphylla , Lophostemon suaveolens and E. drepanophylla . Poorly drained alluvium, mostly on the coastal plains. Floodplain (other than floodplain wetlands).
7.3.10	E	Simple-complex mesophyll to notophyll vine forest on moderately to poorly-drained alluvial plains of moderate fertility.
7.3.44	E	Eucalyptus leptophleba , Corymbia clarksoniana open forest to woodland, on alluvium, in near-coastal areas with moderate rainfall.
7.11.44	OC	Eucalyptus tereticornis (forest red gum) open forest to woodland. Coastal metamorphic foothills
7.11.49	OC	Eucalyptus leptophleba , Corymbia clarksoniana and E. platyphylla open forest to woodland. Moist metamorphic foothills.
7.11.5	LC	7.11.5a: Eucalyptus pellita , Corymbia intermedia , C. tessellaris open forest with Acacia celsa , A. circinnata , A. mangium and A. flavescens . Lowlands and foothills on metamorphics , of the very wet and wet rainfall zones. 7.11.5d: Corymbia intermedia , Eucalyptus pellita , E. tereticornis , C. tessellaris , C. torelliana , open forest to woodland with Acacia celsa , A. mangium , Lophostemon suaveolens and Syncarpia glomulifera , and with a very well-developed vine forest understorey. Lowlands and foothills on metamorphics , of the wet and moist rainfall zones.
7.11.51a	LC	Corymbia clarksoniana and/or Eucalyptus drepanophylla open forest to woodland. Metamorphics .
7.11.7	LC	7.11.7a: Complex notophyll vine forests (with emergent Agathis robusta). Foothills and uplands of areas excluding the Seaview Range Subregion. Moist rainfall zone. 7.11.7b: Complex notophyll vine forests (with emergent Agathis robusta) recovering from disturbance, with Acacia spp. canopy or emergents . Foothills and uplands on metamorphics , of the moist rainfall zone.
7.12.7	LC	Simple to complex microphyll to notophyll vine forest, often with Agathis robusta or A. microstachya , on granites and rhyolites of moist foothills and uplands
7.12.59	OC	Eucalyptus leptophleba and Corymbia clarksoniana open forest to woodland. Foothills on granite and rhyolite, of the moist rainfall zone.
7.12.61a	LC	Eucalyptus tereticornis open forest to tall open forest and woodland. Includes communities ranging from those dominated by E. tereticornis to mixtures of that species with Corymbia intermedia , E. drepanophylla , Lophostemon suaveolens and Allocasuarina torulosa . Foothills and uplands on granite and rhyolite, of the moist and dry rainfall zones.

Key to table: E – endangered; OC – of concern; LC – least concern.

Table 3.9 Field verified REs within the Wangetti South Section where they differ to the mapped RE

Mapped RE (version 11.1)	Field verified RE	VM Act	Field description
7.3.8b	7.3.44	Endangered	Open forest dominated by <i>Eucalyptus leptophleba</i> and <i>Corymbia tessellaris</i> on an alluvial plain. Vegetation: Open forest dominated by <i>Eucalyptus leptophleba</i> and <i>Corymbia clarksoniana</i> with emergents of <i>E. platyphylla</i> in places. Landform: Plain Geology/soils: Alluvial
7.3.44	7.3.25	Of concern	Gallery forest on an alluvial plain, adjacent to extensive areas of RE11.3.25. Vegetation: <i>Melaleuca leucadendra</i> +/- vine forest species open forest to closed forest on alluvium fringing streams. Landform: Plain

			Geology/soils: Alluvial
7.3.8b	7.3.44	Endangered	<p>Woodland to open woodland dominated by <i>Eucalyptus platyphylla</i> and <i>Corymbia clarksoniana</i> with a lower tree layer dominated by <i>Melaleuca viridiflora</i> and a ground layer dominated by <i>Themeda triandra</i>, on an alluvial plain.</p> <p>Vegetation: Open forest dominated by <i>Eucalyptus leptophleba</i> and <i>Corymbia clarksoniana</i> with emergents of <i>E. platyphylla</i> in places.</p> <p>Landform: Plain</p> <p>Geology/soils: Alluvial</p>
7.11.49	7.11.51	Least concern	<p>Grassy open forest dominated by <i>Corymbia clarksoniana</i> and <i>Eucalyptus drepanophylla</i> on metamorphic rocky slope.</p> <p>Vegetation: <i>Corymbia clarksoniana</i> and/or <i>Eucalyptus drepanophylla</i> open forest to woodland on metamorphics.</p> <p>Landform: Top of ridgeline</p> <p>Geology/soils: Metamorphic</p>
7.11.49	7.11.16	Of concern	<p>Low open forest dominated by <i>Eucalyptus portuensis</i>, <i>Corymbia intermedia</i> and <i>Eucalyptus drepanophylla</i> on metamorphic rocky slope.</p> <p>Vegetation: <i>Eucalyptus portuensis</i> (white mahogany) and <i>Corymbia intermedia</i> (pink bloodwood) open forest to woodland.</p> <p>Metamorphics of foothills and uplands, of the wet and moist rainfall zones.</p> <p>Landform: Top of ridgeline</p> <p>Geology/soils: Metamorphic</p>
7.11.49	7.11.51	Least concern	<p>Grassy open forest dominated by <i>Corymbia clarksoniana</i> and <i>Eucalyptus drepanophylla</i> on metamorphic rocky slope.</p> <p>Vegetation: <i>Corymbia clarksoniana</i> and/or <i>Eucalyptus drepanophylla</i> open forest to woodland on metamorphics.</p> <p>Landform: Top of ridgeline</p> <p>Geology/soils: Metamorphic</p>
7.12.49		Least concern	<p>Notophyll vine forest/gallery forest fringing large rocky stream, 30 m wide.</p> <p>Vegetation: Simple notophyll vine forest with dense canopy of <i>Canarium australianum</i> and <i>Acacia polystachya</i> (8 – 15 m tall), over a sub-canopy of <i>Mallotus philippensis</i>, <i>Litsea glutinosa</i>, <i>Polyscias australianum</i> and <i>Melia azedarach</i>.</p> <p>Landform: Gully line</p> <p>Geology/soils: Granite</p>
7.11.49	7.12.53	Least concern	<p>Grassy open forest dominated by <i>Corymbia clarksoniana</i> and <i>Corymbia tessellaris</i> on granite slope.</p> <p>Vegetation: <i>Corymbia clarksoniana</i> +/- <i>C. tessellaris</i> +/- <i>Eucalyptus drepanophylla</i> +/- <i>C. intermedia</i> open forest to woodland, or <i>E. drepanophylla</i> woodland, of moist to dry lowlands, foothills and uplands on granite and rhyolite.</p> <p>Landform: Foothill</p> <p>Geology/soils: Granite</p>
7.12.59	7.11.51	Least concern	<p>Low open forest dominated by <i>Corymbia clarksoniana</i> and <i>Eucalyptus drepanophylla</i> on a steep slope formed from metamorphic rock.</p> <p>Vegetation: <i>Corymbia clarksoniana</i> and/or <i>Eucalyptus drepanophylla</i> open forest to woodland on metamorphics</p> <p>Landform: Top of ridgeline</p> <p>Geology/soils: Metamorphic</p>

7.12.59	7.12.53	Least concern	<p>Grassy open forest dominated by <i>Corymbia clarksoniana</i> and <i>Eucalyptus drepanophylla</i> on granite slope.</p> <p>Vegetation: <i>Corymbia clarksoniana</i> +/- <i>C. tessellaris</i> +/- <i>Eucalyptus drepanophylla</i> +/- <i>C. intermedia</i> open forest to woodland, or <i>E. drepanophylla</i> woodland, of moist to dry lowlands, foothills and uplands on granite and rhyolite.</p> <p>Landform: Foothill</p> <p>Geology/soils: Granite</p>
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The *Vegetation Management Act 1999* does not apply to any native vegetation clearing within a protected area (this includes Macalister Range National Park) under the NC Act.

Furthermore, under Schedule 21, Part 1, Item 1 (19) of the Planning Regulation 2017, an exemption applies to clearing of native vegetation for constructing or maintaining infrastructure stated in Schedule 5 of the Planning Regulation, where the infrastructure is government supported transport. Wangetti South Section A has been determined to be government supported transport.

Marine plants

Wangetti South Section A is partly located within a coastal environment where it runs parallel to the Captain Cook Highway, where there is the potential for marine plants protected under the *Fisheries Act 1994* (Fisheries Act) to be present within the proposed works footprint. During the ecological field surveys, marine plants were investigated.

It was determined that the proposed works associated with Wangetti South Section A will not result in damage/disturbance to marine plants protected under the Fisheries Act. The refinement of the proposed works during the design phase has meant that no clearing of marine plants will be required above and/or below the highest astronomical tide for Wangetti South Section A.

Threatened fauna species

Nine distinct fauna habitat types have been recorded within the Wangetti South survey area during the field surveys completed by GHD in 2019. These include the following:

- *Acacia* woodland
- Disturbed rainforest
- Ephemeral waterways
- Eucalypt woodland on steep rocky slopes
- *Melaleuca* swamp
- Mixed *Melaleuca viridiflora* woodlands on inundated plains
- Open woodland over grasses on undulating plains
- Permanent streams
- Vine forest
- Modified landscapes.

These fauna habitats can support a wide variety of terrestrial and aquatic fauna species. The protected fauna species that are known, likely of may occur within the Wangetti South Section are outlined below in Table 3.10.

Table 3.10 Protected fauna species that are known, likely or may occur within Wangetti South Section

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
Birds						
<i>Actitis hypoleucos</i> Common sandpiper	SL	WildNet	Species inhabits coastal wetlands and some inland wetlands and mostly found around muddy margins or rocky shores. The species generally forages in shallow water and on bare soft mud at the edges of wetlands (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti North Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species within the surveyed areas. Marginally suitable habitat was recorded during the field survey; and previous records exist within the desktop search extent
<i>Apus pacificus</i> Fork-tailed swift	SL	WildNet	Species is almost exclusively aerial in areas such as inland plains and sometimes foothills or coastal areas. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, health land or saltmarsh (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti North Section, the proposed works can be sited to avoid impacts to the species.	Likely to occur No sighting of this species within the surveyed areas. Potentially suitable habitat was recorded during the field survey, and previous records exist within the desktop search extent. This species occurs across a range of habitat types and is likely to forage within the study area
<i>Calidris canutus</i> Red knot	E	PMST	In Queensland, the red knot migrates along the coast north of 19°S, sometimes in large numbers. It is widespread along the coast south of Townsville. During the non-breeding season, the red knot mainly inhabits intertidal mudflats, sandflats and sandy beaches of sheltered coasts and sometimes on sandy	No records in Wildnet report	Not considered to be impacted by the proposed works.	May occur No sighting of this species or evidence of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			ocean beaches or shallow pools on exposed rock platforms (DAWE 2021).			
<i>Cuculus optatus</i> Oriental cuckoo	SL	PMST	The oriental cuckoo is a non-breeding migrant to Australia, with breeding occurring broadly across northern Eurasia east to northern China, Korea and Japan. In Australia, the species inhabits coastal regions across northern and eastern Australia, as well as offshore islands (DAWE, 2021). Species utilises a range of vegetated habitats, including monsoon rainforests, wet sclerophyll forests, open woodlands and along the edges of forests (DAWE, 2021; Menkhorst et al., 2019).	No records in Wildnet report	Not considered to be impacted by the proposed works.	May occur No sighting of this species; however, there was evidence of this species within the surveyed areas. Suitable habitat for the species was recorded throughout the northern extend of the Project area, excluding only the urban areas around Buchan Point.
<i>Casuaris johnsonii</i> Southern cassowary	E	PMST; WildNet; Essential Habitat	The species primarily inhabits rainforest habitats but can also use woodlands, Melaleuca swamps and mangroves as connecting habitat between more suitable sites (DES 2020c).	Previous records and essential habitat exist within the desktop search extent.	Considered to be potentially impacted by the proposed works.	Confirmed present No sighting of this species; however, there was evidence of this species within the surveyed areas. Several scats were observed within the Wangetti South Section and along the access track into Mowbray National Park. Suitable habitat was recorded during the field survey, and essential habitat is mapped within the Wangetti South Section.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
<i>Charadrius leschenaultia</i> Greater sand plover	V; SL	WildNet; Essential Habitat	Species inhabits coastal areas, within littoral or estuarine habitats. They mainly occur in sheltered, sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons (DAWE 2021).	Previous records and essential habitat exist within the desktop search extent.	Not considered to be impacted by the proposed works.	May occur No sighting of this species or evidence of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Charadrius mongolus</i> Lesser sand plover	E	WildNet	This species inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves. The species also inhabits near-coastal saltpans, brackish swamps and sandy or silt islands (DAWE 2021).	No previous records in desktop search.	Not considered to be impacted by the proposed works.	May occur No sighting of this species or evidence of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Cyclopsitta diophthalma macleayana</i> Macleay's fig parrot	E;	WildNet	Species inhabits warm subtropical rainforest, cool subtropical rainforest and cool temperate rainforest) from sea level to approximately 1000 m altitude. Birds also use thin strips of gallery rainforest, littoral rainforest and coastal bloodwood, melaleuca and cabbage palm forest where fig densities are abundant.	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works.	May occur No sighting of this species or evidence of this species within the surveyed areas. Suitable habitat was generally absent from the study area.
<i>Erythroriorchis radiatus</i> Red goshawk	E	PMST	Species inhabits coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia. Riverine forests are also inhabited frequently.	No records in Wildnet report	Not considered to be potentially impacted by the proposed works. Vegetation communities within the study areas were generally unsuitable for the	May occur No sighting of this species or evidence of this species within the surveyed areas.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			Vegetation types that are usually inhabited include eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest and rainforest margins (DAWE 2021). This species occupies a large home range of approximately 250 km ² , where it prefers semi-closed woodlands / forests.		species, with rainforest communities being too dense, and woodland communities providing too few ambush sites for prey.	Marginally suitable habitat was recorded during the field survey around Turtle Creek Beach
<i>Esacus magnirostris</i> Beach stone-curlew	V	WildNet	The beach stone-curlew forages on large intertidal mudflats, sandflats, sandbanks and sandpits exposed by low tide for crabs and other marine invertebrates. The species is also known to frequent river mouths, offshore sandbars associated with coral atolls, reefs and rock platforms, and coastal lagoons.	No records on Wildnet report.	Not considered to be potentially impacted by the proposed works.	May occur No sighting of this species or evidence of this species within the surveyed areas. Marginally suitable habitat was recorded during the field survey between Buchan Point and Simpson Point.
<i>Fregata minor</i> Great frigatebird	SL	WildNet	Marine, pelagic, tropical bird. Usually occurring throughout Indonesia, northeast Pacific Ocean and north/east Australia. Breeds on the Hawaiian Islands in the tropics in mangroves. Migration patterns are poorly documented; however it is believed to migrate from Islands in the Pacific to Australia. It is suggested they breed throughout the year and transit between islands regularly (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	Unlikely to occur No sighting of this species or evidence of this species within the surveyed areas. Habitat requirements are not met. This species is seabird and unlikely to occur within the study area. Species likely to utilise coastal ecosystems to the east of (external to) the project.
<i>Gelochelidon nilotica</i> Gull-billed tern	SL	WildNet	This species is found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats,	Previous records exist within the desktop	Not considered to be impacted by the proposed works. If the species is found within the Wangetti	May occur No sighting of this species or evidence of this

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			floodwaters, sewage farms, irrigated croplands and grasslands.	search extent.	South Section, the proposed works can be sited to avoid impacts to the species.	species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Hirundapus caudacutus</i> White-throated needletail	V	PMST	Species is almost exclusively aerial however they are most often seen above woodlands, open forests and rainforests (DAWE 2021).	No records on Wildnet report	Not considered to be potentially impacted by the proposed works. This species occurs across a wide array of habitats. If the species is present, it is likely to forage over the entire region, rather than exclusively utilise the Wangetti South Section. As such, the impacts of the proposed works are unlikely to generate an impact for the species.	May occur No sighting of this species or evidence of this species within the surveyed areas. Marginally suitable habitat was recorded during the field survey.
<i>Hydroprogne caspia</i> Caspian tern	SL	WildNet	The Caspian Tern inhabits every continent except Antarctica. In North America, this species breeds locally in central Canada, the Great Lakes, along the Gulf coast of the United States, and along the Pacific and Atlantic coasts of the U.S. and Canada. In winter, Caspian Terns may be found in southern California, along the coast of the southeastern U.S., and further south into Mexico and Central America (ALA, 2019). In the Old World, this species breeds in Eurasia from Eastern Europe east to China, along the coasts of Africa and South Asia, and in Australasia, wintering widely in the tropics. Caspian Terns breed in a variety of	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species or evidence of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			habitats, including marshes, estuaries, barrier islands, bays, and lakes, and may be found either in freshwater or in saltwater. In winter, this species utilizes similar habitat types as in summer. Caspian Terns primarily eat fish and small crustaceans (ALA, 2019).			
<i>Limosa lapponica baueri</i> Western Alaskan bar-tailed godwit	V	PMST; Essential Habitat	The species inhabits coastal habitats, such as large intertidal sand flats, banks, mudflats, estuaries, inlets, harbours and lagoons. It is often found around beds of seagrass and sometimes in saltmarsh. It is rarely found on areas of short grass, such as farmland, paddocks and airstrips (DAWE 2021).	Previous records and essential habitat exist within the desktop search extent.	Not considered to be potentially impacted by the proposed works as the majority of the works will be located outside of coastal areas.	May occur No sighting of this species or evidence of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Monarcha melanopsis</i> Black-faced monarch	SL	WildNet	Species inhabits rainforest ecosystems that include semi-deciduous vine thickets, complex notophyll vine-forests, tropical rainforests, subtropical rainforests, mesophyll thicket/shrubland, warm temperate rainforest, dry rainforest and cool temperate rainforest (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	Likely to occur No sighting of this species or evidence of this species within the surveyed areas. Suitable habitat was recorded during the field survey, and previous records exist within the desktop search extent. This species has been extensively recorded within the region.
<i>Myiagra cyanoleuca</i> Satin flycatcher	SL	WildNet	Species inhabits eucalypt forest and woodland, particularly common in tall wet sclerophyll forest often in gullies or along watercourses (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid	Likely to occur No sighting of this species or evidence of this species within the surveyed areas.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
					impacts to the species.	Suitable habitat was recorded during the field survey, and previous records exist within the desktop search extent.
<i>Numenius madagascariensis</i> Eastern curlew	E	PMST; WildNet; Essential Habitat	Species inhabits sheltered coasts, mangrove swamps, bays, harbours and lagoons that contain mudflats or sandflats, often with beds of seagrass (DAWE 2021).	Previous records and essential habitat exist within the desktop search extent.	Not considered to be impacted by the proposed works as the majority of the works will be located outside of coastal areas.	May occur No sighting of this species or evidence of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Numenius minutus</i> Little curlew	SL	-	The little curlew is the smallest curlew species to visit Australia, where it spends the non-breeding season across much of northern Australia (DAWE, 2021). In Queensland, the species is considered widespread along the coast (DAWE, 2021; DES, 2021). The species feeds in short, dry grassland and sedges occurring on dry floodplains and blacksoil plains, which often contain scattered, shallow freshwater pools or areas that receive temporary inundation (DAWE, 2021). The species moves in flocks of thousands when migrating to breeding grounds in Asia (DAWE, 2021).	No records in Wildnet report	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species or evidence of this species within the surveyed areas. Habitat requirements are not met.
<i>Numenius phaeopus</i> Whimbrel	SL	WildNet	This species generally forages on intertidal mudflats, along the muddy banks of estuaries and in coastal lagoons, either	Previous records exist within the desktop	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the	May occur No sighting of this species or evidence of this species within

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			in open unvegetated areas or among mangroves (DAWE 2021).	search extent.	proposed works can be sited to avoid impacts to the species.	the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Onychoprion anaethetus</i> Bridled tern	SL	WildNet	Habitat preferred by <i>Onychoprion anaethetus</i> is warm oceans and it spends most of year at sea, over warm waters, generally in offshore waters rather than far out in mid-ocean. (Kaufman, 2017).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species or evidence of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Pandion cristatus</i> Eastern osprey	SL	WildNet	Occurs in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found on the coast, but occasionally travel inland along major rivers, particularly in northern Australia. Species requires large areas of open fresh, brackish or saline water for foraging (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	Likely to occur No sighting of this species or evidence of this species within the surveyed areas. Suitable habitat was recorded during the field survey, and previous records exist within the desktop search extent.
<i>Rhipidura rufifrons</i> Rufous fantail	SL	WildNet	Species inhabits wet sclerophyll forests, often in gullies dominated by eucalypts and usually within a dense shrubby understorey that often includes ferns (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	Confirmed present Two individuals were recorded during the field survey in Melaleuca woodlands. This species is likely to occur throughout the majority of the study area during March – September.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
<i>Sterna dougallii</i> Roseate tern	SL	WildNet	Scattered records of this species occurs over the south-east Gulf of Carpentaria and west Cape York Peninsula; however they are more widespread down the east coast of Queensland. It is a coastal and marine species inhabiting tropical and subtropical seas. This species also inhabits rocky and sandy beaches, coral reefs and offshore islands, rarely occurring in inshore waters or near the mainland (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of (external to) the project area.
<i>Sterna hirundo</i> Common tern	SL	WildNet	Widespread and common along the east and northeastern coast of Australia. It is a marine, pelagic and coastal species. It forages in marine environments, often close to shore but can also forage in near-coastal terrestrial wetlands (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species within the surveyed areas. Species likely to utilise coastal ecosystems to the east of the project area.
<i>Sternula albifrons</i> Little tern	SL	WildNet	This species inhabits sheltered coastal environments, including lagoons, estuaries, river mouths and deltas, lakes, and bays, especially those with exposed sandbanks or sand-spits, and also on exposed ocean beaches (DAWE 2021)	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species or evidence of this species within the surveyed areas. Habitat requirements are not met. This species is likely to occur along the coast, though unlikely within the study area itself.
<i>Sula leucogaster</i> Brown booby	SL	WildNet	The distribution of the brown booby is described as pantropical, between latitudes 30 degrees North and 30 degrees South, though it	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can	May occur No sighting of this species within the surveyed areas.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			extends to about 34 degrees South in the central Pacific. Brown boobies use coral atolls and volcanic stack islands for nesting in tropical or subtropical waters. When faced with little or no competition for space, they prefer wide open spaces at sea level. They have, however, been found on cliffs and hillsides (National Museum of Natural History, 1963).		be sited to avoid impacts to the species.	Species likely to utilise coastal ecosystems to the east of the project area.
<i>Symposiachrus trivirgatus</i> Spectacled monarch	SL	WildNet	Species is found in coastal north-eastern and eastern Australia and prefers broadleaf thicket/shrubland, subtropical rainforests, tropical rainforests and wet sclerophyll forests (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	Likely to occur No sighting of this species or evidence of this species within the surveyed areas. Suitable habitat was recorded during the field survey, and previous records exist within the desktop search extent. This species has been extensively recorded within the region.
<i>Thalasseus bergii</i> Crested tern	SL	WildNet	This species rests on open shores.	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species or evidence of this species within the surveyed areas. Habitat requirements are not met.
<i>Tringa brevipes</i> Grey-tailed tattler	SL	WildNet	This species is often found on sheltered coasts with reefs and rock platforms or with intertidal mudflats (DAWE 2021).	Previous records exist within the desktop search extent.	Not considered to be impacted by the proposed works. If the species is found within the Wangetti South Section, the proposed works can be sited to avoid impacts to the species.	May occur No sighting of this species or evidence of this species within the surveyed areas.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
						Habitat requirements are not met.
<i>Turnix olivii</i> Buff-breasted button-quail	E	PMST	The buff-breasted button-quail occurs in patches of short and sparse grassland, on a terrain of small stones, and sometimes in open glades amongst Melaleuca, Acacia, Alphitonia or Tristania, in rainforest or open Eucalyptus woodland (DAWE 2021).	No records in Wildnet report.	Not considered to be impacted by the proposed works as the habitat type associated with the species was not recorded within the Wangetti South Section.	May occur No sighting of this species or evidence of this species within the surveyed areas. This species was not identified in the desktop search results completed in 2019; however, it was identified in the EPBC Act Protected Matters Report 2021. Potentially suitable habitat was recorded during the field survey
<i>Tyto novaehollandiae kimberli</i> Masked owl (northern)	V	PMST	Species occurs in riparian forests, rainforests, open forests, Melaleuca swamps and the edge of mangroves and usually inhabits tree hollows (DAWE 2021).	No records in Wildnet report	Not considered to be impacted by the proposed works. The retention of large hollow trees for nesting is a habitat requirement for this species. The removal of a narrow corridor of vegetation is unlikely to impacts the species prey (arboreal mammals) or the species foraging success.	May occur No sighting of this species or evidence of this species within the surveyed areas. Potentially suitable habitat was recorded during the field survey around Turtle Creek Beach.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
Amphibians						
<i>Litoria dayi</i> Australian lace lid	E	PMST	Species is endemic to the Wet Tropics Bioregion from Paluma to Cooktown, northern Queensland. Inhabit rainforest communities at altitudes between sea level and 1200 m ASL. They prefer fast-flowing rocky streams as well as slower streams with ample vegetation in montane areas, whilst prefers rock soaks, narrow ephemeral streams and rock outcrops in larger watercourses (DAWE 2021; Hodgkison and Hero 2001). The species disappeared from altitudes above 400 m in the early 1990s, however lowland populations still persist (McDonald and Alford 1999). Before its decline, the extent of occurrence of this species was approximately 9000 km ² .	No records in Wildnet report	Not considered to be impacted by the proposed works as the species is not known from the Wangetti South Section. Additionally, this species utilises both fast and slow-flowing, rocky streams and rock slopes. Most streams within the Wangetti South Section are ephemeral and are therefore generally unsuitable for the species. The species is now restricted to lowland areas generally below 400 m elevation.	May occur No sighting of this species or evidence of this species within the Wangetti South Section. Potentially suitable habitat was recorded during the field survey. There are areas of disturbed rainforest habitat within the Wangetti South Section.
<i>Litoria nannotis</i> Waterfall frog	E	PMST	Species is restricted to rocky stream habitats in rainforest or wet sclerophyll forests with fast-flowing water, waterfalls and cascades (DAWE 2021; Hodgkison and Hero 2001).	No records in Wildnet report	Watercourses represent the primary habitat for this species (Hodgkison and Hero 2001), with fast flowing sections of streams and riffles required for breeding (Richards 1992). The waterways within the project were mostly ephemeral, and therefore, suitable habitat was largely absent. This species is not considered to be impacted by the proposed works.	May occur No sighting of this species or evidence of this species within the Wangetti South Section. Potentially suitable habitat may be present within ephemeral watercourses during seasons of high rainfall.
<i>Litoria nyakalensis</i> Mountain mistfrog	E	PMST	This species has not been sighted since 1990, despite intensive investigations since	No records in Wildnet report	The existence of the mountain mistfrog is questionable as it has not been seen in over 20 years.	May occur No sighting of this species or evidence of this species within

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			that year up to 2013. This species formerly occurred across two-thirds of the Wet Tropics Region from Douglas Creek near Cardwell to Alexandra Creek and Thornton Peak. It is a rainforest specialist species, endemic to the Wet Tropics Bioregion. It is found in upland rainforest and wet sclerophyll forest along fast-flowing streams (DAWE 2021).		Regardless, this species is not considered to be impacted by the proposed works there are no rainforest or wet sclerophyll forests with fast-flowing water, waterfalls and cascades within the Wangetti South Section. The waterways within the Wangetti South Section are ephemeral however, suitable habitat may be present during seasons of high rainfall.	the Wangetti South Section. Potentially suitable habitat may be present within ephemeral watercourses during seasons of high rainfall.
<i>Litoria rheocola</i> Common mistfrog	E	PMST	Species is restricted to fast-flowing rocky creeks and streams in rainforest as well as wet sclerophyll forest. Within these streams, the species is often found in the slower sections, away from waterfalls (DAWE 2021; Hodgkison and Hero 2001). The common mistfrog occurs in rainforests north of the Herbert River in the Wet Tropics Biogeographical Region from Broadwater Creek National Park to Amos Bay from 0 - 1180 m above sea level. The species disappeared from all upland areas (higher than 400 m) south of the Daintree River in the early 1990's (Richards et al. 1993). Lowland populations still persist (McDonald and Alford 1999).	No records in Wildnet report	Not considered to be impacted by the proposed works as there are no rainforest or wet sclerophyll forests with permanent, slow-flowing streams. The waterways within the Wangetti South Section are ephemeral and generally unsuitable for that reason.	May occur No sighting of this species or evidence of this species within the Wangetti South Section. Potentially suitable habitat may be present within ephemeral watercourses during seasons of high rainfall.
<i>Litoria serrata</i> Tapping green eyed frog	V	WildNet	Species occurs in rainforests and adjacent forests along streams. Males generally occur among low-hanging vegetation and rocks	Previous records exist within the desktop	Not considered to be impacted by the proposed works as there are no rainforest or wet sclerophyll forests with permanent,	Likely to occur No sighting of this species or evidence of this species within

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			along streams, and females occur in and around stream, or in the forest canopy (Cohen and Cooper 2011; Hoskin and Hero 2008).	search extent.	slow-flowing streams. The waterways within the Wangetti South Section are ephemeral and generally unsuitable for that reason.	the Wangetti South Section. Species was confirmed present within the Wangetti North study area. Potentially suitable habitat may be present within ephemeral watercourses during seasons of high rainfall.
Mammals						
<i>Dasyurus maculatus gracilis</i> Spotted-tailed quoll	E	PMST	Species is mostly confined to cool, wet, upland closed forests that occur in the upper river catchments. Vegetation types usually consist of simple or complex notophyll vine forests, simple microphyll vine-fern forests and simple microphyll vine-fern thicket (DAWE 2021).	No records in Wildnet report	Not considered to be impacted by the proposed works. The fauna habitat type within the Wangetti South Section is considered to be restrictive to facilitate the movement of the species.	May occur No sighting of this species or evidence of this species within the Wangetti South Section. Potentially suitable habitat was recorded during the field survey.
<i>Dasyurus hallucatus</i> Northern quoll	LC	PMST	The northern quoll was once distributed throughout much of northern Australia; however, the species range is now highly-fragmented due to habitat clearing and cane toad invasion (DAWE, 2021). The species inhabits a variety of habitats, ranging from eucalypt woodlands to rainforests (TSSC, 2005). Species particularly prefers areas that contain rock crevices, hollow logs and termite mounds (DAWE, 2021).	No records in Wildnet report.	Not considered to be potentially impacted by the proposed works.	May occur No sighting of this species or evidence of this species within the Wangetti South Section. Potentially suitable habitat was recorded during the field survey.
<i>Dendrolagus lumholtzi</i> Lumholtz's tree-kangaroo	NT	WildNet; Essential Habitat	This species inhabits rainforests of tropical Queensland, centred on the Atherton Tablelands, extending north as far as the Carbine Tableland. The original preferred	One record in Wildnet.	Not considered to be potentially impacted by the proposed works.	May occur Potentially suitable habitat was identified throughout the study area. However, this species is not

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			habitat of the Lumholtz's tree-kangaroo was coastal lowland rainforest. However it is now more common at higher altitudes above 300 m due to habitat clearing.			known to occur within the Wangetti South Section.
<i>Mesembriomys gouldii rattoides</i> Black-footed tree rat	LC	-	The distribution of the black-footed tree rat (north Queensland subspecies) is poorly known. It has been recorded mostly from eucalypt forests and woodlands (but not rainforests) around Mareeba, but there are records sparsely across Cape York Peninsula. The species den in tree hollows, and occasionally in dense foliage (e.g. Pandanus) (TSSC, 2015). They mostly forage up to 500 m from roost sites on fruits (e.g. Pandanus tectorius) and seeds, as well as invertebrates, flowers and grass (TSSC, 2015).	No records in Wildnet report	Not considered to be potentially impacted by the proposed works.	May occur Potentially suitable habitat was identified throughout the study area. However, this species is not known to occur within the Wangetti South Section.
<i>Hipposideros semoni</i> Semon's leaf-nosed bat	E	PMST	This species inhabits tropical rainforest, monsoon forest, wet sclerophyll forest and open savannah woodland (DAWE 2021). This species does not have an obligatory requirement for cave roosts (DAWE 2021).	No records in Wildnet report	Not considered to be potentially impacted by the proposed works. This species can utilise a range of habitats, including forest gaps and edges. During the day, it roosts in large, rainforest trees (which are generally avoided by the alignment). No impacts to roosting sites is anticipated.	May occur No sighting of this species or evidence of this species within the Wangetti South Section s. Potentially suitable habitat was recorded during the field survey
<i>Phascolarctos cinereus</i> Koala	V	PMST	Species inhabits sub-humid Eucalyptus-dominated forests and woodlands in riparian and non-riparian environments, and some Acacia-	No records in Wildnet report	Not considered to be potentially impacted by the proposed works. The removal of a narrow stretch of vegetation is	May occur No sighting of this species or evidence of this species within the Wangetti South Section.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
			dominated forests and woodlands in non-riparian environments (DAWE 2021).		unlikely to impact the species as it is known to persist in semi-urban environments. Additionally, the alignment transverse steep, rainforest ranges which are generally unsuitable for the species.	Potentially suitable habitat was recorded during the field survey.
<i>Pteropus conspicillatus</i> Spectacled flying-fox	V	PMST	Species generally inhabits areas near rainforests and feeds primarily on rainforest species, as well as non-rainforest species such as eucalypts in tall open forests adjoining rainforests, and tropical woodland ecosystems (DAWE 2021).	A number of records south of Palm Cove and in Port Douglas.	Not considered to be potentially impacted by the proposed works. No roosting sites are known from within the Wangetti South Section. Although, the species is likely to forage within the area, feeding predominantly occurs within the canopy or woodland and rainforest communities. The project will mostly require mid-storey/understorey clearing and is not anticipated to generate canopy-level impacts. Suitable foraging habitat for this species is abundant in the region.	May occur No sighting of this species or evidence of this species within the Wangetti South Section. Marginally suitable habitat was recorded during the field survey.
<i>Rhinolophus robertsi</i> Large-eared horseshoe bat	E	PMST	This species is found in lowland rainforest, along gallery forest-lined creeks within open eucalypt forest, Melaleuca forest with rainforest understorey, open savannah woodland and tall riparian woodland (DAWE 2021).	No records in Wildnet report	Not considered to be impacted by the proposed works. No roosting sites (i.e. caves, crevices and rock outcrops) were recorded within the Wangetti South Section. If the species is present, it is likely to utilise the Wangetti South Section for foraging. Considering the abundance of suitable habitat adjacent to the Wangetti South Section, the removal of a narrow strip of vegetation is	May occur Marginally suitable habitat was recorded during the field survey.

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
					unlikely to impact the species.	
<i>Saccolaimus saccolaimus nudicluniatus</i> Bare-rumped sheath-tailed bat	E	PMST	Species inhabits lowland areas, typically in a range of woodland, forest and open environments with roosts typically within tree hollows, caves, overhands or man-made structures (DAWE 2021).	No records in WildNet report.	Not considered to be potentially impacted by the proposed works. All roost sites in Australia are known from three Eucalyptus species (<i>E. platyphylla</i> , <i>E. miniata</i> and <i>E. tetradonta</i>). These species were not recorded within the Wangetti South Section.	May occur No sighting of this species or evidence of this species within the Wangetti South Section. Marginally suitable habitat was recorded during the field survey.
Reptiles						
<i>Crocodylus porosus</i> Estuarine crocodile	V	WildNet; Essential Habitat	The saltwater crocodile shows a high tolerance for salinity, being found mostly in coastal waters or around rivers. It may also be found in freshwater rivers, billabongs and swamps (Pope, 1955, Britton, 1995). Movement between habitats occurs during the wet season, when juveniles are raised in freshwater rivers (Pope, 1955, Britton, 1995). However, these juveniles are usually forced out of these areas, by dominant males who use the freshwater areas for breeding grounds, and into areas of low salinity (Pope, 1955, Britton, 1995). Males who are unable to establish a territory in the river system are either killed or forced out into the sea where they move around the coast in search of another river system (Pope, 1955, Britton, 1995).	A number of records south of Palm Cove and in Port Douglas.	Not considered to be impacted by the proposed works. The proposed works will be setback from the habitat that supports this species.	May occur This species was confirmed present in the Mowbray River to the north of Wangetti South. Potentially suitable habitat was recorded during the field survey.
Aquatic species						
<i>Stiphodon rutilarueus</i>	V	-	This species inhabits fast-flowing streams	Not recorded within	Not considered to be impacted by the proposed works.	Likely to occur

Species	NC Act status	Data source	Description and habitat preference	Previous records within Wangetti South Section	Comments	Likelihood of Occurrence
Orange cling goby			on rocky / boulder substrates	desktop searches, but previously recorded by WTMA (Bray, 2020).	Bridges are proposed to span watercourses intersect by the project and mitigation measures will be incorporated in the project EMP to manage the risk of indirect impacts (e.g. sedimentation and erosion).	Species was not recorded during field surveys. Potential habitat recorded within coastal streams to the east of the study area.
<i>Stiphodon pelewensis</i> Emerald cling goby	V	-	The emerald cling goby inhabits fast-flowing streams in within Queensland's Wet Tropic region. Substrates are normally of bedrock with scattered jumbles of rocks and boulders. Ideal habitats contain clear, well-oxygenated water which facilitates the development of a rich biofilm on submerged surfaces.	Not recorded within desktop searches, but previously recorded by WTMA (Bray, 2020).	Not considered to be impacted by the proposed works. Bridges are proposed to span watercourses intersect by the project and mitigation measures will be incorporated in the project EMP to manage the risk of indirect impacts (e.g. sedimentation and erosion).	Likely to occur Species was not recorded during field surveys. Potential habitat recorded within coastal streams to the east of the study area.
<i>Stiphodon surrufus</i> Birdsong cling goby	V	-	<i>S. surrufus</i> is known to inhabit fast-flowing coastal streams south of Cairns (Bray 2020). Species generally occurs between 40-200 m AHD.	Not recorded within desktop searches, but previously recorded by WTMA (Bray, 2020).	Not considered to be impacted by the proposed works. Bridges are proposed to span watercourses intersect by the project and mitigation measures will be incorporated in the project EMP to manage the risk of indirect impacts (e.g. sedimentation and erosion).	Likely to occur Species was not recorded during field surveys. Potential habitat recorded within coastal streams to the east of the study area.

To minimise impacts to protected fauna species, pre-clearance surveys will be undertaken during the construction phase prior to any vegetation clearing and will involve an appropriately qualified ecologist/botanists. Trail routing will take place along the alignment of least disturbance and trail watercourse crossing points should be sited where there is minimal disturbance to stream banks and riparian vegetation and preferably over exposed bedrock. Manual construction methods will be encouraged over mechanised methods and only existing access roads are to be utilised, with no new access roads constructed.

Of the above mentioned fauna species, two EPBC Act listed species were considered to 'likely to occur' within Wangetti South Section based on the presence of potentially suitable habitat and previous records and they include the southern cassowary and opal cling goby (GHD, 2020).

The southern cassowary is listed as endangered under the EPBC Act has the potential to be impacted by the Wangetti trail development by habitat reduction and a possible increase in interactions with people. The impact to the Southern Cassowary has been assessed and details can be found in the Cassowary Management Plan (Appendix K).

According to the Cassowary Management Plan, Wangetti South Section A consist of a small area of moderate priority habitat management area and areas of low and lowest priority habitat management. These areas may provide important seasonal resources, but potential core habitat features are either diminished or lacking and the likelihood of interactions between cassowaries, construction crew and trail users is very low to nil. To respond to the potential threats and impacts to the southern cassowary habitat as part of the project, mitigation measures have been developed for the design, construction and operational phases and are outlined in the Cassowary Management Plan.

Opal cling gobies are listed as critically endangered under the EPBC Act and therefore steps need to be taken to protect their highly favourable habitat located along short, steep coastal streams in the Wet Tropics. Several of these streams will be crossed as part of the shared use trail and management of the sediment and limiting impact to these waterways is required to ensure the gobies habitat is maintained. Eliminating waterway barrier works will reduce the impact on the opal cling goby as waterway passages used by this fish will therefore not be interrupted.

3.3.4 Biosecurity

Invasive plants and pest species considered to be present or have the potential to occur within the Wangetti South Section project area have been identified in the Wangetti South Section Preliminary Weed, Pest and Disease Management Plan which has been developed for Wangetti South Section (refer to Appendix K). In addition, there are three environmental diseases (pathogens) that pose a high risk to the Wangetti South project area

- Myrtle rust (*Puccinia psidii*) – fungal disease affecting plants in the Myrtaceae family. This pathogen is known to be threat to WTWHA (WTMA, 2020)
- Root rot fungus (*Phytophthora* fungus) – kills all plant species rooted in soil. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020)
- Chytridiomycosis disease – frog disease caused by the chytrid fungus. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020) Frog chytrid fungus has been identified as a primary cause of massive mortality of stream-dwelling frogs in the Wet Tropics bioregion (WTMA, 2020).

There are also several Queensland Biosecurity Zones which are mapped over the Wangetti South Section according to the Queensland Government -Business Queensland Maps of Queensland biosecurity zones (2020) and they include the electric ant biosecurity zone, Asian honey bee infested area and Northern banana biosecurity zone.

Weed and pest species and pathogens identified onsite are to be managed in accordance with the Weed, Pest and Disease Management Plan which is been prepared for the construction and operational phases of the project. Hygiene procedures and ongoing monitoring to detect incursions are to be carried out to minimise transfer of invasive species.

3.3.5 Waterways

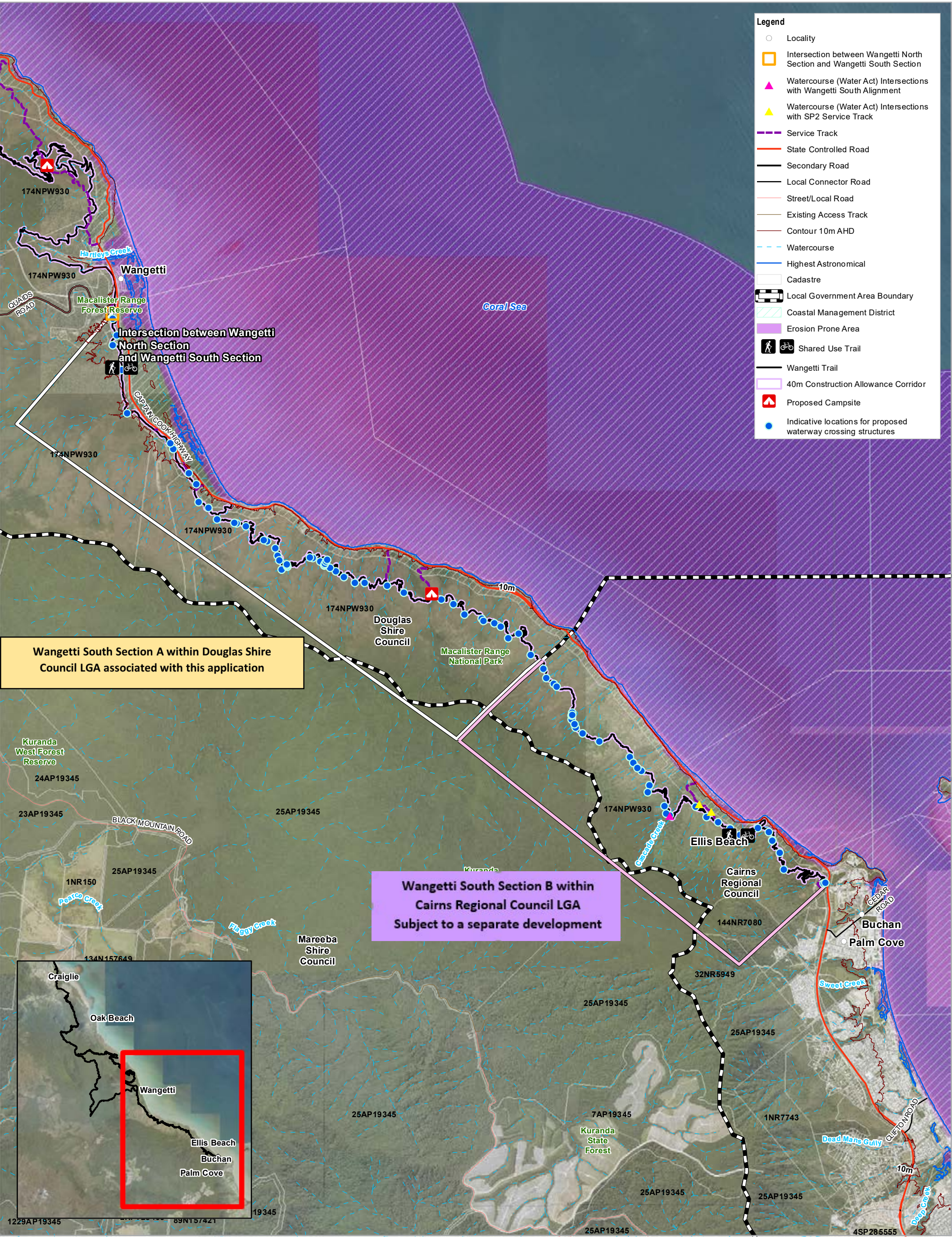
Waterways

Wangetti South Section A traverses a number of watercourses and 'yet to be mapped features' under the *Water Act 2000*. Appendix I provides a list and associated photos of the waterways intersected by the proposed works within Wangetti South Section A. Refer to Figure 3-6.

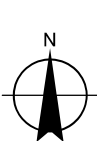
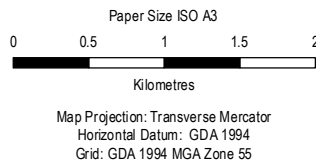
Wangetti South Section A also intersects a number of mapped Queensland Waterways for Waterway Barrier Works on Queensland Globe (Department of Resources, 2021) which are protected under the *Fisheries Act 1994*.

As the trail will intersect a number of waterways, various waterway crossings will be required at these locations to allow hikers and mountain bikers to safely cross the waterway. The exact and type of structure proposed as the waterway crossings will be determined by the trail builder and will comprise of the following options:

- Rock armour crossings
- Gully crossing style bridges.



Based on or contains data provided by the State of QLD (DNRME) 2020. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.



DITD
Environment Assessment Stage 2 Wangetti Trail

Coastal Management District and
Erosion Prone Area Wangetti
South Section A

Project No. 41-32458
Revision No. 0
Date 16/12/2020

FIGURE 3-6

Wetlands

Wangetti South Section A only partly intersects High Ecological Value (HEV) waterways and regulated Vegetation - within 100m of a Vegetation Management Wetland which are also identified as mapped waterways under the *Water Act 2000* (refer to Figure 3-5). No MSES high ecologically significant wetlands intersect the construction allowance corridor. The proposed works will not result in operational works that changes the form of land, or involves placing a structure on land, in a way that diverts water to or from a wetland in a wetland protection area and involves excavating or filling (within 200m of the wetland more than 100m³ or more than 1,000 m³ within a wetland). The proposed works does not trigger state referral for works in wetlands in the Planning Regulation. Mitigation measures have been developed for the construction phase to manage any potential impacts from the project on surrounding water resources and this is discussed further in Section 5.

Coastal Management District and Erosion Prone Areas

Within Wangetti South Section A, there are six areas within mapped CMD areas:

- CMD Area 1 consists of approximately 450 m of the shared use trail and two rock armour waterway crossings.
- CMD Area 2 consists of approximately 850 m of shared use trail and one waterway crossing.
- CMD Area 3 consists of approximately 1.70 km of shared use trail, 8 rock armour crossings and one bridge crossing and the formalization of four existing access tracks ranging from 20 m to 160 m in length to service tracks.
- CMD Area 4 consists of approximately 200 m of shared use trail.
- CMD Area 5 consists of approximately 150 m of existing service track.
- CMD Area 6 consists of approximately 285 m of existing service trail.

The remaining areas of Wangetti South Section A are located outside of CMD areas.

Table 1-1 in Appendix C provides further details of the proposed works within the CMD areas.

The proposed works triggers the following triggers Schedule 10, Part 17, Division 3, Table 1, Item 1 of the Planning Regulation– Operational Work that is tidal works or work in a coastal management district - Parts of the trail are located within in state coastal land within CMD. Assessment against the current State Development Assessment Provisions, State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in a separate report and forms part of the development application package in Appendix C.

Flooding and drainage

Wangetti South Section A does not contain any flooding impacts. Refer to the Douglas Shire Regional Council Planning Scheme overlay maps.

3.3.6 Hazard, health and safety

Wangetti South Section A traverses an area which is susceptible to a number of hazards, health and safety matters. This section provides a summary of the existing hazard, health and safety matters within the project area and immediate surrounds. It also assesses the potential impacts as a result of the project.

The majority of the Wangetti South Section A will be located within national park offering a remote trail experience to hikers and mountain bikers and as a result carries an inherent risk for the users. This includes:

- bites from snakes, spiders, and insects
- potential hostile intersection with fauna species
- allergic reactions to plant species along the trail
- heat/cold exposure, falls and sprains, etc.
- extreme weather events occurring within the project area and requiring evacuation

Wangetti South Section is also characterised by steep terrain, is home to dangerous animals and plants and there is the potential for extreme weather events to occur in the area. All of these matters could have adverse impacts on construction personnel working within Wangetti South Section during the construction phase.

Bushfires

Wangetti South Section a project area is located within a bushfire hazard area, it is located within steep terrain and is surrounded by vegetation, and as a result there is the risk of bushfires impacting the project area. Fires can start and spread rapidly and are often unpredictable. If there is a long spell of hot, dry weather and it's windy, the fire risk increases. Generally, the fire season in Far North Queensland is through the winter ("dry" season) and spring months.

Bushfire management measures will need to be considered for all phases of the project. Material and structure within the project area will also need to consider the impacts of bushfires.

Tropical Cyclones

Geographically, tropical cyclones are observed to effect the areas of the Gulf of Carpentaria and Cape York Peninsula to the north of the State and the eastern coastline extending from the northern tip of Queensland to central coastal regions. Wangetti South Section A project area is susceptible to tropical cyclones. Tropical cyclones are low pressure systems that form over warm tropical waters and have gale force winds (sustained winds of 63 km/h or greater and gusts in excess of 90 km/h) near the centre. Technically they are defined as a non-frontal low pressure system of synoptic scale developing over warm waters having organised convection and a maximum mean wind speed of 34 knots or greater extending more than half-way around near the centre and persisting for at least six hours.

Management measures and the appropriate design standards will need to be considered for all phases of the project to protect people and structures from severe storm events and cyclones.




Landslides

The project is located within steep terrain and there are areas mapped as susceptible to potential landslides (refer to Section 6.5). It is not anticipated that the proposed development will exacerbate any existing landslide hazard impacts. A CESSCP has been developed for the project and will be further developed by the D&C contractor and then implemented to mitigate any potential impacts to land stability

Dangerous plants and animals

Within Wangetti South Section A, particularly within the national park extent there are several dangerous plants and animals that have the potential to cause harm to the construction team, trail operator staff and users of the trail. They are listed in Table 3.11 below. Management measures have been considered for all phases of the project to protect people and the species from hostile interactions and are discussed further in Section 5.

Table 3.11 Dangerous plants and animals within Wangetti South Section A

Dangerous plant or animal	Photograph
Wait-a-while vine (<i>Calamus muelleri</i>) Wait-a-while vines have hooked spines that can catch on skin or clothes and is difficult to unattached the hooks.	
Hairy Mary (<i>Calamus radicalis</i>) If skin comes into contact with the leaves it can result in a bad reaction.	
Stinging Trees (<i>Dendrocnide moroides</i>) If skins comes into contact with the leaves, fine silica-tipped hairs inject venom like mini-syringes and it causes extreme pain with symptoms including an intense stinging sensation that can last for several weeks.	

Eastern brown snake (*Pseudonaja textilis*)

The eastern brown snake is a highly venomous, fast-moving, aggressive snake that together with other browns are responsible for more deaths every year in Australia than any other group of snakes.



Southern cassowary (*Casuarius casuarius*)

Cassowaries have an inner toe fitted with a long, straight, nail which can cause serious injury when used defensively.



3.3.7 Social and economic

Population centres

There are two main population areas within close vicinity to Wangetti South Section A and they include Port Douglas and Palm Cove.

Port Douglas is a well-known and loved tourism destination, justifiably famous for its high end luxury getaways, its coconut tree fringed white sand beaches and access to two World Heritage listed assets – the Great Barrier Reef and the Wet Tropics World Heritage Area. It is located within Douglas Shire Council and Douglas Shire has a population of around 11,717 people according to the 2016 Census. The economy of the region is driven by tourism (with 1.2 million visitors annually) and agriculture (mainly sugar cane farming and processing). With an 80% economic reliance on tourism, the Douglas Shire ranks as the most tourism dependent region in Australia.

Further south of Wangetti South Section A lies Palm Cove. Palm Cove is a small suburb located on the coast at the northern extent of the Cairns municipal area. It is a popular holiday destination with hotels, private residences, restaurants and beautiful beaches and is only 25-30 minutes drive from the centre of Cairns.

One of the larger cities in Queensland, the Cairns municipal area has a population of around 160,000 people and is the economic centre of Tropical North Queensland. Key economic sectors in the municipality are tourism and agriculture. With a modern airport servicing International and Domestic markets, Cairns is generally the gateway for visitors to Tropical North Queensland.

Economic opportunities from the Wangetti Trail Project

There are many commercial opportunities that will arise from the Wangetti Trail, including:

- Operation of the proposed on-trail lodges

- Guided and/or facilitated tours (tours may offer various levels of service from basic shuttling of luggage, to one-on-guiding, meal and campsite preparation, etc.
- Cultural activities, including indigenous dance, storytelling etc.
- Shuttle services for walkers and riders
- Gear and equipment hire, including bikes, tents etc.
- Event opportunities, including hiking, trail running and mountain biking events
- Provision of food and camping supplies
- Off-trail accommodation
- Off-trail restaurants and cafes.

There are a number of high-profile competitive mountain biking events that could potentially utilise sections of the Wangetti Trail, including the internationally known Croc Trophy and Triple R Mountain Bike Race, but more importantly it could also help to generate unique new events, for example in trail running or adventure racing.

Community consultation

Throughout the project lifecycle, there has been extensive engagement with the local community, tourism industry, Councils and regional organisations and conservation interest groups. The Wangetti Trail Project Team maintains a project website and e-newsletter which is updated regularly with all project updates⁴. DTIS have prepared the Wangetti Trail Project Consultation Report (Appendix E) which provides an account of the various community and stakeholder engagement activities at and across certain phases of the project.

Tourism land uses surrounding Wangetti South Section A

Wangetti South Section A is considered to be located in a prime position and compliments the region by providing an adventure-based ecotourism development. There are already a number of established tourism attractions in proximity to the project area, which are detailed below (refer to Figure 3-6):

- **Wangetti Beach** - Wangetti Beach is just north of Palm Cove in Tropical North Queensland. Running from Slip Cliff Point to Red Cliff Point, the four kilometres of almost straight coastline has no facilities, with only a car park on either end of the beach and a stretch of highway connecting them. When visiting Wangetti Beach, it is a must to stop by the southern end as this raw patch stunning and untouched coastline has been naturally eroded, leaving a quirky pebble stone covered section of the beach. You can build stone towers or try your hand at skipping the stones across the water, climb across and adventure through the pebbled mounts, or simply checkout the unique scenery. With easy access from Palm Cove and a plethora of camping sites close by, Wangetti Beach offers fun, relaxation, and a great view of the entire beach from the northern lookouts.
- **Hartley's Crocodile Adventures** - Hartley's Crocodile Adventures is the best place to see crocodiles and local wildlife in the North. 2500 metres of boardwalks you can see an array of wildlife, including beautiful tropical birds, wallabies, reptiles, insects and more.

⁴ Project website: <https://www.dtis.qld.gov.au/our-work/qld-ecotourism-trails/wangetti-trail>



Figure 3-6 Existing tourism ventures surrounding Wangetti South Section A (Queensland Globe, 2020)

3.3.8 Public amenity

Sensitive receptors

Sensitive receptors (e.g. existing residences, places of work, schools, etc., agricultural or ecologically significant areas/species that could be impacted) within and surrounding the project area that may be potentially affected by the proposed works associated with Wangetti South Section A include: Wet Tropics World Heritage Area, National Parks and residential communities within Palm Cove and Wangetti.

The project is predominantly within an area which has been subjected to very limited disturbance. As such, noise and vibration are largely related to the natural environment including bird calls and vegetation movements from wind. There are also a number of sensitive receivers located along Wangetti South Section A including national parks and residential areas in the southern extent.

Air quality

The project area is predominantly within an area which is previously undisturbed. As such, air quality is largely influenced by the coastal location and surrounding related to the natural environment including bird calls and vegetation movements from wind. There are also a number of sensitive receivers located along Wangetti South Section A including national parks and residential areas in the southern extent.

It is anticipated that limited air quality nuisances will be generated as a result of the project, with the construction phase representing the highest potential for air quality changes. During construction, the use of machinery will have the most significant impact on air quality. However, these impacts are anticipated to be minor and short term and intermittent as works progress along the trail alignment.

Noise emissions

The majority of Wangetti South Section A is located within national park and is typified by a generally low noise environment. The southern section of the project area in Palm Cove is subject to more noise as it is located in a built-up urban area. The proposed works are likely to result in increased noise during the construction phase (intermittent, transient and short-term) and operational phase due to increased number of people and machinery and equipment movement through the project area.

Potential sources of noise emissions generated by the project during the construction phase include:

- Construction equipment operating within the project area
- Construction team operating within the project area

Potential sources of noise emissions generated by the project during the operational phase include:

- Hikers and mountain bikers using the trail and camp sites
- Vehicles using the access tracks to access the trail/camp sites
- Noise generated from maintenance workers maintaining trail and camp sites.

3.3.9 Cultural heritage

Indigenous cultural heritage

A search of the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) Cultural Heritage database was undertaken on 21st December 2020 to identify recorded Indigenous cultural sites within 5 km and 20 km of the project area. The 5 km buffer DATSIP search identified eight recorded cultural heritage sites, while the 20 km buffer search identified 175 recorded cultural heritage sites. The sites are recorded to contain a variety of significant features including scarred trees, shell middens, artefact scatter, grinding grooves, resource and quarry areas, story places, paintings and burial places.

Due to the predominantly undeveloped nature of the project area, it cannot be assumed that the sites identified within the DATSIP cultural heritage search are a conclusive representation of all archaeological materials and sites within the area. The presence of multiple identified sites suggests that additional undetected sites of cultural significance may exist throughout the project area. Environmental management for the project should adhere to the measures in the *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines. The project would constitute a Category 5 development and should not proceed without cultural heritage assessment.

World heritage

The Wangetti South Section A traverses the Wet Tropics World Heritage Area, which is recognised as a national heritage place for both natural and Indigenous values.

European cultural heritage

A search of the Queensland Heritage Register revealed no State heritage sites are located within the project area. Similarly, no local historical or European heritage sites are identified within the Douglas Shire Council LGAs.

3.3.10 Transport

Wangetti South Section A project area intersects sealed and unsealed roads and includes both State-controlled roads, local council roads and QPWS-owned roads. Refer to Table 3.12 which provides a list of the road intersected.

The project will include ancillary service tracks to allow for restricted vehicle access along the alignment during the construction phase, operational phase, and maintenance phase and for emergency access. These service tracks will connect to the existing road network and will predominantly be used by side by side vehicles during maintenance and larger construction vehicles. This service track will be gated to members of the public, discouraging access and use. Passive surveillance from users of the trail and monitoring of the trail by QPWS and the trail operator will assist in ensuring that unlawful activities, such as motorbike riding, do not occur with the project area.

Table 3.12 Proposed use within existing road corridors

Road name	Ownership	Local Council Area	Proposed use
Captain Cook Highway	DTMR	DSC	The trail will provide for 7 access tracks to the Captain Cook Highway and various locations south west of the town of Wangetti.

Road name	Ownership	Local Council Area	Proposed use
Quaids Road	DSC	DSC	The trail will require a crossing over Quaids Road near the intersection of Quaids Road – Captain Cook Highway
Unnamed track near Rifle Range Road (Service Track A)	DR	DSC	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.67833,145.57187 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107
Unnamed track (Service Track B)	DR	DSC	Existing dirt track from Captain Cook Highway at Ellis Beach. Location: Captain Cook Highway -16.68024,145.57396 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107
Unnamed track near (Service Track C)	DR	DSC	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.68274,145.57536 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107
Unnamed track near (Service Track D)	DR	DSC	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.68589,145.57816 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930
Unnamed track near (Service Track E)	DR	DSC	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69439,145.60329 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930
Unnamed track near (Service Track F)	DR	DSC	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69680,145.60884 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930

3.3.11 Waste management

Wangetti South Section A would produce all types of waste during construction and operation including glass, paper, food/ kitchen scraps, construction waste, cardboard, and plastic (including recyclables) in addition to vegetation material as a result of clearing. The waste hierarchy of *avoid, reduce, reuse, recycle, dispose* should be implemented to avoid potential environmental impacts and reduce disposal costs. Disposal costs would include transport of the material to landfill.

The project area is predominantly within an area which is previously undisturbed protected area within the national park. As such, waste management will need to be implemented in order to maintain the existing values of the natural environment. A discussion of the potential waste to be generated during the construction phase and operational phase is outlined below.

During construction, it is anticipated that the following waste streams could be generated by the construction teams:

- Waste, oil or fuel are possible as a result of the construction of the proposed trail and camp sites
- Packaging from material used during construction phase
- Domestic waste produced by construction team
- Excess soils/rocks and vegetation.

During operation of the trail and camp sites, it is anticipated that the following waste streams could be generated:

- Domestic waste produced by the users of the trail, including ecotourism operating staff
- Waste, oil or fuel are possible as a result of vehicles servicing the camps and trail for maintenance purposes
- Used mountain bike tyres/chains etc.

The project will incorporate sustainability initiatives in the construction and operational phases of the project such as:

- Use of recycled construction materials
- Use of local materials and contractors
- Minimisation and recycling of wastes
- Energy reductions through efficiency measures
- Regular vehicle maintenance to reduce emission rates

Water use reductions through water recycling, use of recycled water and use of soil stabilisers to minimise water use.

4. Proposal details – Wangetti South Section A

4.1 Overview

Wangetti South Section A is the subject of this development application and comprises a shared use trail accommodating both hikers and mountain bikers, a public camping node and amenities block, water way crossing structures along the trail, and service track connections to the existing road network. An overview of the component details and impacted properties are outlined in Table 4.1.

The project has been designed such that it is responsive to the natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland. World Trail were appointed to design the alignment and completed a walkthrough, working closely with Traditional Owners, specialist consultants and engineers. The project and its ancillary facilities will be low-impact and, to the greatest extent possible, ecologically sustainable and preserve and protect community resources. For this reason, no utility connections will be installed. Rather, water will be collected via rainwater tanks for isolated use and wastewater will be collected and disposed of, offsite. General waste by patrons will be kept and disposed of offsite.

Table 4.1 Overview of components

Component	Impacted area/ Dimensions	Impacted properties	Reference
Shared use trail	<p>The width of the trail will be a maximum of 1.5 m and the total length of the trail (excluding mountain bike trail) is 29.7 km. Wangetti South Section A comprises approximately 17.7 km.</p> <p>Up to 1.0 m and 2.5 m height of temporary disturbance has been allowed during the construction phase in order to accommodate construction equipment. Refer to Vegetation Clearing Drawing: WTSTD-033-WG2 in Appendix J.</p>	<p>Vegetation disruption, including canopy cover, will be minimised.</p> <p>Ongoing vegetation management will likely be required.</p>	Table 4.2 Description of the shared use trail including location, key structures, construction methodology and how it will be maintained
Waterway Crossings including rock armouring and low level bridge (minor water crossing).	<p>Rock armouring</p> <p>This technique will be used to harden the trail surface, using rocks of 400 – 800 mm in size, embedded into the ground to create a hard, rock paved surface.</p> <p>Bridge Crossings</p> <p>21 single span bridges are proposed over minor waterways</p>	Only a small component of this area will result in permanent disturbance.	Table 4.5 Waterway crossings, component description location, key structures, construction methodology and intended maintenance

Component	Impacted area/ Dimensions	Impacted properties	Reference
	The single span bridges will range in span from 5 m to 25 m and will be 1.2 m wide. A maximum area of 21 m ² has been allowed on either side of the waterway (total disturbance area 42 m ²) or a width of 1.5 m over the waterway during construction.		
Dark Jungle - Public camping node and amenities	For the public camping node, a conservative disturbance area of 0.25 ha has been allowed. Toilet Block 12.50m ² Shelter 27.90m ² The 10 x camp decks are 126 m ² in area	Vegetation clearing will be required for site infrastructure, however, will be minimised where possible. Ongoing vegetation management will likely be required.	Table 4.3 A description of the camping node and amenities including location, key, structures, construction methodology and how it will be maintained
Service Track	Project will use existing access tracks referred to as service tracks.	Limited vegetation is required for only one service track (Service track 4) to remove vegetation that has grown over the existing access tracks.	Table 4.4 description of the service vehicle tracks including location, key structures, construction methodology and how it will be maintained

Table 4.2 Shared use trail: component description location, key structures, construction methodology and intended maintenance

Shared use trail	
Proposal appreciation	<p>Wangetti South Section A showcases ecologically and culturally valuable areas including WTWHA, Macalister Range National Park and Mowbray National Park. The trail is 29.7 km shared walking Wangetti and Palm Cove. The Wangetti South Section A comprises approximately 17.7 km.</p> <p>The shared use trail has been designed with a maximum width of 1.5 m to provide flexibility to allow mountain bikers to use the trail with walkers should the market require this. It also gives flexibility over time for the trail to be adjusted accordingly.</p>
WTWHA	<p>The shared use trail is located within Zone B and C of the WTWHA under the Wet Tropics Management Plan (July 2017 version).</p>
Key Structures	<p>Generally, 1.5 m wide, the trail will be constructed utilising the natural soil and rock found along the trail. The trail will have an average gradient of <10% and a maximum gradient no greater than 15% (for short distances only). Built structures are also proposed as part of the trail and include gully crossings, bridges, staircases, platforms, rock armouring and signage, where appropriate and required.</p> <p>The southern end of Wangetti South shared use trail will be accessed from Palm Cove where the trail connects to the Captain Cook Highway road to be situated on Lot 1 SP208071. This component does not form part of this development application, as it is located within Wangetti South Section B within Cairns Regional Council area.</p> <p>The shared use trail will end at Wangetti at the intersection of Quaid's Road and the Captain Cook Highway road reserve on Lot 2 SP309094 (this is part of this development application). No treatments are proposed with Captain Cook Highway road reserve other than signs and marking as agreed by DTMR. Users of the shared use trail would be responsible for making their own transport arrangements once they complete the trail. For guided tours a shuttle service would be organised as arranged by the operator. The trail will be supported through interpretive signage throughout. These include:</p> <ul style="list-style-type: none"> Trailhead signs – designated entry point to the trail, communicating: <ul style="list-style-type: none"> A map of the trail including a description of each section Wangetti Trail and key stakeholder logos Code of conduct Minimum requirement and details on phone reception Emergency procedures Information on water availability Booking protocols for camp sites Interpretive information such as the cultural and environmental significant of the area

Shared use trail

- Decision point signs / directional signs – used at the start of each section to enable trail users to make an informed decision whether to proceed
- Way markers – bollard or post with symbols to guide trail users in the correct direction
- Interpretive signs – focused on telling the story or cultural aspect of a local environmental value, local flora and/or fauna or local history.

Trail signage will be installed with a unique location identification number to be quoted in emergency situations. Emergency responders would be provided with GPS coordinates corresponding to each of these numbers and instructions to access that point. These signs will be installed within the 1.5 m wide clear zone of the trail for easy use by users.

Refer to Appendix J for design drawings.

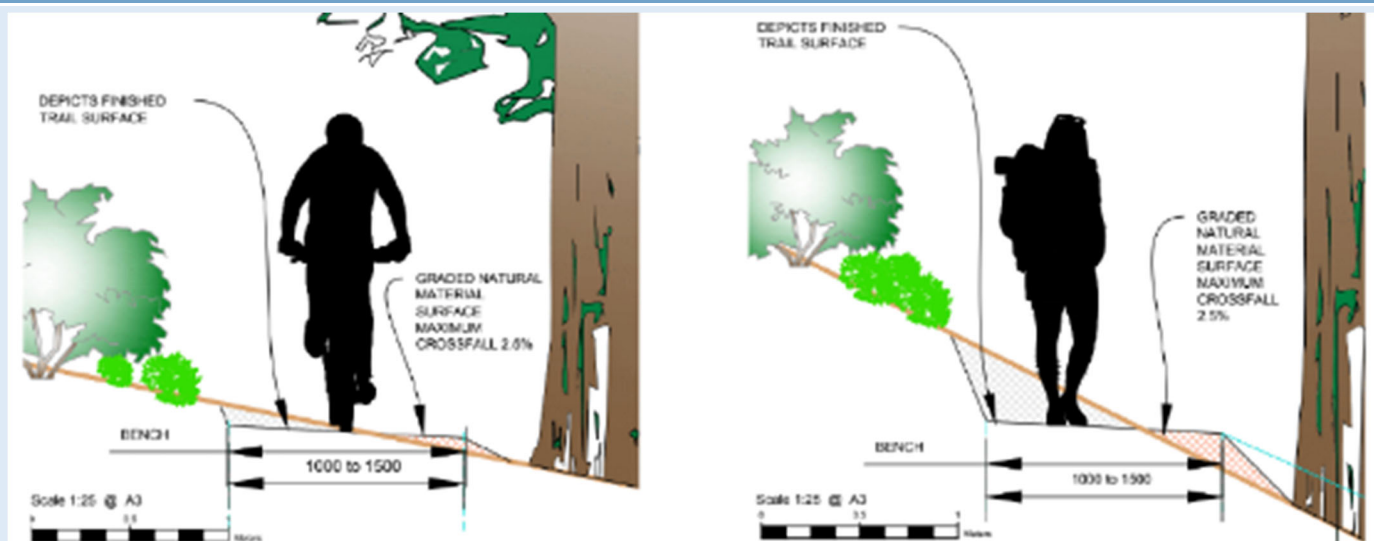
Vegetation

The shared use trail will allow for winding around natural obstacles and integrating within the natural environment. Vegetation disruption, including canopy cover, is minimised. Ongoing vegetation management will likely be required.

Visual examples from World Trail (2020) *Wangetti Trail Construction Methodology*



General Trail layout from World Trail (2020) *Wangetti Trail Construction Methodology*



Construction

Shared use trail

Materials and equipment

Material anticipated to be used by the nominated contractor to construct the trail will include:

- In situ soils – the proposed finished surface for the majority of the trail will be natural soils. Where extra soil is required, it can usually be sourced from the balanced cut and fill process used to create the bench which becomes the finished trail, with soil moved up or down the rail to manage local excesses or deficiencies
- Ballast rock – ballast rock will be used as a base course in low-lying wet areas or flat sandy areas, to build up the trail surface and provide a firm foundation. Ballast rock can vary, but is generally a durable crushed stone with sharp corners and edges, free of impurities, weathering and organic materials. Igneous and metamorphic rocks such as granite, gneiss, and basalt make excellent ballast.
- Fine crushed rock - crushed rock will be used from time to time as a wearing course. Generally the wearing course of the trail will be the natural soil, but crushed rock may be required in situations where ballast rock has been specified as a base course.
- Geofabric underlay
- Rock – in situ from within the construction corridor will be utilised to create rock walling to restrain soil to a slope
- Mortar and concrete – mortar and concrete, along with rock, geofabric and drainage materials will be used to create retaining walls to restrain soils to a slope
- Pre-cast concrete steps – pre-cast concrete steps, along with concrete, road base, mortar, large rocks and anchors will be used to allow the trail to climb up/down steep slopes.

Methodology

The process for constructing a standard trail is as follows (WT, 2020):

- Pre-start trail review: The trail will be re-walked and assessed with the exact alignment re-marked. Although noting that during construction, if something needs to be avoided, the trail can be moved within the 40 m corridor
- Vegetation clearing: The temporary construction corridor is defined as 2.5 m (0.5 m either side of the 1.5 m permanent trail width) and to about 2.5 m high. Clearing of the corridor will be undertaken in 100 – 150 m sections and will be undertaken manually using tools such as brush cutters, chainsaws and hedge trimmers, and hand tools like loppers, hand saws and secateurs. Large trees will not be removed and the trail will re-routed around them. All cleared vegetation will be cut into small pieces and dispersed throughout the surrounding area. The process of clearing only 100-150 m ahead at a time allows for a visible amount of vegetation to be cleared ahead of where the machine is operating.
- Cut the bench using the cut and fill technique: Soil removed from the inner side of the bench will be used to build up the outer edge of the bench. This will be constructed with a small rubber-tracked excavator with a minimum track width of about 900 mm. On steeper slopes, dry strong rock walls, built from rock sourced during construction, will be created. This step is sometimes undertaken by hand where:
 - It is not physically possible to get the mini excavator to the location (for example, a steep sided creek requiring the construction of a bridge, which will not be trafficable by a mini-excavator, or there are large boulders that prevent access to the machine)

Shared use trail	
	<ul style="list-style-type: none"> – It is not safe to use the mini excavator (for example, on steep side slopes or in locations of unstable ground) – Areas of high environmental or cultural heritage significance, requiring minimal excavation – Close to large tree roots <ul style="list-style-type: none"> • Other trail embellishments: Trail surfacing, steps, rock armouring and bridges will then be constructed • Definition of trail: The trail will be defined by placing rocks, logs or other obstacles as necessary to define the preferred riding/hiking line for users. • Clean up: Removal of loose rocks and roots, compaction of tread and drainage management (for example, ensuring grade reversals flow correctly) • Curing: The trail is given a period of rest, known as ‘curing’, to allow the trail tread to settle and harden. <p>QPWS will have a shadow ranger on-ground during the construction of the shared use trail to provide guidance to the construction contractor.</p>
Operational and Maintenance Phase	<p>The shared use trail (including built structures along the trail), within the protected area estate, will be maintained in accordance with QPWS trail maintenance/ procedures/manuals.</p>

Table 4.3 Public camping node and amenities: component description location, key structures, construction methodology and intended maintenance

Public camping node and amenities	
Proposal appreciation	<p>For the public camping node referred to as Dark Jungle, a conservative disturbance area has been allowed for the siting of the node infrastructure, including construction footprint and buffers for the public and private campsites. The design details of the campsite will be developed further during the detailed detail phase and would result in the permanent disturbance footprint of 0.25 ha.</p> <p>The footprint of the node will be 0.25 ha and will allow for users to stay at as they make their way along the trail. A maximum 20 people can be accommodated at the node, per night. The node will be managed in accordance with QPWS standards and Manual. A high level concept plan has been designed including footprint area and nature buffer. The exact layout of the node will be designed once the nominated contractor is awarded by TDPD.</p>
Key Structures	<p>The Dark Jungle public camping node footprint (0.25 ha) is expected to include the following structures:</p> <ul style="list-style-type: none"> • 10 x 4 m diameter elevated camping decks (126 m²) • 1 x toilet block (12.50m²) • 1 communal gathering area including bike rack, table and seating, bench area and shelter (27.90m²) • Interconnecting pathways, boardwalks and access tracks within Dark Jungle footprint. <p>The node will be designed to avoid trees to the greatest extent possible and rocks or other important landscape features. The node would be constructed of lightweight materials and apply green building principles. The site would be for the use of trail guests. The node would be obscured from the walking trail so as to provide privacy and security.</p> <p>Refer to Appendix J for design drawings.</p>
Utility connections	<p>Given the development is for a public camping node, limited infrastructure will be installed, restricted to:</p> <ul style="list-style-type: none"> • Power: solar power • Water: 2 rainwater tanks (on non-remote sites) • Effluent: The amenities block will comprise of either waterless toilet system or hybrid toilet system that discharges waste into tanks. They are considered to be sustainable options, requiring minimal maintenance and suitable for remote locations • Greywater discharged from the camping node will be treated by a suitable onsite treatment/retention system. Greywater will not be discharged into the waterways.
Vegetation	<p>Vegetation clearing will be required for site infrastructure, however, will be minimised where possible. Ongoing vegetation management will likely be required.</p>

Public camping node and amenities

Visual Example – Public camp site (Grampians (Vic) – Hiker Camp Images Site Visit - Aug 2019 TPDP 2019)



View through the campground at the paths and the communal shelter



Camp site pad



Dedicated paths through the camp ground (to help minimise hikers/campers walking over vegetation)



Alternative pathway material choice (steel over hardwood, also allows for some light permeation).

Construction

Materials, equipment and methodology

The construction of the node will ultimately be determined by the nominated construction contractor, with approval provided by the landowner (DES), however the following objectives will be apply to the construction phase:

- The node will be sympathetic to the terrain and topography – It will blend into the landscape and create a sense of purpose and movement through the landscape.
- The node will be accessed via the existing service tracks
- The node will avoid areas of high environmental significance
- The node will be built to modern best-practice standards for sustainable accommodation and amenities.
- The structures at the node will consist of modular, pre-fabricated and easy to assemble construction technologies to reduce construction related impacts
- The nominated contractor will be required to use locally sourced material that is lightweight yet durable.
- Renewable, durable, non-toxic and environmentally sustainable materials to be considered during the construction phase of the nodes.
- Waste streams to be managed during construction through re-use of on-site materials that are within the development zone (e.g. soils, vegetation, fabricated materials).

Table 4.4 Service tracks: component description location, key structures, construction methodology and intended maintenance

Service Tracks
<p>Proposal appreciation</p> <p>The project will include ancillary service tracks to allow for restricted vehicle access along the alignment during the construction phase, operational phase, and maintenance phase and for emergency access. These will connect to the to the existing road network and will predominantly be used by side by side vehicles during maintenance and larger construction vehicles. The service tracks will be gated to members of the public, discouraging access and use. Passive surveillance from users of the trail and monitoring of the trail by QPWS and the trail operator will assist in making sure that the unlawful activities e.g. motorbike riding does not occur with the project area.</p>
<p>Key Structures</p> <p>Grading/improvements of some of the existing access tracks may be undertaken to allow them to cater for the vehicles to be used for the project.</p> <p>Refer to Appendix J for design drawings.</p>
<p>Vegetation</p> <p>Limited vegetation is required for only one service track (Service track 4) to remove vegetation that has grown over the existing access tracks. In regard to the other service tracks only overhanging vegetation over the existing access tracks will be cut back. Ongoing vegetation management will be required</p>
<p>Service Track: Service Track A and B</p> <p>Description: Service track near Rifle Range Road</p> <p>Service Track A Location:</p> <p>Connection to shared use trail -16.67845,145.57145</p> <p>Connection to Captain Cook Highway -16.67833,145.57187</p> <p>Refer to label A on Plan: Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head Plan No: 1 of 5</p> <p>Real property descriptions: Captain Cook Highway Road reserve, 6SP309107</p> <p>Service Track B Location:</p> <p>Connection to shared use trail -16.68036,145.57378</p> <p>Connection to Captain Cook Highway -16.68024,145.57396</p> <p>Real property descriptions: Captain Cook Highway Road reserve, 6SP309107</p> <p>Refer to label B on Plan: Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head Plan No: 2 of 5</p>

Service Tracks

Service Tracks

Service Track A and Service Track B along Rifle Range Road

16°40'39"S 145°34'15"E

16°40'39"S 145°34'31"E

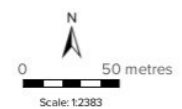


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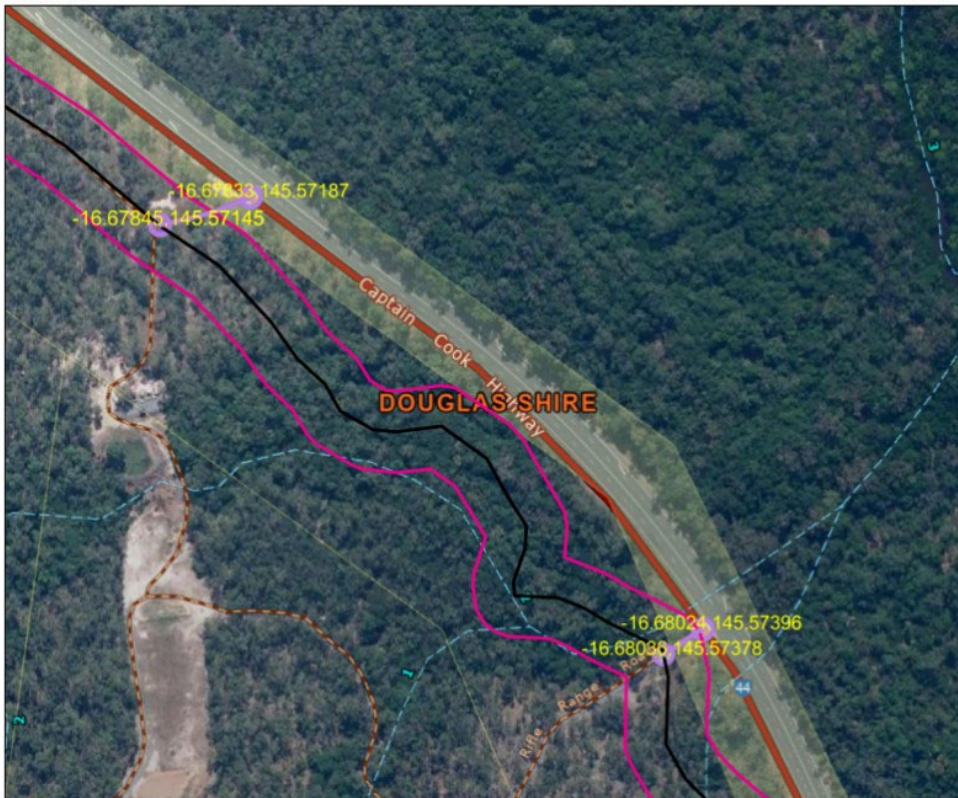


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16°40'52"S 145°34'15"E

16°40'52"S 145°34'31"E



Service Track B Location from Captain Cook Highway

Service Tracks

Service Track: Service Track C and D

Service Track C Location:

Connection to shared use trail -16.68392,145.57544

Connection to Captain Cook Highway -16.68274,145.57536

Refer to label C on Plan: Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head Plan No: 2 of 5

Real property descriptions: Captain Cook Highway Road reserve, 6SP309107

Service Track D Location:

Connection to shared use trail -16.68646,145.57690

Connection to Captain Cook Highway -16.68589,145.57816

Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930

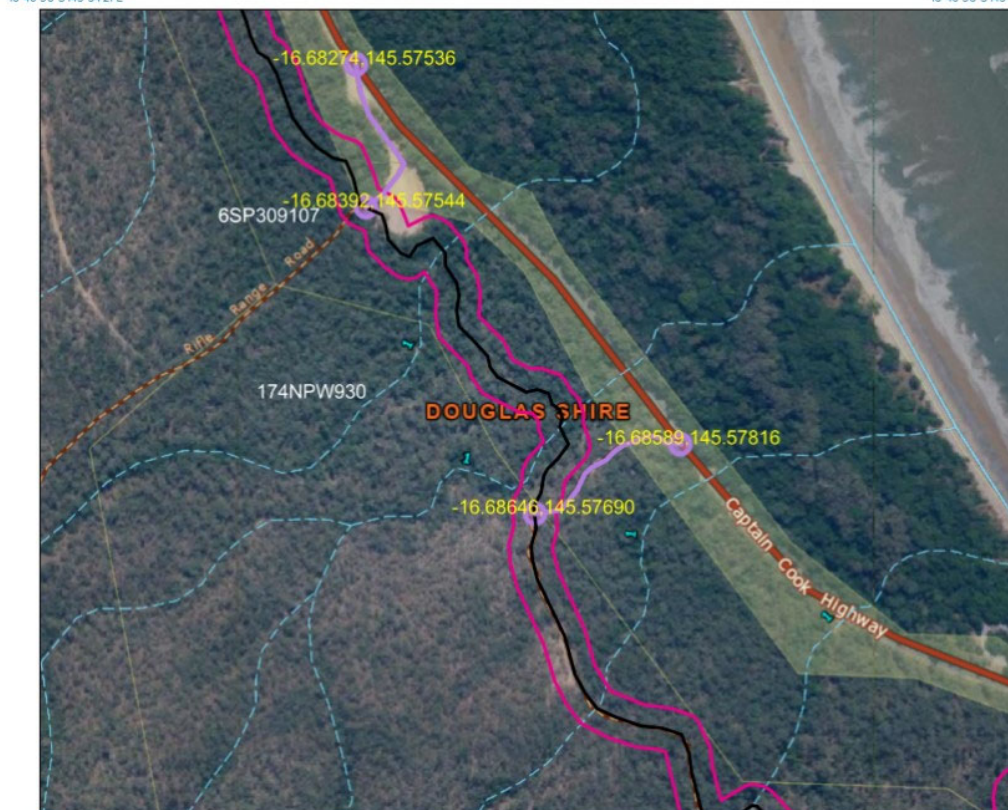
Refer to label D on Plan: Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head Plan No: 2 of 5

Service Tracks

Service Track C and Service Track D

16°40'56"S 145°34'21"E

16°40'56"S 145°34'52"E



16°41'20"S 145°34'21"E

16°41'20"S 145°34'52"E

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Service Tracks

Service Track C from Captain Cook Highway



Service Track D from Captain Cook Highway



Service Tracks

Service Track: Service Track E and F

Service Track E Location:

Connection to shared use trail -16.69859,145.60308

Connection to Captain Cook Highway -16.69439,145.60329

Refer to label E on Plan: Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head Plan No: 4 of 5

Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930

Service Track F Location:

Connection to shared use trail -16.70027,145.60950

Connection to Captain Cook Highway -16.69680,145.60884

Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930

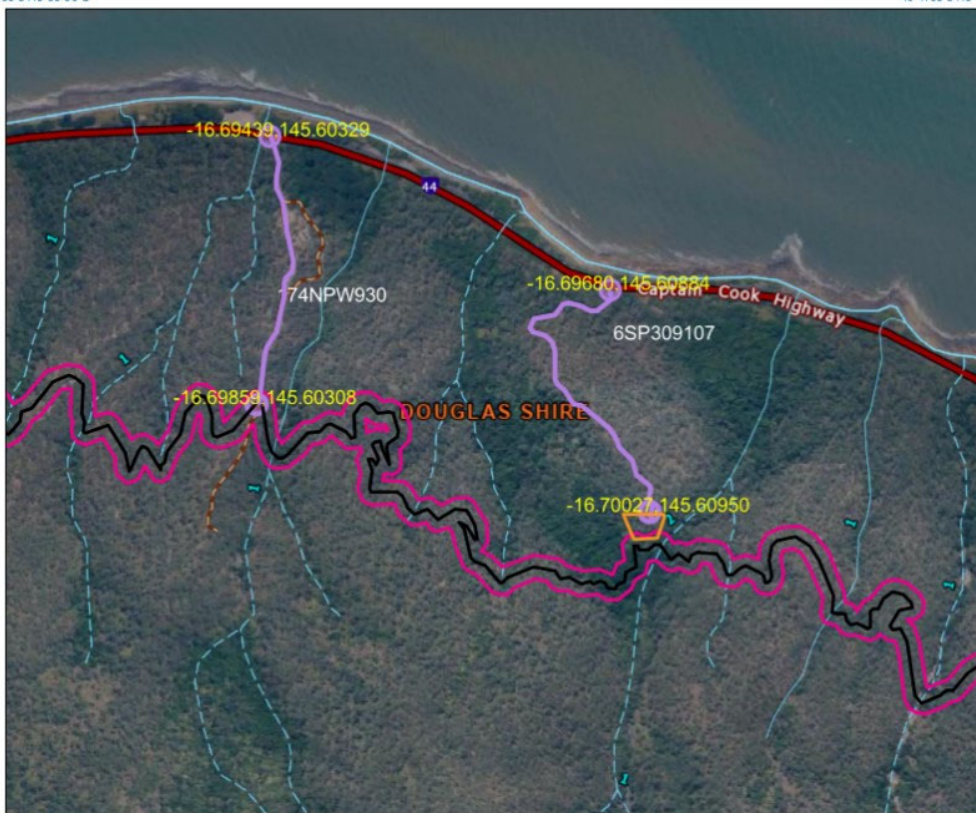
Refer to label F on Plan: Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head Plan No: 4 of 5

Service Tracks

Service Track E and Service Track F

16°41'33"S 145°35'56"E

16°41'33"S 145°36'54"E



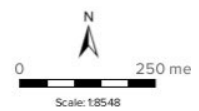
16°42'18"S 145°35'56"E

16°42'18"S 145°36'54"E

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Service Tracks

Service Track E

Entrance from Captain Cook Highway



Service Track F

Entrance from Captain Cook Highway



Service Tracks

Construction - Materials and equipment Methodology

Existing access tracks will be formalised to ensure they are fit for use as a permanent access track. This will involve removal of vegetation where it obstructs the movement of vehicles and some surface treatments to provide safe passage for vehicles.

Operation and maintenance

The service tracks will be managed in accordance with QPWS trail maintenance procedures manuals.

The service tracks will be used by the operators and managers of Wangetti Trail and will be used for the following purposes:

- Deliver equipment and supplies to the camp sites
- Be used by emergency vehicles for emergencies
- Be used to access the trail and camp sites for maintenance purposes
- The service tracks will be gated to restrict access to the general public.

The trail and service tracks will be maintained in accordance with QPWS trail maintenance/ procedures/manuals for those parts of the service tracks that are within the protected area estate.

Table 4.5 Waterway crossings: component description location, key structures, construction methodology and intended maintenance

Waterway crossings along the shared use trail	
Proposal appreciation	As the trail will intersect a number of waterways, waterway crossings will be required at various locations to allow hikers and mountain bikers to safely cross the waterway.
Key Structures	<p>The exact type of structures proposed at the waterway crossings will be recommended by the trail builder and approved by the land manager and will comprise of rock armouring and low level bridge (minor water crossing).</p> <p>Rock armouring</p> <p>Rock armouring is a technique used to harden the trail surface, using rocks of 400 – 800 mm in size, embedded into the ground to create a hard, rock paved surface. Rock armouring is used in the following situations:</p> <ul style="list-style-type: none"> • Wet and boggy areas where no alternative route is available • Steep gradients, to reduce the potential for erosion and to provide traction • In high trafficked areas to prevent erosion and compaction. <p>Low-level bridge (minor water crossing)</p> <p>A number of single span gully crossing bridges will be used within multiple locations along the alignment, over areas of large gully crossings (refer to Appendix I). The design aspects of the structure include the following:</p> <ul style="list-style-type: none"> • The bridges will range from 5 m to 25m and the width of the bridges would be 1.2 m, limited to pedestrians and cyclists. • An estimated area of 42 m² has been allowed on either side of the water way to allow for the installation. The area of disturbance to be confirmed during the detail phase which is underway. However, only a small component of this area will result in permanent disturbance and this will be determined during the detailed design phase by the nominated construction contractor. • Either banks appeared gentle in slopes and not steep, even in height levels either side of the crossing • The materials used for the built structures will be durable enough to withstand the harsh tropical climate and natural environment • The anticipated method of construction to be adopted by the construction contractor for the bridge is outlined below: • Site preparation works including clearing and grubbing • Setup of work areas, including a crane pad, on both sides of the waterway • The topsoil will be stripped and the ground cut to abutment base level • An excavator will move the bridge into place. • The bridge is to be assembled in situ by hand. <p>Removal of all construction materials from site and implementation of appropriate site rehabilitation prior to work completion.</p>
Vegetation	Minor vegetation clearing will be required to allow for construction of the crossings.

Waterway crossings along the shared use trail

Visual examples for waterway crossings from World Trail (2020) Wangetti Trail Construction Methodology



Rock armouring



Low level bridge

4.2 Infrastructure provisions to support the project

To ensure the project will be of low-impact to the surrounding environment, no utility connections will be installed to connect to municipal infrastructure.

4.2.1 Water, sewer and stormwater

There is limited water and/or wastewater infrastructure proposed within Wangetti South Section A. This is restricted to the Dark Jungle camping node, involving:

- Water: 2 rainwater tanks
- Effluent: The amenities block will comprise of either waterless toilet system or hybrid toilet system that discharges waste into tanks. They are considered to be sustainable options, requiring minimal maintenance and suitable for remote locations
- Greywater: Greywater discharged from the camping node will be treated by a suitable onsite treatment/retention system. Greywater will not be discharged into the waterways.

The proposal is not expected to result in a meaningful increase in pervious surfaces. There is expected to be negligible impact to the existing stormwater drainage systems onsite. Therefore, the proposal does not involve any changes to the existing lawful points of discharge.

4.2.2 Electricity and telecommunications

There is limited electrical infrastructure proposed within Wangetti South Section A. This will be restricted to the Dark Jungle camping node involving solar power.

There will be no telecommunication infrastructure proposed within Wangetti South Section A.

4.2.3 General waste

It is anticipated the operation of the Wangetti Trail will closely resemble other walking and biking tracks in that the volume of waste per person will be limited to the amount that can be carried by patrons onto the trail. No waste infrastructure is proposed within Wangetti Trail Section A.

Waste generated during the construction phase will be removed from the project and waste will not contain any contaminated or hazardous materials.

4.3 Design and construction strategy for Wangetti South Section A

4.3.1 Overview

Delivery of the Wangetti Trail has been split into a number of works packages which suit the specialist skills of targeted builders and contractors accordingly. A design and construct (D&C) contractor has been awarded for Wangetti South Section A and B. Subject to approvals, the investigations, survey and design works are set to commence in early 2021. All works will be subject to conditions of the environmental approvals to protect and preserve the environment and cultural heritage.

To assist with delivery of the project the following guidance documents have been developed:

- The Wangetti Trail Construction Methodology Manual including concept design drawings – This document has been developed to guide construction activities associated with the Wangetti Trail project to minimise impacts to the environment and ensure compliance with all permits, approvals and legislative requirements. This document is intended to provide a high-level amount of information for contractors to inform the eventual Construction

Environmental Management Plan. It also including concept level drawings of the share use trail design including ancillary infrastructure and waterway crossings.

- Preliminary Environmental Management Plan (refer to Section 5.1.1 for more information)
- Preliminary Construction Environmental Management Plan (refer to Section 5.1.2 for more information)
- Concept Erosion and Sediment Control Plan (refer to Section 5.1.3 for more information)
- Preliminary Weeds, Pest and Diseases Management Plan (refer to Section 5.1.4 for more information)
- Preliminary Traffic Management Plan (refer to Section 5.1.5 for more information).

The above guidance documents have been included with this development application as supporting documentation.

The D&C contractor will be responsible for developing detailed design drawings, issue for construction drawings, confirming the construction methodology, finalising the environmental management documentation during the Pre-Start Trail Review (PSTR) stage.

At the commencement of the construction, the entire project area will be broken into Construction Segments. The Construction Segments assist in reducing the amount of area to be exposed during the construction phase, which in turns reduces impacts to the natural environment and reduces the impact to the movement of wildlife in the area. Before starting the construction of a Construction Segment, a Pre-Start Trail Review will be undertaken. The purpose of the PSTR is to review and inspect the proposed alignment of the trail with the TDPD Project Manager, prior to construction starting, to confirm the exact alignment within the groundtruthed corridor, identify any specific environmental values to be protected (including values identified to date together with any additional values identified during the PSTR) and to discuss and agree on specific construction treatments.

The following personnel will be involved in the PSTR:

- TDPD Project Manager
- Contractor's Project Manager
- Contractor's Trail Designer/Builder for that Construction Segment
- Suitably qualified botanist/ecologist
- DES Shadow Ranger.

A representative of the respective land manager(s), Queensland Parks and Wildlife Services (QPWS), Wet Tropics Management authority (WTMA) and the Traditional Owners will be invited to attend the PSTR.

Other personnel may also be required – for example, if the trail is in close proximity to areas of high environmental values, qualified environmental specialists should be present to provide assistance in micro-siting the trail to avoid impacts to these values. In areas of high cultural heritage values, qualified archaeologists and/or Traditional Owners should be present.

Prior to commencing the PSTR, known information about the Construction Segment will be gathered and assessed – length, proposed difficulty rating, likely construction treatments, known environmental issues that have been identified.

4.3.2 Staging and timing

In 2018, TDPD completed Stage 1, an initial application to the DIRDC RGF for the purpose of gaining funding for the construction of the Wangetti Trail. A Business Case was then developed to assist the funding applications and to inform the Commonwealth and Queensland Governments on the costs and benefits of constructing the Wangetti Trail.

Stage 2 is now being progressed to continue developing the planning and environmental assessment of the trail, and to gain the appropriate approvals required. Construction is scheduled for Quarter 2 of 2021.

Subject to approvals, the Wangetti Trail is targeted to be operational and open to the public in 2022.

4.3.3 Design

The list of drawings associated with the proposed works for Wangetti South Section A as described in the above sections is outlined in Table 4.6 below and are included in Appendix J.

Table 4.6 Drawing register associated with the project area

Design drawing reference	Date	Creator	What the design is for	Location
WTSTD-001-WG2	07/04/20	World Trail	Typical trail benching standard drawings	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-033-WG2	07/04/20	World Trail	Vegetation clearing standard drawings	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-046 WG2	07/04/20	World Trail	Trail grade reversal placements and dimensions standard drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-047 WG2	07/04/20	World Trail	Rock walled switchback placement and dimensions standard drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-048 WG2	07/04/20	World Trail	Standard switchback placement and dimensions standard drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-034-WG2	7/04/20	World Trail	Rock retaining wall up to 500 mm placement and dimensions standard drawings	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-004-WG2	7/04/20	World Trail	Rock retaining wall up to 1000 mm placement and dimensions standard drawings	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-045-WG2	7/04/20	World Trail	Ballast surfacing placement and dimensions standard drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-003-WG2	07/04/20	World Trail	Precast concrete steps placement and dimensions standard drawings	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-005-WG2	24/03/20	World Trail	Natural rock seat placement and dimensions standard drawings	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-007-WG2	07/04/20	World Trail	Rock armouring placement and dimensions standard drawing	Various sections along the shared use trail intersected by waterways as nominated by the D&C contractor once they complete the PSTR
S030	03/09/2018	Bligh Tanner	For minor crossings and typical gullies	Various sections along the shared use trail intersected by waterways as nominated by the D&C contractor once they complete the PSTR

Design drawing reference	Date	Creator	What the design is for	Location
S031	03/09/2018	Bligh Tanner	For minor crossings and typical gullies	Various sections along the shared use trail intersected by waterways as nominated by the D&C contractor once they complete the PSTR
Concept Gully Crossings GA – Option	01/05/29	GHD	Concept Gully Crossings	Various sections along the shared use trail intersected by waterways as nominated by the D&C contractor once they complete the PSTR
WTSTD-011-WG2	07/04/20	World Trail	Adjustable rock matting 900 mm place and dimensions standard drawings	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
WTSTD-019-BF	07/04/20	World Trail	Rock and concrete spoon drains placement and dimensions standard drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSTD-013-WG2	07/04/20	World Trail	Trail handrail – multisection placement ad dimensions standard drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSTD-014-WG2	07/04/20	World Trail	Trail handrail – single section placement and dimensions standard drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSD-015-WG	07/04/20	World Trail	Handrail – Post and Rail Installation Placement and Dimensions Standard Drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSD-030-WG2	07/04/20	World Trail	Precast Concrete Steps Trail Grading Guidelines Standard Drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSTD-031-WG2	24/03/20	World Trail	Trail – Tree Root Protection Placement and Dimensions	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSTD-029-WG2	24/03/20	World Trail	Raised embankment – Dual Use Placement and Dimensions	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSTD-040-WG2	24/03/20	World Trail	Sediment Control Placement and Dimensions	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSTD-041-WG2	24/03/20	World Trail	Sediment Control – Silt Fence Placement and Dimensions	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR
WTSTD-042-WG2	24/03/20	World Trail	Sediment Control – Silt Fence Notes Placement and Dimensions	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR

Design drawing reference	Date	Creator	What the design is for	Location
WTSD-021-WG2	25/03/20	World Trail	Trail Closure and Rehabilitation Placement and Dimensions Standard Drawing	Various sections along the shared use trail as nominated by the D&C contractor once they complete the PSTR.
4132458_072 Plan – 1 of 5	29/01/21	GHD	Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head	Trail South Section A segment 1 at Wangetti locality
4132458_072 Plan – 2 of 5	29/01/21	GHD	Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head	Trail South Section A segment 2 south of Wangetti locality
4132458_072 Plan – 3 of 5	29/01/21	GHD	Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head	Trail South Section segment 3 between Ellis Beach and Wangetti localities
4132458_072 Plan – 4 of 5	29/01/21	GHD	Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head	Trail South Section A segment 4 west of Ellis Beach locality
4132458_072 Plan – 5 of 5	29/01/21	GHD	Wangetti Trail South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head	Trail South Section A segment 5 at Ellis Beach locality
Dark Jungle Camp Conceptual Layout	13/4/21	EnviroEdge	Dark Jungle campsite	Dark Jungle Camp Conceptual Layout

4.4 Benefits of the proposed Wangetti Trail to Tropics North Queensland

A key objective for the Wangetti Trail is to encourage growth in regional tourism visitation and economic development in TNQ. The Wangetti Trail is expected to deliver significant flow-on benefits for the TNQ region and Queensland, stimulated by additional visitation and non-local expenditure generated by the new ecotourism and adventure tourism offering and establishment of complementary commercial offerings around it.

In addition to the increased visitor expenditure induced by the Wangetti Trail, a significant benefit will be the increase in jobs for the region. The Wangetti Trail will generate an increase in job creation across TNQ, throughout all phases of the project lifecycle.

As the Wangetti Trail is situated between Palm Cove and Port Douglas, it will provide both direct and indirect employment opportunities over several regional locations in the area and across multiple industries. Direct employment will be created through the construction phase, with a range of skilled and unskilled jobs required to complete the Wangetti Trail. It is envisaged that construction of the project may involve training previously unskilled workers who may then be able to maintain the Wangetti Trail once operational. During the operational phase of the trail, direct and indirect jobs are expected through the entire TNQ region, specifically in retail trade, tour operator services, accommodation, food and beverage, and transportation sectors. An independent State funded assessment of the Wangetti Trail was conducted in an earlier stage of the Project and includes a preliminary economic impact assessment (EIA). The assessment estimated that the Trail could create 259 to 436 jobs throughout the construction and operation phases, including direct, indirect and induced employment⁵.

The Wangetti Trail is primed to be a catalyst that stimulates the region's employment and business development opportunities, particularly for the Traditional Owners. There is significant potential to draw on the knowledge, resources and skills of the Traditional Owners, including partnerships with established businesses, to create sustainable and long-term employment opportunities. The market sounding confirmed strong support for authentic Traditional Owner engagement in the Wangetti Trail through commercial arrangements and meaningful cultural experiences for users.

There are a number of other non-monetisable benefits that will be realised through all phases of the Wangetti Trail, including:

- Additional tourism and safety benefit, via the new Mowbray Bridge viewing platform and boardwalk day experience
- Health benefits gained by use of the trail, including improved health outcomes that are both physical and psychological
- Increased social capital for Traditional Owners through promoting Indigenous engagement in the operation and maintenance of the Wangetti Trail.

⁵

Tulipwood Economics (2018).

5. Proposed impacts and management strategies

This section provides a summary of the potential impacts that the construction and operation of the project is anticipated to have on the values of the receiving environment, which includes:

- Land use, land tenure, special areas
- Soils and topography
- Flora and fauna
- Biosecurity
- Water resources
- Hazard, health and safety
- Social and economic
- Public amenity
- Cultural heritage
- Transport
- Waste management.

Table 5.1 outlines the potential impacts to the above-mentioned values during the construction, operation and maintenance phases. Mitigation measures developed for the project are detailed in the Environmental Management Plan in Appendix K.

Table 5.1 Summary of potential impacts to the existing environment and proposed mitigation measures

Environmental value	Impact	Project phase			
		Planning and design	Construction	Operation	Maintenance
Land use, land tenure, special areas	Issues with securing ILUA with the traditional owners within the project area prior to planning and design	Yes	NA	NA	NA
Land use, tenure and special areas	Increasing people numbers have a potential to adversely affect World Heritage Values	NA	NA	Yes	NA
Land use, tenure and special areas	Inappropriate or intensive recreation activities may negatively impact on conservation	NA	NA	Yes	NA

Environmental value	Impact	Project phase			
		Planning and design	Construction	Operation	Maintenance
Land use, tenure and special areas	Works proposed within rural and conservation zoning that does not currently contain any development may result in decreased landscape character	NA	NA	Yes	NA
Land use, tenure and special areas	Undertaking construction activities below 5 m AHD in areas that are likely to contain Potential Acid Sulfate Soils (PASS) or Actual Acid Sulfate Soils (AASS) that could result in the acidification of the surrounding environment.	NA	Yes	NA	NA
Soils and topography	Trail users may displace soil and progressively wear down natural trail elements	NA	NA	Yes	NA
Soils and topography	Movement of soils can adversely impact on dispersive soils which have a high erosion risk and tunnel and gully erosion can occur.	NA	Yes	Yes	NA
Soils and topography	Erosion of soils may occur during construction. Trafficability could also prove difficult within upper layers (such as sand or clay) in wet conditions	NA	Yes	Yes	Yes
Soils and topography	Soil compaction as a result of construction and operation equipment and vehicles moving in the area and could prove difficult within the upper loose sandy layers and the silty clay layers if exposed and trafficked under wet conditions. The	NA	Yes	Yes	Yes

Environmental value	Impact	Project phase			
		Planning and design	Construction	Operation	Maintenance
	upper sandy layer often overlies the less permeable silty clay layer. This ground profile can often result in wet or saturated upper layers for some time following periods of high rainfall as the sand layer is typically limited to horizontal drainage.				
Flora and fauna	Construction activities resulting in the removal of vegetation, including MNES and MSES	NA	Yes	NA	NA
Flora and fauna	Construction activities may impact flora and fauna biodiversity in the area	NA	Yes	NA	NA
Flora and fauna	Development outside of the nominated works area and within Ecologically Significant Areas	NA	Yes	NA	NA
Flora and fauna	Injury or loss of native flora and fauna as a result of the vehicles not using designated access tracks. Trail users no following designated trail.	NA	Yes	Yes	Yes
Flora and fauna	Habitat fragmentation due to construction and on-going operation of project	NA	Yes	Yes	Yes
Flora and fauna	Illegal taking of protected flora and fauna species by the general public/construction crew.	NA	Yes	Yes	Yes
Flora and fauna	Trampling of plants as a result of trail users walking off track	NA	NA	Yes	Yes
Flora and fauna	Additional disturbance to aquatic environments associated with increased foot traffic and potential	NA	NA	Yes	NA

Environmental value	Impact	Project phase			
		Planning and design	Construction	Operation	Maintenance
	deviation from designated trail areas				
Flora and fauna	Additional disturbance and disruption of flora and fauna due to increased access of area	NA	Yes	Yes	Yes
Biosecurity	Introduction or spread of weeds from construction/ operation activities or materials	NA	Yes	Yes	Yes
Biosecurity	Spread of electric ants leading to increase pest activities	NA	Yes	Yes	Yes
Biosecurity	The spread of Chytridiomycosis to amphibians within the project area.	NA	Yes	Yes	Yes
Biosecurity	Introduction and accumulation of food and other waste leading to increased pest activities	NA	Yes	Yes	Yes
Biosecurity	Interference of local wildlife by domestic animals	NA	Yes	Yes	N/A
Water resources	Potential for flooding to occur upstream or downstream as a result of the sizing and treatment of waterway crossings	NA	NA	Yes	NA
Water resources	Reduction in water quality through ineffective treatment of erosion and sediment and total suspended solids.	NA	Yes	Yes	NA
Water resources	Sediment entering drainage lines or waterways and causing a reduction in downstream water quality.	NA	Yes	Yes	Yes
Water resources	Major storms and resulting flooding may impact on activities. Flooding may impact on users of existing access tracks and trails	NA	Yes	Yes	Yes

Environmental value	Impact	Project phase			
		Planning and design	Construction	Operation	Maintenance
Water resources	<p>Equipment used to complete works and the chemicals used in the construction.</p> <p>Equipment used for on-site works during the construction phase include:</p> <ul style="list-style-type: none"> • Mini Excavators • Bobcats • Power carriers • Chainsaws • Compactors • Generators • General construction tools and equipment (drills, saws, sanders, etc.). <p>Some of this equipment will require petrol to be stored on site. Equipment will be refuelled using petrol storage containers on site and there is the potential for contamination to surrounding water resources.</p>	NA	Yes	N/A	NA
Hazard, health and safety	<p>Bites from snakes, spiders, and insects</p> <p>Potential hostile intersection with fauna species</p> <p>Allergic reactions to plant species along the trail</p>	NA	Yes	Yes	Yes
Hazard, health and safety	Heat/cold exposure, falls and sprains, etc.	NA	Yes	Yes	Yes
Hazard, health and safety	Extreme weather events occurring within the project area and requiring evacuation and impacting structures	NA	Yes	Yes	Yes
Social and economic	Construction activities within road reserve may	NA	Yes	Yes	Yes

Environmental value	Impact	Project phase			
		Planning and design	Construction	Operation	Maintenance
	result in impacts to roads users				
Social and economic	Increase in employment opportunities and movement of people from another tourist attraction	NA	Yes	Yes	NA
Social and economic	Increase visitors using local region facilities and infrastructure	NA	Yes	Yes	NA
Public amenity	Additional noise and vibration associated with construction/ operation may negatively impact flora and fauna*	NA	Yes	Yes	NA
Public amenity	Additional noise and vibration associated with the movement of hikers and mountain bike riders along the trail and within the nodes.	NA	NA	Yes	NA
Public amenity	Production of greenhouse gases as a result of machinery use*	NA	Yes	NA	NA
Public amenity	Decline of air quality related to construction/operational machinery and dust particles* Production of greenhouse gases as a result vehicle using the access tracks to service the trail and nodes.	NA	Yes	Yes	Yes
Public amenity	Light sources generated from the construction phase and operational phase adversely impacting on wildlife.	NA	Yes	Yes	Yes
Cultural heritage	Potential to find unrecorded cultural heritage*	NA	Yes	NA	NA
Cultural heritage	Potential to disturb identified cultural heritage*	NA	Yes	NA	NA
Cultural heritage	Additional access to sensitive and restricts	NA	Yes	Yes	Yes

Environmental value	Impact	Project phase			
		Planning and design	Construction	Operation	Maintenance
	sites that may impact on Traditional Owner cultural values*				
Transport	Increased traffic as a result of construction activities impacting existing road users	NA	Yes	NA	NA
Transport	Construction activities within the road reserve impacting other road users	NA	Yes	NA	NA
Transport	Degradation of the existing access tracks	NA	Yes	Yes	Yes
Waste Management	Waste generation/ pollution of local area during construction/ operation*	NA	Yes	Yes	Yes
Responsibility		TDPD	D&C contractor	Operator in Partnership with DES/ QPWS	Operator in Partnership with DES/ QPWS

5.1 Management Strategies

TDPD has developed a number of management plans in order to address the impacts identified in Table 5.1. These mitigation measures have been developed in accordance with legislative requirements with respect to Commonwealth, State (Queensland) and local legislation and those statutory approvals that are associated with the project. Considerations of relevant authorities including but not limited to the WTMA, DES, QPWS, State emergency services (police/fire/ambulance) and DTMR will be undertaken by TDPD.

As a result, a number of management plans have been developed for the construction and operational phase of the project and they include:

- Environmental Management Plan (EMP)
- Construction Environmental Management Plan (CEMP)
- Concept Erosion and Sediment Control Plan (CESCP)
- Weeds, Pest and Diseases Management Plan (WPDMP)
- Traffic Management Plan (TMP)
- Matters of National Environmental Significance (MNES) flora pre-clearance survey methodology.

The following sections below provide an overview of each plan and detail how the plans have been structured. The EMP has been attached as Appendix K, which appends the CEMP, CESCP, WPDMP, TMP and MNES flora pre-clearance survey methodology.

5.1.1 Environmental Management Plan

Overview

The EMP details the performance objectives, actions and procedures to be carried out to minimise potential environmental impacts during the construction phase and operational phase of the Wangetti South Section A.

The EMP is the key reference document which identifies actions and commitments to be followed during the Project. The EMP serves as a benchmark for measuring the effectiveness of environmental protection and management. This will be achieved by specifying monitoring and reporting requirements, with nominated responsibilities and timing to ensure necessary performance objectives are met.

The contractors assigned to the Project will use the information in this document to develop an environmental management system and documentation for the construction and operational phase of the Project.

The EMP is a stand-alone, dynamic, document which will be reviewed and updated as required to reflect changes in processes, controls and procedures.

Structure of the EMP

The structure of the EMP has been developed to align with provisions in the Department of the Environment – Environmental Management Plan (DEMP) Guidelines 2014, It has also considered the provisions in the QPWS policies and procedures for undertaking works within protected areas and advice from WTMA. Table 5.2 below demonstrates how this EMP has considered the sections of the DEMP Guidelines.

Table 5.2 Structure of the EMP

Section	Comments
Section 1: Introduction	This section outlines the purpose for the EMP and the scope of works associated with the EMP.
Section 2: Site description	This section provides a description of the Wangetti South Section. It also outlines the key environmental factors relevant to construction, the proposal activities that would affect the factors and the site-specific environmental values, uses and sensitive components that will be affected.
Section 3: Legislative requirements	This section provides an overview of the Commonwealth and State legislation applicable to Wangetti South Section and details about how the proposed measures in the environmental management sub plans are consistent with Wet Tropics World Heritage Management Plan 2020 and Wet Tropics Strategic Plan 2020 – 2030.
Section 4: Role and responsibilities	This section outlines parties associated with the Wangetti South Section and the responsibilities during the construction and operational phases.
Section 5: Project phases	This section provides an overview of the planning and design phase of the project, the construction phase and the operational phase.

Section	Comments
Section 6: Training	This section outlines how training will be addressed during the construction phase and operational phase.
Section 7: Monitoring and environmental inspections	Section outlines the types of monitoring activities that will occur during the construction phase and operational phase.
Section 8: Documentation, document control and records	This section outlines how documentation will be managed during the construction and operational phases of the Project.
Section 9: Audit	This section outlines how audits will be undertaken during the construction phase and operational phase.
Section 10: Review	This section outlines when reviews will be undertaken during the construction phase and operational phase.
Section 11: Emergency, incidents, and complaints	This section outlines how emergency incidents will be addressed during the construction phase and operational phase.
Section 12: Environmental management sub plans	<p>The environmental management sub plans provide details of specific environmental outcomes to be achieved for relevant MNES and MSES during the relevant phases of the Project.</p> <p>They also provide details of the proposed measures to be undertaken to avoid, mitigate and manage the relevant impacts of the proposed action.</p>

5.1.2 Construction Environmental Management Plan

Overview

The CEMP guides construction activities associated with the Wangetti South Section A and B to prevent or minimise the environmental impacts and disturbance on site and to the surrounding environment during the construction phase. This CEMP has been prepared to satisfy the environmental obligations during the construction phase and complements the overarching Wangetti South Section A and B Environmental Management Plan.

The CEMP adopts a risk-based approach to identify and prioritise actions, which addresses the key environmental values, uses and sensitive components. The CEMP adopts provisions based on industry standard practices for minimisation and rehabilitation of environmental impacts during construction. The provisions reflect the potential for indirect and direct impacts posed by construction activities, such as unauthorised clearing, dust emissions during high winds and collisions with wildlife.

The CEMP is broken down into the following sections:

- Section 1: Introduction
- Section 2: Potential environmental impacts and risks
- Section 3: CEMP Provisions
- Section 4: Rehabilitation of works areas
- Section 5: Monitoring
- Section 6: Audit
- Section 7: Review

- Section 8: Emergency incident planning and response.

5.1.3 Concept Erosion and Sediment Control Plan

Overview

The CЕСCP provides preliminary guidance to establish appropriate site erosion and sediment control (ESC) management measures to reduce potential adverse impacts during the construction phase of the Project. It is expected that prior to any construction activity for the Project, a detailed work specific ESCP will be developed by the contractor as part of the CEMP. The contractor will review the preliminary guidance provided in the CЕСCP and provide greater detail based on construction methodology, geotechnical conditions, and timing of works.

The CЕСCP does not prescribe or locate any permanent or temporary erosion or sediment control measures in detail but provides indicative locations for erosion and sediment control devices as one measure of meeting the contractor's responsibilities.

The CЕСCP has been developed in general accordance with International Erosion Control Association's (IECA) Best Practice Erosion and Sediment Control Guidelines (2008).

Structure of the CЕСCP

Table 5.3 below provides a breakdown of the structure of the CЕСCP and an overview of each section.

Table 5.3 Structure of the CЕСCP

Section	Comments
Section 1: Introduction	Includes project background, purpose and scope of the CЕСCP, and relevant guidelines and legislation.
Section 2: Site description	Details all characteristics of the Project including location, proposed works, topography, geology, soils, and hydrology and drainage.
Section 3: Erosion hazard assessment	Preliminary erosion hazard assessment in accordance with Section 5.2 of the IECA Manual (IECA 2008). A preliminary erosion hazard assessment provides an indication of the erosion risk of the Project as a whole.
Section 4: Construction staging and timing	Details the proposed construction staging of the Project, including the proposed staging of erosion and sediment controls.
Section 5: Erosion and sediment control measures	Identifies a range of suitable erosion, sediment and drainage control types, and their respective locations, that could be adopted for each disturbed area.
Section 6: Monitoring and maintenance	Details the requirements for site inspections and monitoring of ESC, wet weather preparedness and non-conformances and corrective actions.
Section 7: Conclusion	Details recommendations for erosion and sediment control relevant for the Project.

5.1.4 Weeds, Pest and Diseases Management Plan

Overview

A preliminary WPDMP has been prepared to satisfy the obligations and complements the overarching Wangetti South Section A and B Environmental Management Plan.

The objectives of the WPDMP is to:

- Protect the biodiversity of the surrounding landscape of the adverse impacts from weeds
- Reduce weed infestations by integrating control methods and cost-effective management
- Manage weeds in disturbed areas and to protect rehabilitated areas
- Manage the weed species that are currently present on the site as well as off-site work areas
- Prevent introduction of new weed infestations to the Project area and adjoining areas
- Increase on-site awareness about the major weed species and manage pest species through strategic management, where possible
- Avoid and effectively manage impacts associated with weeds, pests and diseases.

The WPDMP provides an overview of the strategy, methods and controls implemented as part of the Wangetti South Section to manage the issue of weeds, pests and diseases. Specifically, this WPDMP identifies weeds, pests and potential diseases within the Wangetti South Section and describes management strategy, to identify, avoid and prevent/minimise and control the introduction of and spread of weeds, pests and diseases within the Wangetti South Section A and B and to neighbouring areas.

Structure of the WPDMP

Table 5.4 below provides a breakdown of the structure of the WPDMP and an overview of each section.

Table 5.4 Structure of the WPDMP

Section	Comments
Section 1: Introduction	Details the project background, purpose and objective of the WPDMP and site specific background documents.
Section 2: Roles and responsibilities	Outlines parties associated with the Wangetti South Section and the responsibilities regarding weeds, pests and disease management.
Section 3: Legal and other requirements	Details the applicable legislation, regulations, guidelines and strategies enacted by the Commonwealth, State of Queensland and local governments for weed, pest and disease management in the Wangetti South Section.
Section 4: Existing environment	Identifies the weeds, pests, diseases (pathogens) and biosecurity zones likely to occur within the Wangetti South Section.
Section 5: Impact assessment and mitigation	A summary of potential impacts associated with biosecurity matters that could be generated by activities undertaken during the construction and operational phases of the project and could impact on the ecological values of the receiving environment.

Section	Comments
Section 6: Reporting, auditing and review	Reporting, auditing and review requirements relating to weed, pests and diseases.

5.1.5 Traffic Management Plan

Overview

A preliminary TMP provides preliminary guidance to help establish appropriate traffic control and traffic management procedures manage potential hazards associated with the traffic environment during the Project and to reduce potential adverse impacts to people and wildlife during the construction and operational phases of the Project.

It is expected that prior to any construction activity and operational activity for the Project, a detailed work specific TMP will be developed by the contractor as part of the EMP. The contractor should review the preliminary guidance provided in this TMP and provide greater detail based on construction methodology, operational activities, and timing of works. The TMP will also need to be in general accordance with the MUTCD, Austroads Guide to Traffic Management and Transport and Main Roads Specifications MRTS02 Provision for Traffic.

Structure of the TMP

Table 5.5 below provides a breakdown of the structure of the WPDMP and an overview of each section.

Table 5.5 Structure of the TMP

Section	Comments
Section 1: Introduction	Details project background, and purpose and objectives of the TMP.
Section 2: Project overview	Provides an overview of the Project including location, impacted properties, proposed works during construction and operational phases, and impacts to existing traffic and road environments.
Section 3: Traffic hazard risk assessment	Identifies traffic related risks that have been identified with the Project and could take place during the construction and operational phases of the Project.
Section 4: General specifications	Discusses the mitigation measures that have been developed to minimise the impacts to existing road network, pedestrians and MNES within the Project area and surrounding area associated by the movement of vehicles within the Wangetti South Section.

5.1.6 Matters of National Environmental Significance flora pre-clearance survey methodology

Overview

The purpose of the Matters of National Environmental Significance flora pre-clearance survey methodology was to outline the pre-clearance survey methodology to be adopted before starting

construction works for the Wangetti South Section to demonstrate how protected flora species will be identified and managed as part of the project. Protected flora considered by the document are those that are listed as MNES under the EPBC Act. The document outlines the timing of the MNES flora pre-clearance survey, the personnel required to undertake the MNES flora pre-clearance survey and the methods to be adopted.

Structure of the MNES flora pre-clearance survey methodology

Table 5.6 below provides a breakdown of the structure of the MNES flora pre-clearance survey methodology and an overview of each section.

Table 5.6 Structure of the MNES flora pre-clearance survey methodology

Section	Comments
Section 1: Introduction	Details the project background, purpose of the document.
Section 2: MNES flora pre-clearance survey methodology	A discussion of the methodology, the target species, the survey team, the area to targeted and the timing of the survey.
Section 3: Reporting	Details of the reporting process and mechanism for the the MNES flora pre-clearance survey during the PSTR.
Section 4: Predicted effectiveness	A discussion of the effectiveness of adopting the MNES flora pre-clearance survey methodology in order to avoid potential impacts to MNES flora species.

6. Local government planning instruments – Wangetti South Section A

6.1 Douglas Shire Planning Scheme 2018

The development site is located within Douglas Shire Council Local Government Area and is subject to assessment against the *Douglas Shire Planning Scheme 2018* (Planning Scheme). The development site is located within the Conservation Zone. The proposed works being an environmental facility and nature-based tourism triggers impact assessable development, in accordance with the Planning Scheme, for a Material Change of Use.

Development Permit for a Material Change of Use for an ‘Environmental Facility’ and ‘Nature-Based Tourism’.

Accordingly, this application has been assessed against the Strategic Intent of the Planning Scheme, the purpose of the Conservation Zone, relevant code requirements and any other development provisions pertinent to the proposed development and the merits of the proposal.

The development also triggers the following state referrals:

- Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material Change of Use of premises near a State transport corridor. Parts of the trail are located within in Captain Cook Highway road reserve. The proposed works within the state-controlled road reserve have been discussed with DTMR and they have provided their support of the proposed works.
- Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational Work that is tidal works or works in a coastal management district - Parts of the trail are located within in state coastal land within CMD. Assessment against the current State Development Assessment Provisions, State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in a separate report in Appendix C.

6.2 Strategic intent

Part 3 of the Planning Scheme lists six Strategic Framework themes, which represent policy intent for Douglas Shire Council. All six have been reviewed and two themes are applicable to the proposed development, being:

- Settlement pattern
- **Environment and landscape values**
- Natural resource management
- Strong communities and identity
- **Economy**
- Infrastructure and transport.

6.2.1 Environment and landscape

The purpose of the environment and landscape values theme is to ensure the shire’s areas of environmental value and ecological significance are preserve and protected in a manner that

ensures their continuation as ecological, social, tourism and economic assets for present and future generations.

The Wangetti Trail will enhance conservation and protection of a cherished part of Tropical North Queensland and deliver environmental, social and economic benefits to local communities and to Queensland, including:

- Better controls to limit damaging and uncontrolled activities within parks including feral animal management
- Long term job and business opportunities for Traditional Owners and their future generations
- Enhanced connection to country whilst ensuring the protection and preservation of Land and Country
- Stronger appreciation and understanding of Indigenous culture
- Underpinning long-term growth and liveability in the Tropical North and builds community resilience for their respective regional communities
- Supporting Traditional Owner businesses, existing local businesses and new business opportunities
- New local jobs for development and operation of tour facilities created, including opportunities to develop local skills and increase diversity of regional jobs
- Indigenous business opportunities for construction, maintenance, guided walks and other activities.

6.2.2 Economy

The purpose of the economy strategic theme is to ensure the region maintain a prosperous community with a dynamic tourism industry attributed to the key lifestyle attributes of Douglas Shire Council.

The Wangetti Trail project aims to deliver an iconic international ecotourism experience with direct economic benefits to regional Queensland and local Traditional Owners, potentially attracting up to 28,000 local and international visitors annually. It is estimated that thousands of walkers and mountain bike riders will visit the Wangetti Trail every year.

In addition, given the unique design of the trail and existing tourism market in the Cairns and Port Douglas region, tourist operators have endless opportunities to shorten or lengthen their tours.

6.3 Land use definition

Under the Planning Scheme, Wangetti South Section A components meet the following use definitions as outlined in Table 6.1.

Table 6.1 Definition of the proposed uses for Wangetti South Section A

Use definition	Wangetti South Section A proposed works
Environmental Facility - use definition of an 'Environmental Facility', being a facility for the <i>"conservation, interpretation and appreciation of areas of environmental, cultural or</i>	Shared use trail and ancillary infrastructure including service tracks and waterway crossing structures

<i>heritage value’ and ‘walking tracks, seating, shelters, boardwalks, observation decks, bird hides”.</i>	
Nature-based tourism – The use of premises for a tourism activity including tourist accommodation, that is intended for the conservation, interpretation, and appreciation of environmental, cultural or heritage value, local ecosystem and attributes of the natural environment.	Dark Jungle public camping node

6.4 Zoning

6.4.1 Intent of conservation zone

Under the Planning Scheme, the site is located within the Conservation Zone. Wangetti South Section A is not located within a local plan area. The purpose of the Conservation Zone Code is to *“provide for the protection, restoration and management of areas identified as supporting significant biological diversity and ecological integrity”*.

The proposed development involves an Environmental Facility and Nature Based Tourism for the development of a shared use trail and service tracks which involves minimal disturbance to environmental integrity and maintains the high level of ecological amenity in the locality. The shared use trail will consist of natural ground and surface treatments, which will be a maximum of 1.5 m wide. The 1.5 m wide trail will be located within a 40 m survey corridor, referred to as the construction allowance corridor, to allow flexibility for the placement of infrastructure during the construction phase however will maintain minimal environmental disturbance.

The intent of the proposed development is to showcase the natural environment of Far North Queensland through nature-based tourism. It is, therefore, considered that the proposed development achieves the purpose of the Conservation Zone (refer to Figure 6-1).

6.4.2 Category of assessment

Environmental facility (Shared use trail, waterway crossings and service tracks) within conservation zone triggers **code assessable** development under the planning scheme. This planning report has addressed the following planning codes:

- Conservation zone
- Acid sulfate overlay
- Access, parking and servicing
- Bushfire hazard overlay
- Hillslopes overlay
- Environmental performance
- Filling and excavation
- Infrastructure works
- Landscape
- Vegetation management

Refer to Table 6-2 in this report.

Nature based tourism (Dark Jungle campsite) within conservation zone triggers **impact assessable** development under the planning scheme.

This planning report has addressed the following planning codes:

- Conservation zone
- Acid sulfate overlay
- Access, parking and servicing
- Bushfire hazard overlay
- Hillslopes overlay
- Environmental performance
- Filling and excavation
- Infrastructure works
- Landscape
- Vegetation management

Refer to Table 6-2 in this report. The proposed works has also been assessed against Council's Strategic Intent of the Planning Scheme – Environment and landscape theme and Economy theme (refer to Section 6.2 in this report).

The proposed works has been assessed against the Far North Queensland Regional Plan and State Planning Policies (refer To Section 7).

Appendix J shows the proposed works that are code assessable and impact assessable.

According to the Douglas Shire Regional Council Plan, a Material Change of Use for an Environmental Facility and Nature Based Tourism within the Conservation Zone triggers impact assessment. Therefore, the development application will be required to demonstrate compliance against the following codes defined in Table 6.2:

Table 6.2 Codes triggered by a material change of use for an environmental facility and Nature Based Tourism within the Conservation Zone

Codes	Comments
Conservation zone	An assessment of the proposed works against this code is presented in Appendix L
Acid sulfate overlay	An assessment of the proposed works against this code is presented in Appendix L
Access, parking and servicing	An assessment of the proposed works against this code is presented in Appendix L
Bushfire hazard overlay	An assessment of the proposed works against this code is presented in Appendix L
Hillslopes overlay	An assessment of the proposed works against this code is presented in Appendix L
Environmental performance	An assessment of the proposed works against this code is presented in Appendix L

Codes	Comments
Filling and excavation	An assessment of the proposed works against this code is presented in Appendix L
Infrastructure works	An assessment of the proposed works against this code is presented in Appendix L
Landscape	An assessment of the proposed works against this code is presented in Appendix L
Vegetation management	An assessment of the proposed works against this code is presented in Appendix L

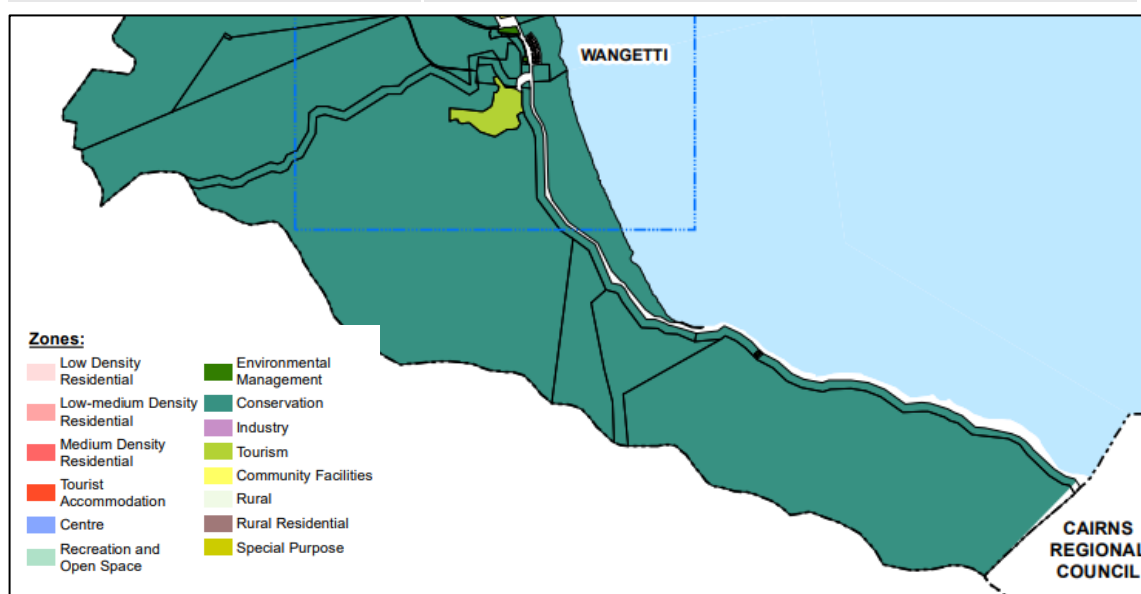


Figure 6-1 Site zoning map

6.4.3 State referral triggers

The development application also triggers the following State referral triggers which are code assessable:

- Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material Change of Use of premises near a state transport corridor. Parts of the trail are located within in Captain Cook Highway road reserve. The proposed works within the state-controlled road reserve have been discussed with DTMR and they have provided their support of the proposed works. The proposed uses are considered consistent with the intent of the road reserve. The development application has been assessed against State code 1: Development in a state-controlled road environment in Appendix B
- Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational Work that is tidal works or work I a coastal management district - Parts of the trail are located within in state coastal land within CMD. Assessment against the current State Development Assessment Provisions, State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in a separate report.

6.4.4 Public notification

The proposed development is subject to impact assessment and is therefore required to undergo a public notification period of fifteen (15) business days.

6.5 Relevant overlays

6.5.1 Acid sulfate soils overlay

In Queensland, coastal areas lower than 5 m AHD are likely to have ASS present. ASS can also be found buried beneath newer soils at elevations below 20 m AHD. Portions of the Wangetti South Section A project area are mapped as occurring below 5 m AHD or between 5 and 20 m AHD under the acid sulfate soil overlay. Therefore, ASS may be present in these areas.

The Douglas Shire Council ASS overlay indicates the northern section of the Wangetti South Section A project area near Wangetti township is mapped as being between 5 and 20 m AHD. No detailed ASS investigations have been undertaken to date for the Wangetti South Section A project area as this will be the responsibility of the nominated design and construction contractor. The Construction Contractor will develop an ASS Management Plan as part of the CEMP, in line with the *Queensland acid sulfate soils technical manual: soil management guidelines*.

Compliance has been demonstrated against the ASS Overlay Code, refer to Appendix L.

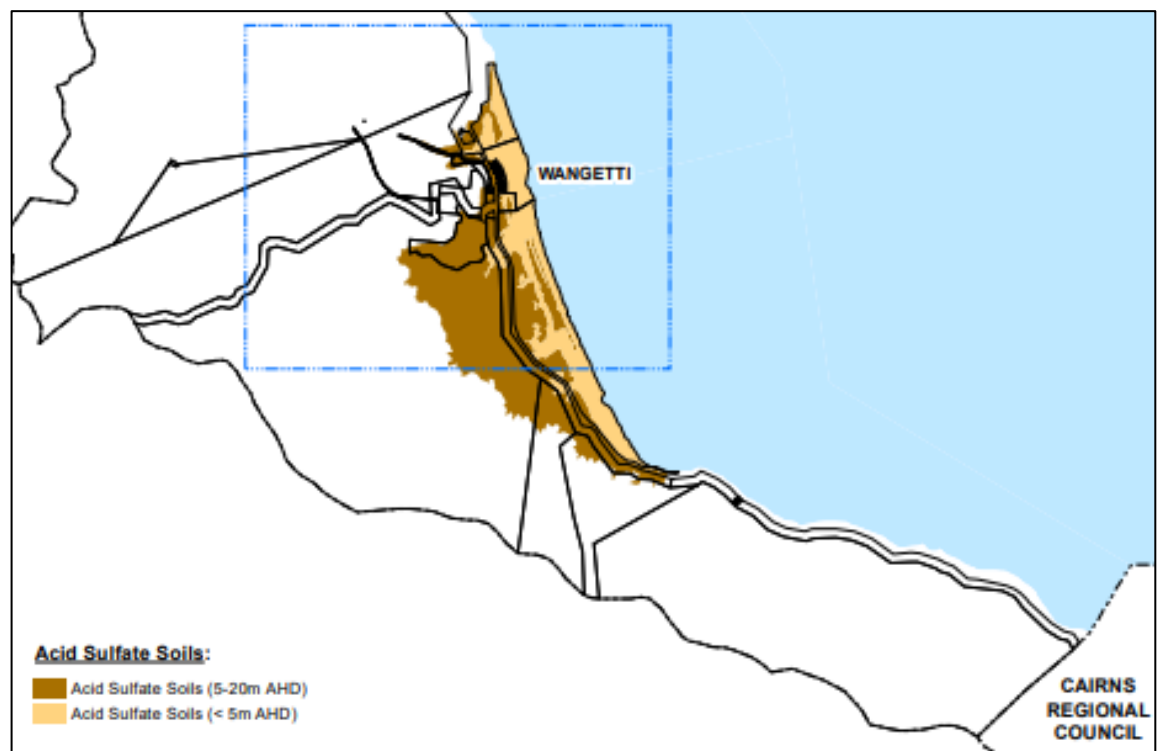


Figure 6-2 Acid sulfate soils overlay mapping

6.5.2 Bushfire hazard overlay

The project area is located within the very high, high and medium potential intensity and bushfire hazard buffer of the bushfire hazard overlay. During construction, construction activities will cease during adverse weather conditions (e.g. high wind) that have the potential to increase bushfire hazard. During operation, bushfire hazard will be managed through procedures in accordance with existing QPWS procedures, including:

- Installation of signage with a unique 'location identification number' to be quoted in case of an emergency
- Cancellations of bookings, closing sections of the trail to complete evacuation of patrons, depending on the levels of threat
- The trail will be a designated non-smoking area.

During construction, construction activities have the potential to increase bushfire hazard. The use of construction machinery within the project area have the potential to ignite fires and include, but not limited to mini excavators; chainsaws, compactors, general construction tools and equipment such as drills, saws, sanders, etc. A Preliminary CEMP has been developed to manage environmental risks to the project area during the construction phase.

To address bushfire risk during the operational phase, the following measures will be implemented:

- The operator will prepare and implement a bushfire management plan
- Signage will be installed along the trail of signage with a unique 'location identification number' to be quoted in case of an emergency
- During fire season an assessment will be made by the operator whether to open the trail to the public
- A network of service tracks has been included in the proposed development and provide access to the shared use trail for construction purposes, operational purposes, maintenance purpose and for emergency purpose. The service tracks will also be maintained during the operational phase to provide access to the trail by emergency services
- The trail will be a designated non-smoking area, minimising the potential for any fires to ignite from cigarettes
- The operator will be responsible for undertaken education and awareness programs for dealing with bushfires within the project area with the operational staff
- Aboriginal bushfire management measures will be adopted during the operational phase of the project
- QPWS rangers undertaking increase patrols in high-fire-risk areas (including camping areas) on high-fire-danger days
- The use of fire-retardant treated timbers in accordance with AS 3959 Construction of buildings in bushfire-prone areas. The use of fire-retardant paint finishes or 'intumescent' paint systems, which have been used and trialed successfully in a number of different external applications
- Management and maintenance of vegetation in and around trail to reduce the build-up of combustible vegetation.

Weed management will be carried out during the operational phase. Compliance has been demonstrated against the Bushfire Hazard Overlay Code, refer to Appendix L.

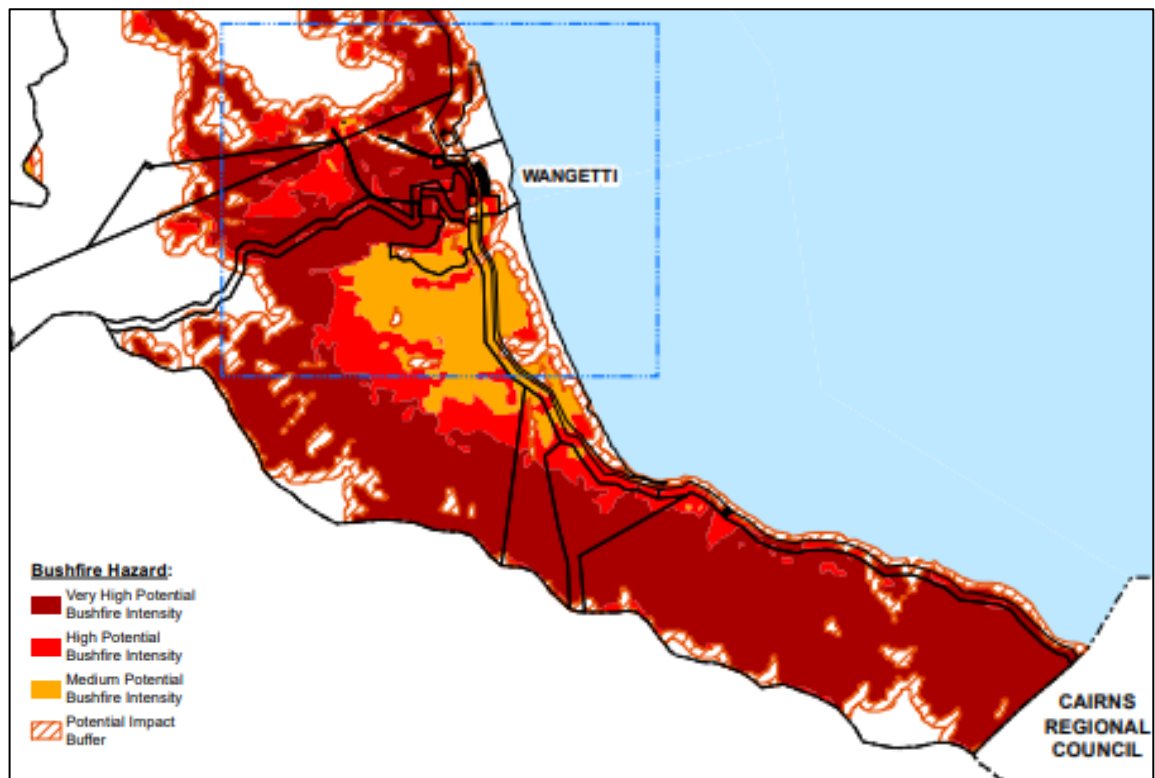


Figure 6-3 Bushfire hazard overlay mapping

6.5.3 Coastal processes overlay

Given the location of the proposed development within a coastal area, the site contains a small portion of coastal management district towards the foreshore. Erosion and sediment control measures will be developed in an Erosion Sediment and Control Plan by the construction contractor and then implemented to mitigate any potential impacts to water quality and bed and banks (substrate and vegetation present) of adjoining aquatic habitats that may provide habitat and resources. This plan will include:

- Ensuring all temporary erosion and sediment control devices are maintained by the contractor until disturbed areas are stabilised. Clean out any controls clogged with sediment or debris
- Managing stormwater runoff to minimise the potential for erosion
- Scheduling construction within waterways during dry periods.

Compliance has been demonstrated against the Coastal Processes Overlay Code, refer to Appendix L.

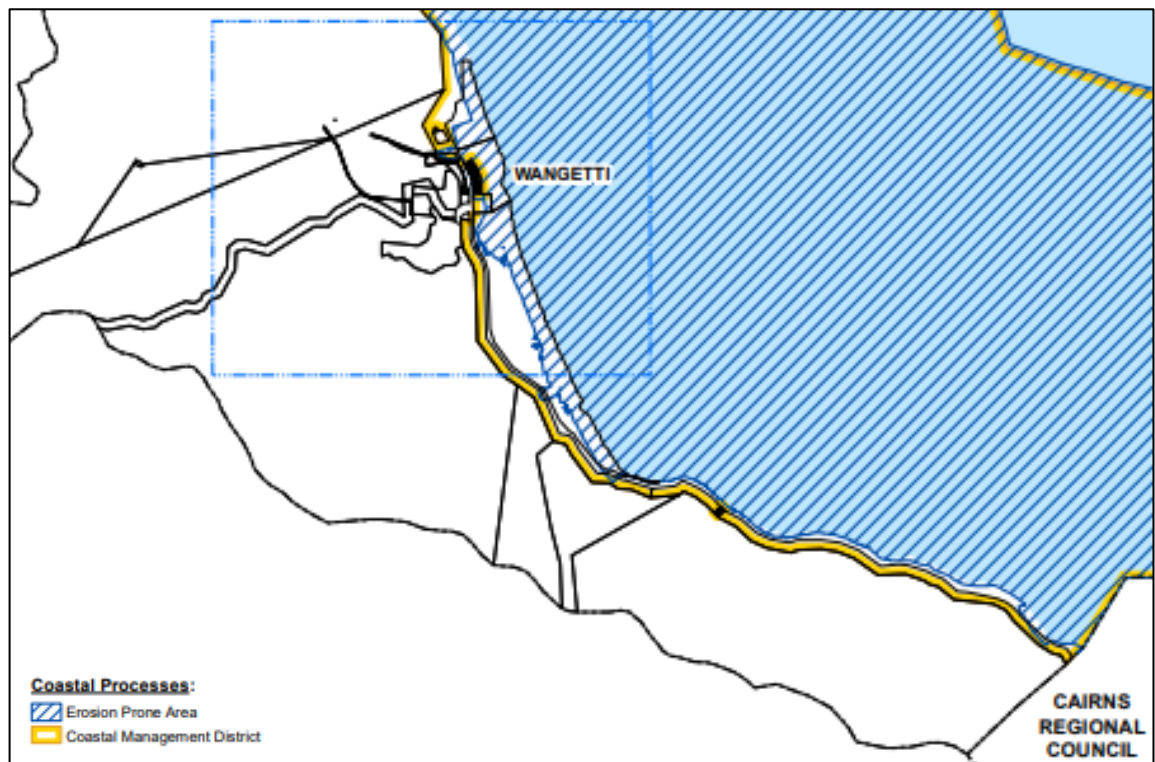


Figure 6-4 Coastal processes overlay

6.5.4 Flood and storm tide inundation overlay

The project area is impacted by the floodplain assessment overlay within the flood and storm tide inundation overlay. The purpose of this overlay is to ensure development design and layout minimises the risk of flood or storm tide inundation.

The project has been designed such that it is responsive to the natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland. World Trail were appointed to design the alignment and completed a walkthrough, working closely with Traditional Owners, specialist consultants and engineers.

Construction and operational activities will cease during adverse weather conditions including flood or Storm tide.

Compliance has been demonstrated against the Flood and Storm Tide Inundation Overlay Code, refer to Appendix L.

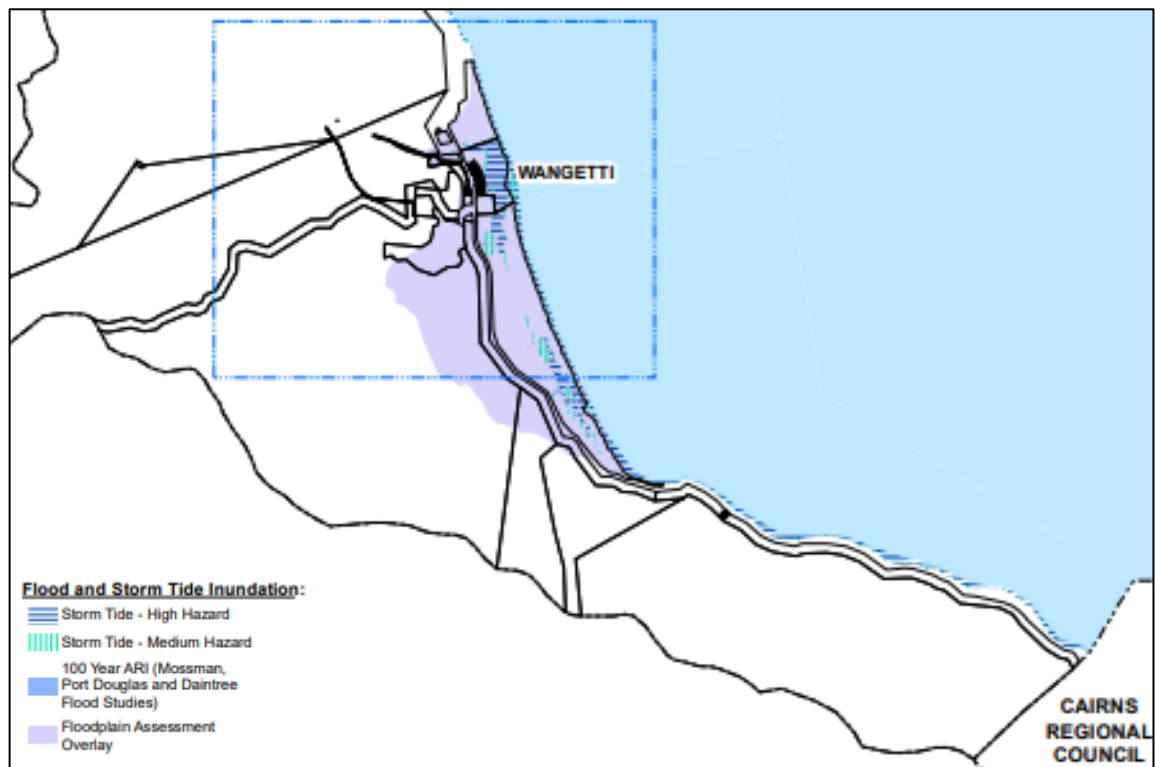


Figure 6-5 Flood and storm tide inundation overlay mapping

6.5.5 Hillslopes overlay

The project area is located within the hillslopes overlay. The project has been designed such that it is responsive to the natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland. World Trail were appointed to design the alignment and completed a walkthrough, working closely with Traditional Owners, specialist consultants and engineers. The proposal will ensure the safety of people, property and environment in that:

- The project will abide by environmental impact best practice guidelines by using low impact construction methods
- An assessment of the likely environmental impacts has been undertaken and mitigation measures/controls have been developed to avoid, mitigate or minimise these impacts
- The project and its ancillary facilities will be low-impact and, to the greatest extent possible, ecologically sustainable and preserve and protect community resources.

Compliance has been demonstrated against the Hillslopes Overlay Code, refer to Appendix L.

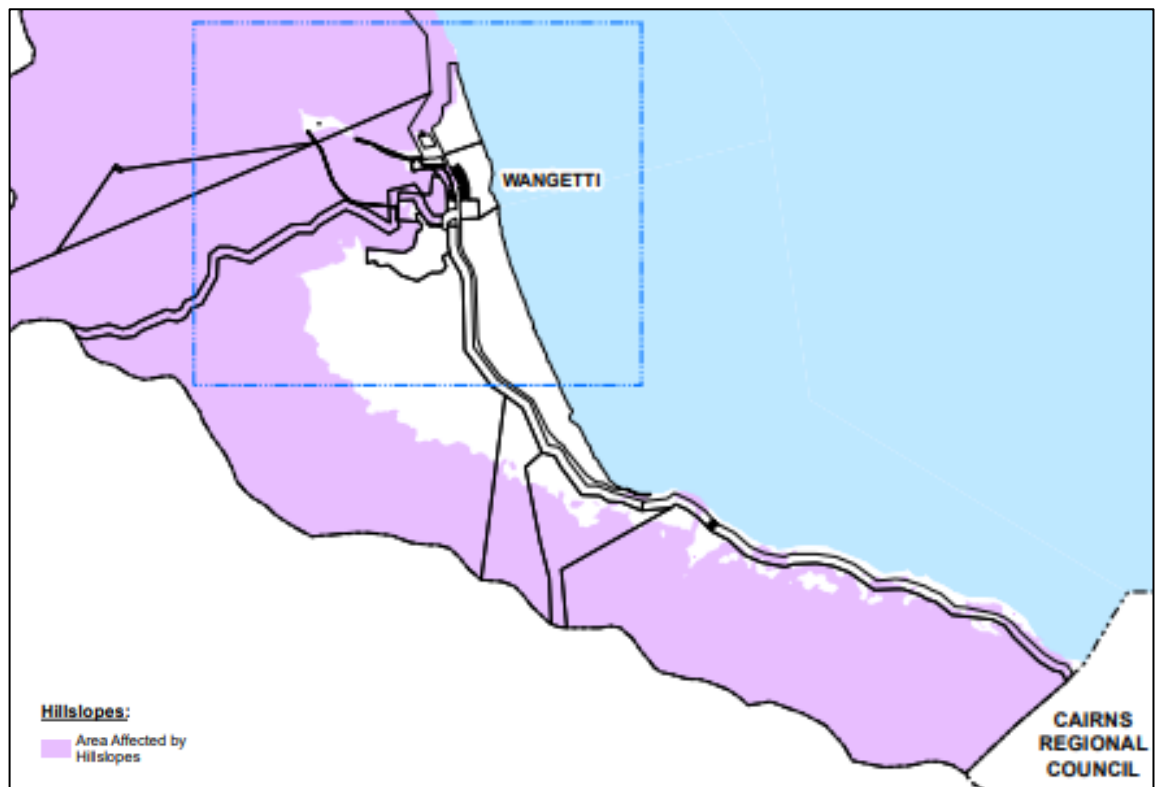


Figure 6-6 Hillslopes overlay mapping

6.5.6 Landscape values overlay

The project area is identified as containing high landscape value. The proposed development is considered to enhance the landscape value by providing a high quality nature based tourism facility to showcase the natural environment. The project has been designed such that it is responsive to the natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland. World Trail were appointed to design the alignment and completed a walkthrough, working closely with Traditional Owners, specialist consultants and engineers. The proposal will ensure the landscape values are enhanced, in that:

- The project will abide by environmental impact best practice guidelines by using low impact construction methods
- An assessment of the likely environmental impacts has been undertaken and mitigation measures/controls have been developed to avoid, mitigate or minimise these impacts:
 - Where the trail is in close proximity to areas of high environmental values, qualified environmental specialists will likely be present to provide assistance in micro-siting the trail to avoid impacts to these values including qualified fauna spotters
 - Any clearing required within a high risk flora trigger area will require preparation of a protected plants flora survey report prepared within the prescribed currency period and the submission of an exempt clearing permit submitted more than seven days prior to clearing commences. Where clearing is required within 100 m of confirmed protected plant locations, the preparation of a protected plant clearing permit and Protected Plant Impact Management Plan will be submitted to DES more than 40 days before clearing commences. Where protected flora species are found during pre-clearance surveys (including the Ant Plant and Orange Tamarind) works are required to avoid clearing the protected flora species where possible

- The project and its ancillary facilities will be low-impact and, to the greatest extent possible, ecologically sustainable and preserve and protect community resources.

Compliance has been demonstrated against the Landscape Values Overlay Code, refer to Appendix L.



Figure 6-7 Landscape values

6.5.7 Natural areas overlay

The project area is located within the natural areas overlay. The proposed Wangetti Trail development has undertaken thorough environmental assessment to ensure all environmental values are maintained and enhanced during construction, operation and maintenance phases. The proposal will ensure the non-urban waterways are maintained and enhanced, in that:

- Erosion and sediment control measures will be developed in an Erosion Sediment and Control Plan by the construction contractor and then implemented to mitigate any potential impacts to water quality of adjoining aquatic habitats that may provide habitat and resources
- Storing fuels, chemicals, wastes and other potentially environmentally hazardous substances in contained areas will occur away from watercourses and managed through a Hazardous Substances Management Plan.

Compliance has been demonstrated against the Natural Areas Overlay Code, refer to Appendix L.

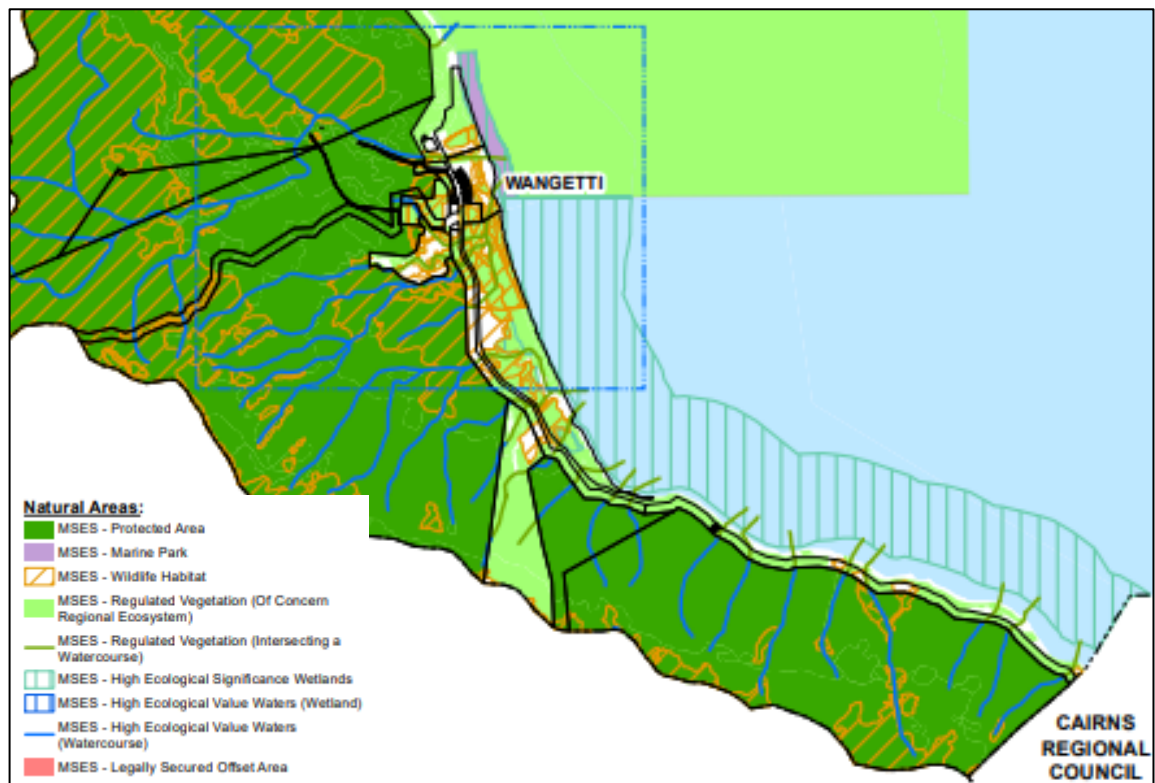


Figure 6-8 Natural areas overlay

6.5.8 Transport network overlay

Wangetti South Section A is located within the transport network overlay in relation to the Captain Cook Highway which is located towards the eastern extent of the site. A future principle pedestrian route is identified along the Captain Cook Highway. Given the nature of the proposed development, being for a shared use trail and public camping node, it is not considered that the development will impact on the function and form of the transport network.

Compliance has been demonstrated against the Transport Network Overlay Code, refer to Appendix L.

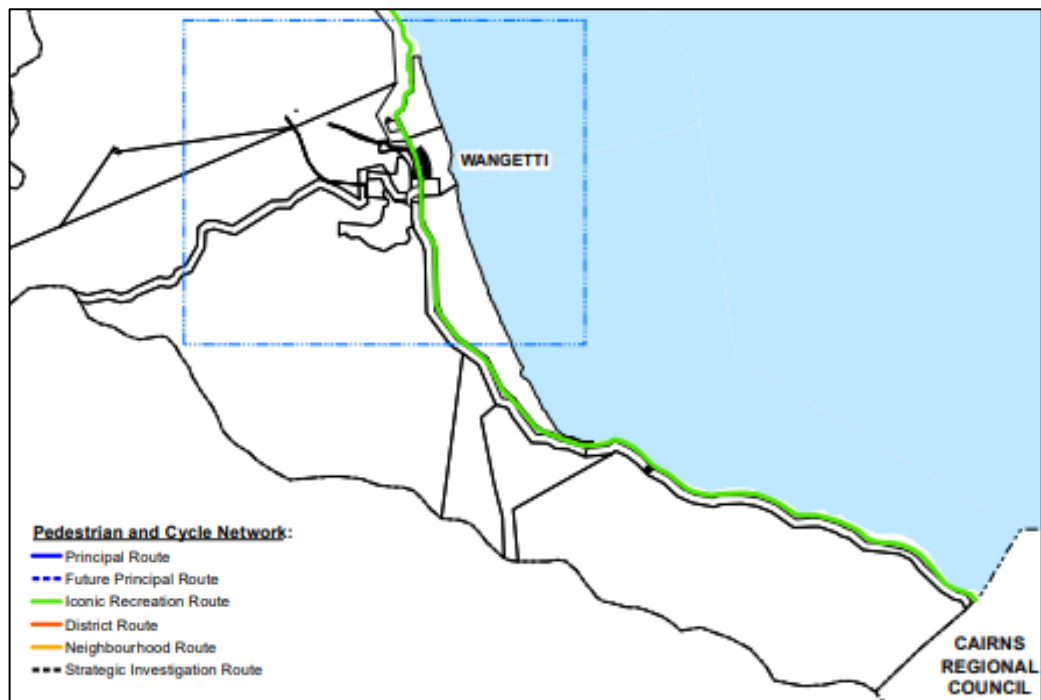


Figure 6-9 Transport network (pedestrian and cycle) overlay mapping

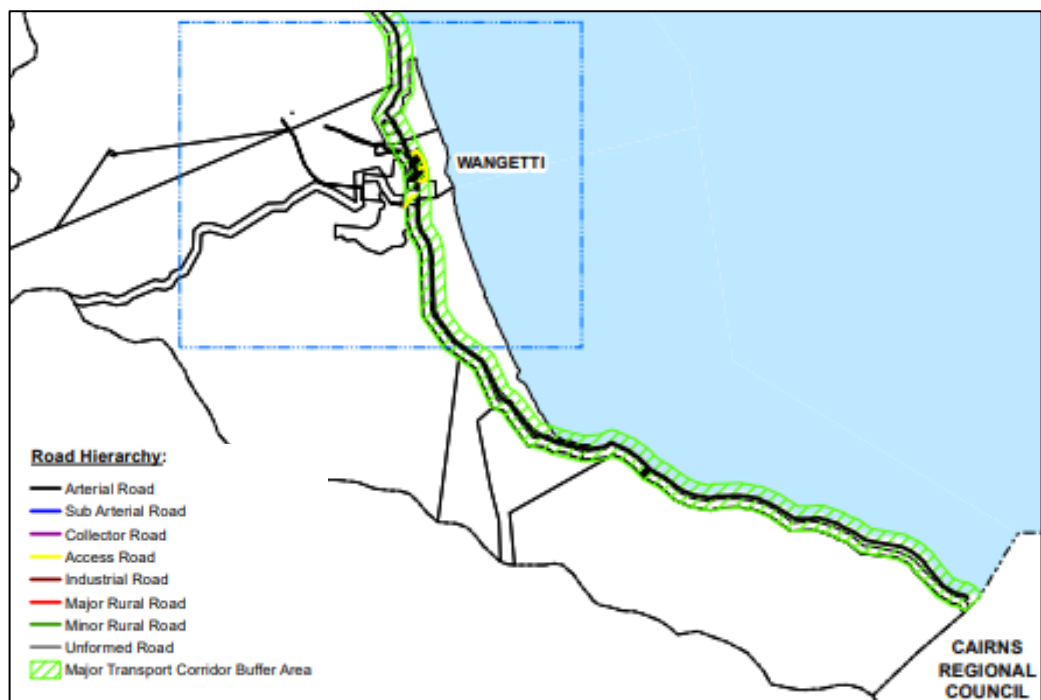


Figure 6-10 Transport network (road hierarchy) overlay mapping

7. State planning legislation – Wangetti South Section A

7.1 Planning Act 2016

'Development' is defined under Section 44 of the *Planning Act 2016* and includes Building Work, Plumbing or Drainage Work, Operational Work, Reconfiguring a Lot and making a Material Change of Use of premises.

The proposed development subject to this application is considered a Material Change of Use in that it is "*the start of a new use of the premises.*"

The proposed development subject to this application is also considered Operational Work in that it is "*work, other than building work or plumbing or drainage work, in, on, over or under premises that materially affects premises or the use of premises.*" This is associated with the state referral triggers:

- Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material Change of Use of premises near a State transport corridor. Parts of the trail are located within in Captain Cook Highway road reserve
- Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational Work that is tidal works or work I a coastal management district - Parts of the trail are located within in state coastal land within CMD. Assessment against the current State Development Assessment Provisions, State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in a separate report.

7.1.1 State Assessment and Referral Agency

A review of the referral agency requirements under Sections 9 and 10 of the *Planning Act 2016* has been undertaken for Wangetti South Section A. A summary of the development's referral requirements is provided in Table 7.1.

Submission of the application to these referral agencies will be undertaken in accordance with the Development Assessment Rules.

Table 7.1 State Referrals for Wangetti South Section A

Referral requirement	Relevance to the development	Referral agency and role	Comments
Material Change of Use triggers			
Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material Change of Use of premises near a State transport corridor	Parts of the trail are located within in Captain Cook Highway road reserve. As discussed in Section 3.3	The chief executive	Assessment against the current State Development Assessment Provisions, State Code 1: Development in a State-Controlled Road Environment has been undertaken, refer to Appendix B. The proposed works within the state-controlled road reserve have been discussed with DTMR and they have

Referral requirement	Relevance to the development	Referral agency and role	Comments
			provided their support of the proposed works. The proposed uses are considered consistent with the intent of the road reserve. The development application has been assessed against State code 1: Development in a state-controlled road environment in Appendix B.
Operational Work triggers			
Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational Work that is tidal works or work in a coastal management district	Parts of the trail are located within in state coastal land within CMD.	The chief executive	Assessment against the current State Development Assessment Provisions, State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in a separate report.

7.2 State Planning Policy 2017

The *State Planning Policy* (SPP) sets out the State's interests in land use planning and development across Queensland. The SPP was updated and introduced in 2017 to coincide with the release of the *Planning Act 2016*. The SPP must be considered as part of any development application under the *Planning Act 2016*.

The SPP identifies 17 State interests categorised into 5 broad themes, being:

- Liveable communities and housing
- Economic growth
- Environment and heritage
- Safety and resilience to hazards
- Infrastructure.

In accordance with Section 2.1 of the *Douglas Shire Planning Scheme*, all aspects of the April 2016 SPP have been appropriately integrated or are not relevant to Douglas Shire. As the current SPP version is dated July 2017, the State interests are required to be addressed individually.

A State interest review against the assessment benchmarks has been undertaken in Table 7.2.

Table 7.2 State Interest Assessment Benchmarks

State Interest	Response
Liveable Communities and Housing	
Liveable Communities This State interest aims to ensure that <i>“planning delivers liveable, well designed and services communities that support wellbeing and enhance quality of life”</i> .	Although not applicable, the proposal complies with the intent as the Wangetti Trail will enhance conservation and protection of a cherished part of Tropical North Queensland and deliver environmental, social and economic benefits to local communities and to Queensland,
Housing Supply and Diversity This State interest aims to ensure that <i>“diverse, accessible and well serviced housing and land for housing is provided”</i> .	The proposal is for an environmental facility and, therefore, this State interest has no relevance to the proposal.
Economic Growth	
Agriculture This State interest aims to ensure that <i>“planning protects the resources on which agriculture depends and supports the long-term viability and growth of the agricultural sector”</i> .	The land surrounding the proposal is generally zoned conservation of urban zones. There is no agricultural land within the locality of the proposed development and, therefore, this State interest has no relevance to the proposed designation.
Development and Construction This State interest aims to ensure that a broad range of economic development opportunities can grow in response to current and projected economic demand, and to meet the needs of the communities in which they operate.	The Wangetti Trail will enhance conservation and protection of a cherished part of Tropical North Queensland and deliver economic benefits to local communities and to Queensland, including: <ul style="list-style-type: none"> • Long term job and business opportunities for Traditional Owners and their future generations • Underpinning long-term growth and liveability in the Tropical North and builds community resilience for their respective regional communities • Supporting Traditional Owner businesses, existing local businesses and new business opportunities • New local jobs for development and operation of tour facilities created, including opportunities to develop local skills and increase diversity of regional jobs • Indigenous business opportunities for construction, maintenance, guided walks and other activities.
Mining and Extractive Resources This State interest aims to ensure that the issues and opportunities generated by resources development are considered as part of the planning process.	The proposal does not involve a resource activity and is not located within an area onsite impacted by the State interest. Therefore, this State interest has no relevant to the proposal.

State Interest	Response
<p>Tourism</p> <p>The State interest in tourism seeks to support these economic opportunities for local communities, regions and the state.</p>	<p>The project is being delivered by TDPD as part of an adventure-based ecotourism development in North Queensland. The shared use trail will provide walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including the Wet Tropics of Queensland (Wet Tropics) and national parks.</p> <p>The proposal complies with the intent as the Wangetti Trail project aims to deliver an iconic international ecotourism experience with direct economic benefits to regional Queensland and local Traditional Owners, potentially attracting up to 28,000 local and international visitors annually. It is estimated that thousands of walkers and mountain bike riders will visit the Wangetti Trail every year.</p>
Environment and Heritage	
<p>Biodiversity</p> <p>This State interest aims to safeguard biodiversity at the national, state and local level, and to build ecological resilience.</p>	<p>The current proposal has considered matters of national environmental significance, State environmental significance and local environmental significance. The project has been designed such that it is responsive to the natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland. World Trail were appointed to design the alignment and completed a walkthrough, working closely with Traditional Owners, specialist consultants and engineers. The project and its ancillary facilities will be low-impact and, to the greatest extent possible, ecologically sustainable and preserve and protect community resources.</p>
<p>Coastal Environment</p> <p>This State interest aims to ensure that the coastal environment, including offshore islands, along with its natural processes and resources, is appropriately considered.</p>	<p>The proposal is located in the coastal zone. Erosion and sediment control measures will be developed in an Erosion Sediment and Control Plan by the construction contractor and then implemented to natural processes of adjoining aquatic habitats that may provide habitat and resources.</p>
<p>Cultural heritage</p> <p>This State interest aims to ensure that development affecting a place of cultural heritage significance supports its long-term conservation through preservation, restoration, reconstruction or adaptive reuse and renewal.</p>	<p>During the development of the trail, cultural heritage representatives were engaged to provide advice regarding the significant Aboriginal areas, significant Aboriginal objects and or evidence, of archaeological or historic significance along the trail.</p> <p>A search of the DATSIP Cultural Heritage database was undertaken on 12 December 2019 to identify recorded Indigenous cultural sites within 20 km of the project area. The DATSIP search identified 46 recorded cultural heritage sites, which are dispersed along the entirety of the Wangetti South Section A. The sites are recorded to contain a variety of significant features including scarred trees, shell middens, artefact scatter, grinding grooves, resource and quarry areas, story places, paintings and burial places.</p> <p>Due to the predominantly undeveloped nature of the project area it cannot be assumed that the sites identified within the DATSIP cultural heritage search are a conclusive representation of all archaeological materials and sites within the area. The presence of multiple identified sites suggests that</p>

State Interest	Response
	<p>additional undetected sites of cultural significance may exist throughout the project area.</p> <p>The project would constitute a Category 5 development and should not proceed without cultural heritage assessment.</p> <p>The ongoing nature of determining cultural heritage is acknowledged.</p>
<p>Water Quality</p> <p>This State interest aims to ensure the enhancement of the environmental values of Queensland waters.</p>	<p>The enhancement of environmental values has been considered and appropriate stormwater design will be adopted as part of the proposal. The proposal is not expected to result in a meaningful increase in pervious surfaces. There is expected to be negligible impact to the existing stormwater drainage systems onsite. Therefore, the proposal does not involve any changes to the existing lawful points of discharge.</p>
Safety and Resilience to Hazards	
<p>Emissions and hazardous activities</p> <p>This State interest aims to ensure that the risk to the health and safety of communities and individuals, and the natural and built environment is adequately managed to avoid potential adverse impacts.</p>	<p>This State interest has no relevance to the proposed development, as there will be no hazardous materials stored onsite.</p>
<p>Natural hazards, risk and resilience</p> <p>This State interest aims to ensure that natural hazards are properly considered, community resilience is increased, and hazards are avoided or the risks are mitigated to an acceptable or tolerable level.</p>	<p>The Wangetti South Section A is impacted by the following natural hazard, risk and resilience layers:</p> <ul style="list-style-type: none"> • bushfire prone areas • erosion prone area • landslide hazard area <p>A risk assessment has been undertaken as part of the development of the Construction Environmental Management Plan (CEMP) prepared for the project. The risk assessment identifies the potential risks associated with natural hazards and provides mitigation measures to mitigate coastal hazard risk to an acceptable or tolerable level where avoidance of the coastal hazard area is unachievable and accepting residual risk in a coastal hazard area and maintain acceptable or tolerable land uses in existing areas.</p> <p>The CEMP provides initial and residual risk ratings for before and following implementation of the recommended mitigation measures. The CEMP sees all residual risk ratings for natural hazard areas as low risk.</p> <p>The proposed works include in minimal built infrastructure and will not hinder disaster management capacity and capabilities. The works may improve disaster management through the formalization and upgrade works to existing service tracks that will allow for access to the shared use trail and camp site for construction, operational, maintenance and emergency purposes.</p> <p>The proposed works will involve a limited linear trail that will retain as much natural vegetation as possible, the works will not interfere with canopy</p>

State Interest	Response
	coverage where possible and appropriate erosion and sediment control devices will be implemented where vegetation is cleared. The project will not increase the exposure or severity of a natural hazard and its potential for damage of the site.
Infrastructure	
Energy and Water Supply This State interest aims to ensure that provision is made for safe, reliable and affordable energy and water supply to communities.	The proposal does not require any alteration to existing energy and water supply arrangements and, therefore, this State interest has no relevance to the proposal.
Infrastructure integration This State interest aims to ensure that the benefits of past and ongoing investment in infrastructure and facilities are maximised through integrated land use planning.	This State interest has no relevance to the proposed development as the proposal will not have a significant impact on surrounding infrastructure.
State Transport Infrastructure This State interest aims to ensure that developments are integrated with state transport infrastructure to ensure transport networks are used safely, efficiently and sustainably, and our communities are connected, prosperous and liveable.	This State interest has no relevance to the proposal as the proposal will not increase the number of vehicles on a State-controlled road. The proposed is for a shared (bicycle and pedestrian) trail.
Strategic airports and aviation facilities This State interest aims to ensure that development does not impact on the safe and efficient operation of these facilities will support continued growth of the state's economy, regional communities and national defence.	The proposal complies as the maximum building height will not change (8.5 m) and will not compromise the safety and efficiency of aviation facilities.
Strategic Ports This State interest aims to ensure that development does not impact on the safe and efficient operation of sea ports will support continued growth of the state economy and the national defence system.	The subject site is not identified as being near a strategic port, therefore, this State interest has no relevance to the proposal. The proposal will not compromise the operation of a strategic port. .

7.3 Far North Queensland Regional Plan

The development is not identified as being located within a current regional plan. The North Regional Plan is currently being drafted and, once adopted, the development will be included with its jurisdiction.

The draft North Queensland Regional Plan provides a regional framework for growth management, and sets the planning direction of sustainable growth, global economic competitiveness and high quality living. The development is included within the boundaries of the draft North Queensland Regional Plan.

The development will be located within the Regional landscape and Rural Production Area (RLRPA), which identifies land to be protected from inappropriate development, particularly urban and rural residential development. The proposed development complies with the intent in that the Wangetti Trail delivers an ecotourism experience that enhances conservation and protection efforts of the regional landscape.

8. Legislation triggers for Wangetti South Section A

8.1 Wangetti Trail South Section A statutory framework

Given the project area is located over a number of different land tenures and is located within a protected area, a summary of the statutory framework associated with establishing the Wangetti South Section A is summarised in Table 8.1 below. The statutory framework includes Commonwealth Government, State Government and Local Government approvals.

Table 8.1 Approvals applicable to Wangetti South Section A

Applicable Legislation	Permit	Comments
<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>	EPBC Act referral Controlled Action	TDPD in the process of securing approval from DAWE for Wangetti South Section Wangetti South Section is considered to involve undertaking an action which has, will have, or is likely to have, an impact on a MNES. Therefore, referral of the project to DAWE under the EPBC Act was required.
<i>Aboriginal Cultural Heritage Act 2003</i>	A Cultural Heritage Management Plan (CHMP) or similar may need to be established with the relevant Aboriginal parties	TDPD in the process of addressing this with the relevant Aboriginal parties for Wangetti South Section A A Cultural Heritage Management Plan will be established with the relevant Aboriginal parties for the project. The Department of Aboriginal and Torres Strait Islander Partnerships Duty of Care Guidelines are required to be followed to assist in conducting due diligence.
<i>Native Title Act 1993</i>	Indigenous Land Use Agreement (ILUA) or notification procedures	TDPD in the process of addressing this with the relevant Aboriginal parties for Wangetti South Section A TDPD has been engaging with Traditional Owners who have a native title claim or assert a native title interest in relation to trail area. To address native title requirements for the project, Indigenous Land Use Arrangements (ILUA) will be negotiated between native title parties and the State accordingly.
<i>Wet Tropics Management Plan 1998</i>	Wet Tropics permit under Part 4, Division 1, Section 45 of the Wet Tropics Management Plan 1998 to allow for the proposed works to occur within the Wet Tropics Management Zone.	Approval has been secured from the Wet Tropics Management Authority Part of the Wangetti South Section A is located within the Wet Tropics World Heritage Area and requires a permit under Part 4, Division 1, Section 45 of the Wet Tropics Management Plan 1998 (Wet Tropics World Heritage Protection Management Act 1993) to allow for the proposed works to occur within the Wet Tropics Management Zone.
<i>Nature Conservation Act 1992 (NC Act)</i>	s34 of the NC Act, a lease, agreement, license, permit or other authority over, or in relation to land in a protected area	TDPD in the process of addressing supporting documentation for this approval <i>Nature Conservation Act 1992 (NC Act)</i> – Subject to s34 of the NC Act, a lease, agreement, license, permit or other

Applicable Legislation	Permit	Comments
		authority over, or in relation to land in a protected area may be granted if the activity is consistent with the management principles for the area and, if a management plan has been approved for the area, the management plan. The grant of an authority will be considered by the Chief Executive of the DES for the construction of Wangetti Trail and public camping areas in the protected area estate.
<i>Planning Regulation 2017 and Coastal Protection and Management Act 1995</i>	Development permit for operational works for interfering with quarry material on state coastal land above the high-water mark within a Coastal Management District (CMD)	<p>This forms part of this development application</p> <p>A development permit for Operational Works for interfering with quarry material on State coastal land above the high-water mark within a Coastal Management District (CMD) will be required for parts of the Wangetti South Section within State coastal land and within the CMD.</p>
<i>Nature Conservation Act 1992 (NC Act)</i>	A Species Management Program	A Species Management Program will be required for the project to allow for tampering with an animal breeding place for endangered, vulnerable and near threatened and special least concern fauna species protected under the NC Act.
<i>Planning Regulation 2017 VM Act</i>	Operational works development approval clearing of native vegetation or a clearing exemption	<p>The VM Act does not apply to any native vegetation clearing within a protected area (i.e. national park) under the <i>Nature Conservation Act 1992</i>.</p> <p>Under Schedule 21, Part 1, Item 1 (19) of the Planning Regulation 2017, an exemption applies to native vegetation clearing that the VM Act does not apply to or affect. Under Schedule 21, part 1, section 1, item 14(b) of the <i>Planning Regulation 2017</i>, an exemption applies for the clearing of native vegetation for constructing or maintaining Infrastructure stated in Schedule 5 of the Planning Regulation, where the infrastructure is government supported transport. As previously advised the proposal is considered to be government supported transport infrastructure.</p>
<i>Planning Regulation 2017 and Fisheries Act 1994</i>	Development permit for operational works for constructing/raising waterway barrier works	<p>This will be addressed in a separate development application package if required.</p> <p>A Development Permit for Operational Works for constructing/raising waterway barrier works will be required for works proposed over waterways where they do not meet the accepted development requirements for operational work that is constructing or raising waterway barrier works. Boulder crossings are considered to require this approval.</p>
<i>Water Act 2000</i>	<p>Riverine protection permit under the <i>Water Act 2000</i></p> <p>Riverine Protection Permit (RPP) Exemption Requirements</p>	DSDT/TDPD is an entity under schedule 2 of the Riverine Protection Permit (RPP) Exemption Requirements and therefore can follow the RPP exemption requirements WSS/2013/726 for works proposed in a watercourse.

Applicable Legislation	Permit	Comments
<i>Planning Act 2016</i>	Material Change of Use Development Permit	This forms part of this development application A Material Change of Use Development Permit assessable under the Douglas Shire Council planning scheme will be required to establish the project within Wangetti South Section A.
<i>Environmental Offsets Act 2014</i>	Environmental offset requirements under the <i>Environmental Offsets Act 2014</i>	DES has advised that state environmental offsets will not be triggered for Wangetti South Section which will be administered under s34 and s35 of the NC Act.
<i>Transport Infrastructure Act 1994</i>	Road corridor permit	Parts of Wangetti South are located within State controlled road reserve namely Captain Cook Highway which is managed by DTMR. Works within a state-controlled road reserve triggers a road corridor permit from DTMR.
<i>Land Act 1994</i>	Permanent closure or short-term occupation within road reserves Owner's consent from DRNME	Permanent closure or short-term occupation within road reserves will be required for the project. Owner's consent for works on state land from former DNRME (now DR) will also be required for the project.
<i>Environmental Protection Act 1994</i>	General Environmental Duty under the <i>Environmental Protection Act 1994</i>	The project will be required to comply within the General Environmental Duty. Under the provisions of the EP Act, all persons, whether undertaking an activity authorised under the EP Act, are required to comply with the General Environmental Duty. The duty requires that: <i>'A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.'</i>
<i>Biosecurity Act 2014</i>	General Biosecurity Obligation (GBO) under the Biosecurity Act 2014	During the construction and operation phase of the project activities are to be undertaken in accordance with the General Biosecurity Obligations whereby all reasonable and practical measures are to be undertaken to prevent or minimise biosecurity risks. Where activities are proposed contrary to the restriction for each category under the Act, a Restricted Matter Permit is required.

9. Conclusion

This planning report forms part of the development application package that seeks a development permit for a Material Change of Use to establish an environment facility and nature-based tourism within Wangetti South Section A. This development application package relates only to components of the Wangetti South Section A located within Wangetti within Douglas Shire Council LGA. The Material Change of Use component constitutes impact assessable development under the Douglas Shire Council Planning Scheme for the establishment of an environment facility and nature-based tourism.

The proposed works also triggers the following state referrals and they have considered in this planning report:

- premises near a State transport corridor. Parts of the trail are located within in Captain Cook Highway road reserve. The proposed works within the state-controlled road reserve have been discussed with DTMR and they have provided their support of the proposed works. The proposed uses are considered consistent with the intent of the road reserve. The development application has been assessed against State code 1: Development in a state-controlled road environment in Appendix B.
- Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational Work that is tidal works or works in a coastal management district - Parts of the trail are located within in state coastal land within CMD. Assessment against the current State Development Assessment Provisions, State Code 8: Coastal Development and Tidal Works has been undertaken. This is included in a separate report in Appendix C.

From the preceding information, this report finds the proposed Wangetti South Section A over the locality consistent with the intent of the conservation zone, surrounding locality, and the applicable local and State Planning instruments.

The majority of Wangetti South Section A is located on national park and has the support from the following parties: Wet Tropics Management Authority, DES, DTMR and traditional owners. The project aligns with the Far North Queensland Regional Plan 2009–2031 tourism development objectives to develop Far North Queensland into a world-class destination for nature-based tourism opportunities. The project will provide a low-impact, nature-based tourism attraction that will showcase the natural and cultural assets of Far North Queensland, while educating visitors about the values that makes Far North Queensland a region of outstanding ecological significance. Potential impacts arising from the construction and operational phases of the project will be managed through the implementation of a number of management plans. It is recommended that this proposal is approved, subject to reasonable and relevant conditions.

10. References

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Appendices

Appendix A – Pre-lodgement Advice

**Queensland Treasury**

Our reference: 1908-12771 SPL
Your reference: Wangetti Trail SP2

17 June 2020

Department of State Development, Tourism and Industry
C/- Sarah Wilson (GHD Pty LTD)
Level 13 - The Rocket, 203 Robina Town Centre Drive
ROBINA QLD 4226
Sarah.Wilson@ghd.com

Attention: Sarah Wilson

Dear Sir/Madam

Further pre-lodgement advice

Thank you for your correspondence received on 8 June 2020 in which you sought pre-lodgement advice from the State Assessment and Referral Agency (SARA) regarding the proposed development described below.

Reference information

Departmental role:	Referral agency/Assessment manager
Departmental jurisdiction:	Material change of use <ul style="list-style-type: none">• Material change of use of premises near a State transport corridor• Material change of use involving work in a coastal management district (if applicable) Operational work <ul style="list-style-type: none">• Operational work that is constructing or raising waterway barrier works• Operational work that is tidal works or work in a coastal management district

Location details

Street address:	Road reserves - Captain Cook Highway (Mowbray to Palm Cove) and Tresize Road Freehold lots - Captain Cook Highway, Mowbray Captain Cook Highway, Wangetti Reserves - Captain Cook Highway, Mowbray; Captain Cook Highway,
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Ellis Beach, Captain Cook Highway, Wangetti; 4035 Captain Cook Highway, Wangetti; Quaid's Road, Wangetti

Land lease – Captain Cook Highway, Ellis Beach

Easement – Captain Cook Highway, Wangetti

National Park – Mowbray River Road, Cassowary; Captain Cook Highway, Mowbray

State land – Wangetti

Real property description:

Freehold lots - 119SR598; 47SP307120; 32RN7691

Reserves - 117SR898; 31SP129117; 39SP309107; 6SP309107; 3SP309107; 4SP309107; 32SP165924; 12AP19345; 15AP19345; 16AP19345; 23AP19345; 24AP19345

Land lease – 13NR5512

Easement - AP746002 within 21NR5583

National Park - 122NPW91; 174NPW930; 63AP19345

State land - 12USL9994; 9USL9994; 8USL9994; 1CP910509; 48AP16233; 2AP19233; 1SP309094; 2SP309094

Local government area:

Cairns Regional Council, Douglas Shire Council and Mareeba Shire Council

Existing use:

Various uses/tenures (Freehold, Road reserve, National Park, State land, Land lease)

Details of proposal

Development type:

Material change of use and Operational work

Development description:

Department of State Development, Tourism and Industry is proposing to establish the Wangetti Trail, a 94 km dual use trail (mountain bikers and hikers) from Palm Cove in the south to Port Douglas in the north.

The project is split into two sections, with section 2 (SP2) located between Mowbray and Palm Cove and the subject of this pre-lodgement advice.

SP2 comprises of eight sections:

- Section 1 - Palm Cove
- Section 2 - Macalister Range/ Wangetti
- Section 3 - Wangetti
- Section 4 - Wangetti
- Section 5 - Wangetti
- Section 6 - Wangetti
- Section 7 - Wangetti

- Section 8 - Mowbray

Supporting information

Drawing/report title	Prepared by	Date	Reference no.	Version/issue
Memorandum - request for more Further pre-lodgement written advice	GHD	8 June 2020	4132458	-
Wangetti Trail detailed designs (Attachment 3)	Queensland Government	Various	Various	Various
Concept designs for waterway crossings (Attachment 4)	Various entities	Various	Various	Various
State Assessment and Referral Agency Lot plan report	Queensland Government (Department of State Development, Manufacturing, Infrastructure and Planning)	20/08/2019	Various lots	-

SARA has carried out a review of the information provided and the impacts of the proposal. The following advice outlines the matters of interest to the SARA and matters that should be addressed if you lodge your development application with the assessment manager.

Overview of project	
1.	<p>Following SARA issuing its pre-lodgement advice on 20 September 2019, the project team has addressed the following matters:</p> <ul style="list-style-type: none"> The project description and design drawings have been finalised. The proposed Wangetti Trail SP2 includes: <ul style="list-style-type: none"> shared use trail to accommodate both mountain bike riders and hikers consisting of natural ground and surface treatments. a number of low-level bridges and crossings including Hartleys Creek suspension bridge, boulder rock crossings and gully crossing style bridge for minor waterway crossings four eco-accommodation camp sites (each with a 0.25ha footprint), including an ecotourism facility - maximum of 20 people per night at each site, managed by an ecotourism operator through a lease agreement with the Department of Environment and Science four public camping areas, amenities and communal gathering area – maximum of 20 people per night at each area (10x 4m elevated camping decks) administered by Queensland Government amenities block and covered area referred to as Dark Jungles formalisation of existing service tracks into service tracks to provide restricted

	<p>access to the shared use trail and the camp site for construction purposes, operational purposes, maintenance purposes and emergency purposes.</p> <ul style="list-style-type: none"> – mountain bike trail using existing service tracks being Twin Bridges Road (Black Mountain East Road) and Quaid's Road – replacement of five existing dilapidated waterway crossings along Twin Bridges Road (Black Mountain East Road). <ul style="list-style-type: none"> • A 20m construction corridor is proposed either side of the shared use trail (total buffer of up to 40m) to provide flexibility to the trail builders to deviate from the alignment up to 20m to either side to enable the trail to be moved or adjusted to avoid Matters of National Environmental Significance and Matters of State Environmental Significance. • A maximum width of 2.5m and up to 2.5m in height will be disturbed for the shared use trail during the construction phase. Clearing of vegetation will take place within the corridor and be limited to the 1.5 m wide trail but will be restricted to approximately 1m wide within environmentally sensitive areas. • Built structures include gully crossings, bridges, staircases, platforms, rock armouring and signage. • Surface treatments include ballast raised trail, artificial rock armour, standard raised trail and rock armour. • Completion of four ecological field surveys for the SP2 project area. • Completion of an environmental assessment for Matters of National Environmental Significance and Matters of State Environmental Significance. • Wangetti Trail Project Consultation Report • Wangetti Trail Construction Methodology Manual • A Wet Tropics Permit for the project elements of the works within the Wet Tropics World Heritage Area has been secured. • Ongoing engagement with the Department of Agriculture, Water and Environment regarding the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> referral requirements. • Confirmation that an application for authorisation to develop the ecotourism facilities within the state protected area under sections 34 and 35 of the <i>Nature Conservation Act 1992</i> will be submitted to the Department of Environment and Science.
Development approvals required	
2.	<p>With respect to the Wangetti Trail area within the World Tropic Heritage Area, it is recommended you discuss this with both Douglas Shire Council and Cairns Regional Council. Schedule 6 of the Planning Regulation describes development a local categorising instrument is prohibited from stating is assessable development.</p> <p>It is understood the applicant is proposing the lodge separate applications for:</p> <ul style="list-style-type: none"> • A material change of use for a Nature-based tourism facility and Environment facility assessment against the Douglas Shire Council and Cairns Regional Council planning schemes. • An operational work application for raising or constructing waterway barrier work

	<p>lodged to SARA as assessment manger.</p> <ul style="list-style-type: none"> An operational work application for interfering with quarry material on state-coastal land as assessment manager. <p>As the proposed Wangetti Trail is located over two local government areas, an assessment manager determination is required if you intend to lodge one development application for the material change of use which includes both local government areas.</p> <p>It is recommended you discuss the operational works proposed on state coastal land with both Douglas Shire Council and Cairns Regional Council as the works may be assessable under the planning scheme with the council(s) as assessment manager. SARA will be a referral agency for the application where the operational work is assessable against the planning scheme.</p> <p>It should also be noted if a structure is to be constructed in on or above tidal water, a prescribed tidal works application will also be required, with council as the assessment manager. The council is required to assess the prescribed tidal works application against the Coastal Regulation – Schedule 3.</p> <p>An assessment manager determination is required if you intend to lodge one development application for the operational work assessable against the planning scheme which includes both local government areas.</p> <p>SARA is unable to confirm whether the information provided in Attachment 2 of the Memorandum - request for further pre-lodgement written advice, is adequate for the purpose of the material change of use application to Douglas Shire for the ecotourism camp sites. This should be discussed with Douglas Shire Council.</p>
Determination of assessment manager	
3.	<p>In accordance with Section 48(6) of the Planning Act 2016 the Minister may decide who is the assessment manager for the development application or require the development application to be split into two applications.</p> <p>The determination request is to be addressed to:</p> <p>Hon Cameron Dick MP Treasurer, Minister for Infrastructure and Planning PO Box 15009 City East QLD 4001 Email: treasurer@ministerial.qld.gov.au</p> <p>To assist the Minister in making a determination, it is recommended the following information is provided with the request:</p> <ul style="list-style-type: none"> overview of the SP2 Wangetti Trail project including a description of the proposed development within each local government area maps showing the project area within each local government area; and any written communication from Douglas Shire Council and/or Cairns Regional Council advising of its view on the appropriate assessment manager for the proposed development application.
SARA referrals and fees	

4.

Potential referral requirements under the [Planning Regulation 2017](#) and referral agency assessment fees are as follows:

Material change of use triggers

State transport corridor

- Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material change of use of premises near a State transport corridor.
- The potential assessment fee is \$3,313.00 if the proposed development involves a new or changed access to the state-controlled road, otherwise the fee is \$1,655.00.

Coastal management district

- Schedule 10, Part 17, Division 3, Table 6, Item 1 – Material change of use involving work in a coastal management district (if applicable).
- The potential assessment fee is \$3,313.00.

Operational work triggers

Constructing or raising waterway barrier works

- Schedule 8, Table 4, Item 3(m) - Operational work that is constructing or raising waterway barrier works – SARA as assessment manager, otherwise, Schedule 10, Part 6, Division 4, Subdivision 3, Table 1, Item 1 – Operational work that is constructing or raising waterway barrier works is SARA is the referral agency.
- The potential assessment fee for each waterway barrier is scaled at \$3,313.00, \$6,625.00 or \$13,248.00. The fee is based on the risk category of the waterway.
- Under section 36 of the Planning Regulation 2017, where there is one or more waterway barrier the assessment fee is capped at \$13,248.00.

Tidal works or wok in a coastal management district

- Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational work that is tidal works or work in a coastal management district.
- The potential assessment fee is \$3,313.00.

Owners consent

5.

The Department of Natural Resources, Mines and Energy has confirmed that owner’s consent was provided on 4 June 2020 for the following lots. To lodge a properly made application a copy of the owner’s consent must be provided with the development application.

Part A - Reserves

Description	Reference	Purpose	Trustee(s)
117SR898	49006406	Camping	Douglas Shire Council
31SP129117 39SP309117 6SP309107 3SP309107 32SP165924 4SP309107	49006406	Recreation Permit to Occupy 0/208185 – Commercial/Business	Douglas Shire Council and Cairns Regional Council (joint trustees) Hartleys Creek Crocodile Farming Company Pty Ltd

		purposes namely crocodile farming registered over part of Lot 4 on SP309107	
Part B - State Leasehold Land			
Description	Reference	Tenure/Purpose	Lessee
13NR5512	17659182	Non-competitive Lease 9/2568 – Tourism purposes namely tourist accommodation and ancillary facilities	Bellbird Park Developments Pty Ltd
Part C - Unallocated State Land (USL)			
Description	Reference	Tenure/Purpose	Registered Owner
12USL9994	47001491	USL	DNRME
9USL9994	47001493	USL	DNRME
8USL9994	47001494	USL	DNRME
1CP910509	47020569	USL	DNRME
48AP16233	47023999	USL	DNRME
2AP19233 1PER208185	47033558 40009327	USL Permit to Occupy 0/208185 – Commercial/Business purposes namely crocodile farming	DNRME Hartleys Creek Crocodile Farming Company Pty Ltd
1SP309094 2SP309094	47002909 47032011	USL USL	Proposed to be declared as transferable land under the <i>Aboriginal Land Act 1992</i>
If any operational work involves work below high water, owner's consent is also required form the Department of Natural, Resources, Mines and Energy to lodge a properly made application.			
Application material			
6.	The pre-lodgement request states the following information will be provided in the development application: <ul style="list-style-type: none">• construction Methodology Manual which includes the construction methodology of the proposed works and design drawings of the proposed structures• details of the existing environment and surrounding environment from information collected during the field surveys• a discussion of the alternatives considered for the SP2 trail alignment to reduce impacts on the waterway• an assessment of matters of State environmental significance within the three coastal sections within the project area and SARA's Significant Residual Impact Guidelines		

	<p>2014</p> <ul style="list-style-type: none"> • environmental report to provide details of the proposed works and the existing environment including addressing State code 8; and • Mitigation measures table that outlines the measures to prevent, reduce or control adverse environmental effects on waterways during the construction phase and operation phase. The mitigation measures will be refined further and incorporated into a Construction Environmental Management Plan (CEMP) and the Environmental Management Plan (EMP), which will be prepared by the nominated contractor for the project at a later stage. <p>Without seeing the reports/documents, SARA is unable to advise whether they are sufficient for assessment of the application(s). The reports/documents should address the relevant state codes in the State Development Assessment Provisions and address matters of State environmental significance.</p> <p>The state codes relevant to the proposed development are:</p> <ul style="list-style-type: none"> • State code 1: Development in a state-controlled road environment • State code 8: Coastal development and tidal works • State code 18: Constructing or raising waterway barrier works in fish habitats
Native vegetation clearing	
7.	<p>The <i>Vegetation Management Act 1999</i> does not apply to any native vegetation clearing within a protected area (i.e. national park) under the <i>Nature Conservation Act 1992</i>. Under Schedule 21, Part 1, Item 1 (19) of the Planning Regulation 2017, an exemption applies to native vegetation clearing that the <i>Vegetation Management Act 1999</i> does not apply to or affect.</p> <p>Under Schedule 21, part 1, section 1, item 14(b) of the Planning Regulation 2017, an exemption applies for the clearing of native vegetation for constructing or maintaining infrastructure stated in Schedule 5 of the Planning Regulation, where the infrastructure is government supported transport.</p> <p>As previously advised the proposal is considered to be government supported transport infrastructure.</p>
Constructing or raising waterway barrier work	
8.	<p>Hartleys Creek</p> <p>Based on the provided information the proposed cable suspension bridge for crossing Hartleys Creek is not a waterway barrier as the design does not include components that enter the waterway.</p> <p>Low-level bridges</p> <p>The proposed 34 single-span low-level bridges that cross minor waterways are likely to be able to comply with What is not a waterway barrier work? and not constitute waterway barrier works. Careful placement of the footings/abutments of these crossings must be made to ensure that they comply with not being waterway barrier works. If doubt exists, specific crossing details should be provided to enable specific advice.</p> <p>The rock armouring of wet or boggy areas may be waterway barrier works if the works are within an area defined as a waterway by the <i>Fisheries Act 1994</i> and the works raise the bed level of the waterway. In areas outside the definition of a waterway, this type of armouring would not be waterway barrier works. Where these type of crossings are within waterways they will constitute waterway barrier works. They may be able to be undertaken as bed level crossings under the Department of Agriculture and Fisheries (DAF) accepted development</p>

[requirements for operational work that is constructing or raising waterway barrier works.](#)

Black Mountain Road

- Bridge 1 - the replacement of the existing bridge with a truss bridge with footings outside the waterway does not constitute waterway barrier works.
- Drain at -16.65752, 145.51985 does constitute a waterway barrier work and can be undertaken under DAF's accepted development requirements.
- Concrete pipe – The proposal to leave as is or replace with a truss bridge with footings outside the waterway options are not considered waterway barrier works.
- Bridge 2 the replacement of the existing bridge with a truss bridge with footings outside the waterway does not constitute waterway barrier works.
- Bridge 3 - The proposal to leave as is or replace with a truss bridge with footings outside the waterway options are not considered waterway barrier works.

Boulder crossings

The proposed boulder crossings are waterway barrier works and are unable to comply with the DAF's accepted development requirements as the design restricts water flow and boulders protrude above bed level. Development approval is required for constructing or raising waterway barrier works for each boulder crossing of a waterway proposed.

In accordance with Schedule 8, Table 4, Item 3(m) of the [Planning Regulation 2017](#), SARA is the assessment manager for operational work that is constructing or raising waterway barrier work in a fish habitats. Otherwise SARA is the referral agency for an operational work application lodged with council which includes the boulder crossings.

Assessment benchmarks

The development application will be assessed against the current State Development Assessment Provisions, State code 18: Constructing or raising waterway barrier works.

- All development - PO1 to PO18 and PO36
- Temporary waterway barrier works - PO32 to PO35.

Particular attention should be paid to:

- **PO1** - there is a demonstrated need for the development and alternatives (locations and designs) which have a lesser impact on fish passage or do not involve constructing or raising waterway barrier works are not viable.
The development application should include details as to why a bridge crossing or a bed level crossing are not viable for each crossing.
- **PO3** - the number and extent of waterway barrier works and the spatial and temporal extent of impacts on waterways providing fish passage are minimised.
A discussion should be provided as to the extent of works for each crossing and how this is minimised by the proposed trail design.
- **PO4** - adequate fish passage must be provided and maintained for the life of the waterway barrier works. The works must be designed and constructed, operated and maintained to provide lateral and longitudinal passage for all members of the fish community.

The development application should describe design features included in the stepping stone crossing and management actions to ensure that the structure maintains fish passage. This should include a discussion of the steps taken to provide hydraulic conditions such as water velocities suitable for fish passage. The discussion should

	<p>include details on the likely timing of drowned out events for the crossing and the avenues for fish passage during such events. Details of maintenance measures and timing should be discussed.</p> <p>Design of such crossings should demonstrate the avoidance of the low flow channel and that fish habitats (including instream vegetation) are maintained in the low flow channel. The stream slope, pre-crossing and predicted post- crossing velocities are important in assessing these crossings.</p> <ul style="list-style-type: none"> • PO5 - waterway barrier works must be designed, constructed, operated and maintained to provide lateral and longitudinal fish passage for all members of the fish community regardless of size, species, life-stage or swimming ability, and accommodating future and seasonal increases in fish biomass. <p>A report from a suitably qualified and experienced fish passage biologist is a suitable mechanism to demonstrate compliance with this performance outcome.</p> <ul style="list-style-type: none"> • PO6 - development must be designed and operated so that all components of the waterway barrier works and all pathways of potential fish movement provide safe fish passage. <p>A discussion of the steps taken to ensure safe fish passage through the available apertures is required to enable assessment of this performance outcome.</p> <ul style="list-style-type: none"> • PO7 - addresses the drownout characteristics of the waterway barrier works, drownout frequency, timing and duration of these conditions provides adequate fish passage of the fish community and biomass moving past the barrier. Describe how fish and biomass will achieve passage during drownout periods. • PO8 - the development does not increase the risk of mortality, disease or injury, or compromise the health, productivity, marketability or suitability for human consumption of fisheries resources. This concerns predominantly: <ul style="list-style-type: none"> - biotic and abiotic conditions, such as water and sediment quality - substances that are toxic to plants or toxic to or cumulative within fish - the design of the structures - impact on reproductive success by not restricting access to habitat - effect on fish energy reserves by not providing suitable fish passage design elements, and - whether fish may be physically damaged, injured, killed, trapped or stranded by the development. - Fish passage and access to habitat generally, and - the impacts of pest fish and other relevant pest species. <p>The impact of the constriction of stream cross-section (flow area) on the energy reserves of fish moving upstream and details on whether the crossings will restrict access to habitats should be discussed.</p> <ul style="list-style-type: none"> • PO9 - development should avoid non-essential hardening or unnatural modification of the main channel of the waterway, retains natural fish habitat features such as rock outcrops and boulders as well as avoiding channelisation and works during period of elevated flows. <p>To comply with this performance outcome the development should demonstrate avoidance of the main channel of each waterway where such a crossing is proposed.</p> <ul style="list-style-type: none"> • PO13 and PO14 - construction avoids direct and indirect disturbance to beds, banks and vegetation adjacent to the permanent development footprint. Where disturbance cannot be avoided, the bed and banks outside of the permanent development footprint must be returned to their original profile. Provide a thorough discussion on the works methodology of waterway barrier construction.
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- **PO32-** the temporary waterway barrier work will exist only for a specified temporary period and provide for adequate fish movement.
State how long the temporary causeway is likely to be in place and what provisions for fish passage and flows have been included in the design.
- **PO33** - temporary barriers are removed at the end of their design life, so that full movement for fish is reinstated and the bed and banks are returned to their original profile and stability.
- **PO34** - where there are species at the site of the temporary waterway barrier works that require downstream movement during works, provisions are made to allow those species to move downstream.
- **PO36:** Matters of state environmental significance

A waterway providing for fish passage is a matter of State environmental significance under the *Environment Offsets Act 2014*. The department maintains an 'avoid, mitigate, offset' requirement that applies to those activities that will, or are likely to, have a significant residual impact on matters of state environmental significance.

Depending on the type of works being proposed and impact to waterways providing for fish passage, the works may have a significant residual impact.

Details will need to be provided on how the impacts to waterways providing for fish passage will be avoided or minimised and where this cannot be reasonably achieved, offset. Offsets will not be considered until it has been demonstrated that all reasonable measures to firstly avoid and/or mitigate impacts to waterways have been taken.

Temporary waterway barrier work

The placement of temporary waterway barriers to facilitate the proposed works may be conducted under DAF's accepted development requirements.

If any proposed temporary waterway barrier works cannot meet the accepted development requirements, this aspect of the works will need to be covered under a development approval.

It should be noted that time limitations apply to all temporary waterway barriers in place under the accepted development requirements. If there is any possibility (e.g. business impacts due to temporary government restrictions, personnel availability, weather, and/or budget) the barriers need to be in place for longer than the prescribed period under the accepted development requirements, the proposed temporary waterway barrier works must be included in the development application, including a response to the relevant POs.

Development application material

The development application should include:

- detailed plans clearly showing the location of the proposed works in relation to existing mapped waterways
- detailed plans clearly showing a cross section of the proposed waterway barrier works in relation to the existing bed and banks of each impacted waterway
- a longitudinal section of the proposed waterway barrier works in relation to the bed of the waterway upstream and downstream of the works.

Note – all plans should be able to be read to scale at A3 size.

The [DA Forms guide-Relevant plans](#) may assist you in preparing relevant plans for the development application.

	<p>The development application should also include written documentation discussing:</p> <ul style="list-style-type: none"> • details of the purpose of the proposed works (e.g. single/stepping stone crossing bridge for pedestrian access and bicycle access) • a description of the waterway proposed to be impacted (e.g. condition, size, connectivity, general hydrology) and nature of the impact • a description of the work method (e.g. timing, equipment to be used) • a detailed description of the alternatives considered to reduce impacts on the waterway, as applicable (e.g. alternative designs, locations, setbacks/buffer distances) • details of on-site mitigation actions, during and after the development • the extent of any future maintenance works required for the continued safe operation of the proposed structure or facility; and • Impacts to fish passage. It must firstly be demonstrated that impacts to waterways providing for fish passage have been avoided. Where avoidance is not reasonably possible, impacts to waterways providing for fish passage must be mitigated. An environmental offset pursuant to the <i>Environmental Offsets Act 2014</i> may need to be provided for any significant residual impact.
State transport corridor	
9.	<p>Based on the information provided, part of the Wangetti Trail will be located within the Captain Cook Highway road reserve as requiring access for emergency and service vehicles via the Captain Cook Highway, a state-controlled road.</p> <p>The proposed material change of application will trigger referral agency assessment for development within 25 metres of the state-controlled road.</p> <p><u>Assessment benchmarks</u></p> <p>The development application will be assessed against the current State Development Assessment Provisions, State code 1: Development in a state-controlled road environment.</p> <p>The development application should provide a response State code 1 in its entirety, identifying how the proposed development meets each performance outcome.</p> <p>The Department of Transport and Main Roads has prepared a guideline to assist applicants in responding to State code 1.</p> <p><u>Application material</u></p> <ul style="list-style-type: none"> • Provide detailed drawings / plans which clearly show the Wangetti Trail can be located and safely constructed within the Captain Cook Highway road corridor. <p>The Department of Transport and Main Roads (DTMR) notes in previous conversations / discussions that is indicated that the Captain Cook Highway road corridor in certain locations does not have sufficient width to accommodate the Wangetti Trail.</p> <ul style="list-style-type: none"> • Clearly identify which service tracks will be utilised by Wangetti Trail. Some of the existing vehicle accesses to the proposed service tracks do not comply with the DTMR access standards. DTMR will require additional access works to upgrade non-compliant accesses. <p>It is recommended further discussions are undertaken with SARA regarding access to service tracks for the Wangetti Trail.</p>

Tidal works or work a coastal management district	
10.	<p>Based on the information provided, the majority of the works fall outside of the coastal management district and erosion prone area as the works are inland of the Captain Cook Highway.</p> <p>The proposed development will trigger referral agency assessment for operational work, where the proposed work interferes with quarry material. If a structure is to be constructed in on or above tidal water, the proposed development will also trigger referral agency assessment for tidal works.</p> <p>The proposed development will trigger referral agency assessment for a material change of use where operational work is carried out completely or partly in an erosion prone area in a coastal management district; and</p> <ul style="list-style-type: none"> • is extracting, excavating or filling 1,000m³ or more, or clearing native vegetation from an area of 1,000m² or more; or • involves building work increasing the gross floor area on the premises by 1,000m² or more. <p><u>Assessment benchmarks</u></p> <p>The development application will be assessed against the current State Development Assessment Provisions, State code 8: Coastal development and tidal works.</p> <p>The development application should provide a response State code 8 in its entirety, identifying how the proposed development meets each performance outcome (PO). Particular attention should be paid to PO1, PO2, PO11, PO12 and PO16.</p> <p>The Department of Environment and Science has also prepared a guideline to assist applicants in responding to State Code 8. The guideline provides background information and key concepts relevant for coastal processes and resources and coastal protection and management applicable to complying with the code.</p> <ul style="list-style-type: none"> • PO16 - determine if there are any matters of state environmental significance on or adjacent to the proposed development site. Based on the information provided, the proposed works are within the following matters of state environmental significance: <ul style="list-style-type: none"> – Regulated Vegetation (essential habitat) – Regulated Vegetation (category B – endangered or of concern) – Regulated Vegetation (defined watercourse) – Regulated Vegetation (category R – GBR riverine) – Wildlife Habitat (endangered or vulnerable) – Declared High Ecological Value Waters (watercourse) – Protected Area (estates) <p>Where matters of state environmental significance are identified, the development application should:</p> <ul style="list-style-type: none"> • provide a targeted assessment to ground truth any matters of state environmental significance identified; • demonstrate how the development avoids adverse impacts on each matters of state environmental significance to the greatest extent practicable; • where the above is not reasonably possible, demonstrate how impacts on matters of state environmental significance have or will be minimised and/or mitigated to the

	<p>greatest extent practicable;</p> <ul style="list-style-type: none"> • demonstrate whether the development will have a Significant Residual Impact on any identified matters of state environmental significance using SARA's Significant Residual Impact Guideline. An assessment will need to be undertaken for each matters of state environmental significance to determine whether the proposed development will result in a significant residual impact; and • identify any potential offset obligation as per PO16 (3) of State Code 8. <p><u>Application material</u></p> <p>The development application should include a detailed description of the proposed development and a description of the existing site conditions of the proposed development location. In particular, the following documentation should be provided:</p> <ul style="list-style-type: none"> • Description of the land intended to be developed, including the property address, tenure and real property description of the land • Description of the development, including: <ul style="list-style-type: none"> – location of all built structures, or structures to be modified or demolished, as a result of the proposed development – description of any operational works occurring on site including expected timeframes – any machinery to be used or stored on the site, and – staging of the development if applicable. • Detailed and appropriately scaled drawings and/or plans which clearly identify the location of proposed development, including: <ul style="list-style-type: none"> – adjacent real property boundaries – adjacent riverbanks, walls, sandbanks, structures, the limit of vegetation, and/or other principal features of the immediate area – relevant tidal planes (e.g. Highest Astronomical Tide, Mean High Water Springs) – the location and setting out details for cross-sections, and – any other information required to accurately define the area and to allow the site to be readily identified from the plan. <p>All plans/drawings should include title, date and numbering suitable to identify the plan and should be mapped to GDA94 projection.</p>
Environmental offset	
11.	<p>Schedule 2 of the Environmental Offsets Regulation 2014 provides a definition for matters of state environmental significance.</p> <p>SARA's Significant Residual Impact Guideline provides guidance for which an environmental offset condition may be imposed for certain prescribed environmental matters (matters of state environmental significance) where SARA has a role in assessing a development application against the State Development Assessment Provisions.</p> <p>Where a significant residual impact will occur on matters of state environmental significance, the offsets framework provides three offset delivery options:</p> <ul style="list-style-type: none"> • proponent-driven offsets i.e. land-based offsets or a Direct Benefit Management Plan; • financial settlement offset; or • a combination of the two. <p>For further information on environmental offsets visit Queensland Government's website.</p>

State Development Assessment Provisions	
12.	<p>State Development Assessment Provisions version 2.6 took effect on 7 February 2020. To assist applicants in preparing a development application the department has prepared SDAP version 2.6 response templates.</p> <p>An application that complies with all applicable acceptable outcomes is considered to satisfy the corresponding performance outcome. If an application does not comply with one or more of the applicable acceptable outcomes, compliance with the performance outcome should be demonstrated.</p>
Further advice outside SARA's jurisdiction	
Tenure advice	
13.	<p>Lot 117 on SR898</p> <p>Part of the trail, service track and a campsite are proposed on Lot 117 on SR898, being a reserve for 'camping' purposes held by Douglas Shire Council as trustee. A reserve for 'camping' purposes is generally considered a reserve for travelling stock and is associated with the stock route network. Historically, these reserves were used as places where stock can be camped, watered, rested or trucked. The proposed campsite is not considered consistent with the current purpose of the reserve.</p> <p>The Department of Natural Resources, Mines and Energy may consider a change of the reserve purpose from 'camping' to a community purpose prescribed under Schedule 1 of the <i>Land Act 1994</i>. As trustee, Douglas Shire Council is required to request and support any change in purpose.</p> <p>It is understood the applicant has not yet established if the proposed campsite on Lot 117 will be operated in a commercial nature or open to non-exclusive public use. If the proponent is seeking to develop a commercial campsite, an additional authority will be required (i.e. a trustee permit authorised by Douglas Shire Council or a trustee lease under the Land Act). A trustee lease under the Land Act will involve the development of a Land Management Plan.</p> <p>Alternatively, the proponent may wish to consider applying for Lot 117 on SR898 to be included into the adjoining national park. The following steps are required:</p> <ul style="list-style-type: none"> • Confirmation in writing from Douglas Shire Council that Lot 117 on SR898 is no longer required for its dedicated purpose as a reserve and inclusion of the Lot into the adjoining national park is supported; and • Confirmation in writing from Department of Environment and Science that inclusion of Lot 117 on SR898 into the national park is supported. <p>Providing the abovementioned requirements are met, the Department of Natural Resources, Mines and Energy may then revoke the current reserve, which would require that Lot 117 be reverted to unallocated state land before being transferred to the State of Queensland (represented by Department of Environment and Science).</p> <p>The Department of Environment and Science would then take action to include Lot 117 into the protected area estate under the <i>Nature Conservation Act 1992</i>. If the land is to be managed under the Nature Conservation Act, the unallocated state land may be transferred to the State of Queensland (represented by Department of Environment and Science) without the requirement to payment market value. A service provision fee of \$1,200.00 plus GST applies for the transfer.</p>

	<p>Lot 13 on NR5512</p> <p>A service track is proposed to traverse Lot 13 on NR5512, which a non-competitive lease for tourism purposes being tourist accommodation and ancillary facilities with Bellbird Park Developments Pty Ltd the registered lessee.</p> <p>An easement for either right of way (i.e. for access), or public thoroughfare, under section 362 of the Land Act will be required. An easement is an agreement between the land owner(s) and either the local government or the State. Please refer to Attachment 1 - Preliminary Tenure Options.</p> <p>The proponent should contact the Department of Natural Resources, Mines and Energy via: Townsville.SLAMS@dnrme.qld.gov.au for further information.</p>
<p>Approvals under the <i>Transport Infrastructure Act 1994</i></p>	
14.	<p><u>Road works approval (s33) – State-controlled road</u></p> <p>Under section 33 of the <i>Transport Infrastructure Act 1994</i>, written approval is required from the Department of Transport and Main Roads to carry out road works on a state-controlled road.</p> <p>Please contact the Cairns regional office of the Department of Transport and Main Roads on 4045 7144 to make an application for road works approval.</p> <p>This approval must be obtained prior to commencing any works on the state-controlled road reserve. The approval process will require the approval of engineering designs of the proposed works, certified by a Registered Professional Engineer of Queensland (RPEQ).</p> <p>The road works approval process takes time – please contact Transport and Main Roads as soon as possible to ensure that gaining approval does not delay construction.</p> <p><u>Road corridor permit (s50) – State-controlled road</u></p> <p>A Road Corridor Permit is required for any ancillary works and encroachments on the state-controlled road under section 50(2) and Schedule 6 of the <i>Transport Infrastructure Act 1994</i> and Part 5 and Schedule 1 of the Transport Infrastructure (State-Controlled Roads) Regulation 2006.</p> <p>To undertake works within the state-controlled road reserve, the proposed development will require a Road Corridor Permit under s50 under the Transport Infrastructure Act.</p> <p>Ancillary works and encroachments include but are not limited to advertising signs or other advertising devices, paths or bikeways, buildings/shelters, vegetation clearing, landscaping and planting.</p> <p>Please contact the Cairns regional office of the Department of Transport and Main Roads on 4045 7144 to make an application for a Road Corridor Permit.</p>
<p><i>Water Act 2000</i></p>	
15.	<p>Water for the proposed campsites will be supplied via rainwater tanks. There is no requirement under the <i>Water Act 2000</i> for this proposed take of water for the campsites. There is also no requirement under the <i>Water Act 2000</i> for the take of underground water to supply the proposed campsites in this area.</p> <p>If an alternative water supply is considered (i.e. from a waterway), please contact the Department of Natural Resources, Mines and Energy via waterinfornorth@dnrme.qld.gov.au for</p>

further information.

This pre-lodgement advice does not constitute an approval or an endorsement that SARA supports the development proposal. Additional information may be required to allow the department to properly assess the development proposal when a formal application has been lodged.

For further information please contact Joanne Manson, A/Manager (Planning), on 40373228 or via email CairnsSARA@dsdmip.qld.gov.au who will be pleased to assist.

Yours sincerely



Anthony Walsh
Manager Planning

Enc: **Attachment 1** - Attachment 1 - Preliminary Tenure Options.

Attachment 1 - Preliminary Tenure Options

Freehold

Private commercial lease

- A lease agreement between two parties being the land owner/s and potentially a State entity.
- A legally binding contract that gives a party certain rights to a property for a set term and details what the responsibilities are for each party for the lease area.
- Both parties are required to agree on the terms and conditions of the lease agreement.
- The lease agreement terms may include public liability and indemnity clauses, and provide for subletting and options for renewal of the lease.
- Will be subject to payment of rent/consideration to the landowner/s.
- Other requirements may include: drafting of lease document and Titles Registry Form 7, survey of the lease area, payment of lodgement fees (currently \$192.00 per lease) and registration in the Titles Registry Office of the Department of Natural Resources, Mines and Energy.

Public thoroughfare easement

- Provides access to the public (as opposed to a 'right of way (access)' easement, which is an agreement between landowners where the benefiting landowner can access a specific area of their neighbour's property).
- Use of this type of easement (public thoroughfare) is limited to: pedestrians, cyclists and vehicles reasonably needed for the building and maintenance of the easement.
- The easement is between the land owner/s and either the local government or the state government (represented by the Department of Transport and Main Roads).
- Any proposed public thoroughfare easement over common property within a community titles scheme must be granted by the body corporate in a way provided for under its relevant regulation module (i.e. for Standard, Small Schemes, Accommodation and Commercial Modules a copy of the resolution certified under the body corporate seal to the granting or accepting of the easement.)
- May be subject to payment of a consideration.
- Other requirements may include: drafting of easement document and Titles Registry Form 9, survey of the easement area, payment of lodgement fees (survey plan currently \$411.00 and easement currently \$192.00) and registration in the Titles Registry Office of the Department of Natural Resources, Mines and Energy.

Reserve – Land Act

- Reserve purpose should be complimentary to the proposed use (i.e. Recreation, Camping).
- A reserve can be for more than one community purpose.
- Community purposes for reserves are detailed in Schedule 1 of the *Land Act 1994*.
- Department of Natural Resources, Mines and Energy may require the trustee to prepare a Land Management Plan particularly where there are secondary uses of the reserve.

Trustee Lease

- Secondary use of reserve land is authorised by the issue of a trustee lease or trustee permit, if required.
- Before issuing a trustee lease, to authorise the use and occupation of the reserve land, the trustee must obtain approval from the Department of Natural Resources, Mines and Energy.
- State or local government trustees may not need to obtain approval from Department of Natural Resources, Mines and Energy for a trustee lease provided:
 1. the trustee lease is consistent with the purpose of the reserve,

2. the trustee lease complies with the requirements of section 15(2) of the *Land Regulation 2009*,
 3. the lease is shown as subject to the Mandatory Standard Terms Document No 711932933, and
 4. a copy of the Written Authority forms part of the trustee lease documents lodged for registration in the Titles Registry Office.
- Mandatory Standard Terms Document No 711932933 must form part of all trustee lease documents.
 - The proposed secondary use must be complimentary to the purpose of the reserve, and cannot be commercial or exclusive in nature.
 - The maximum term for a trustee lease and trustee sublease is 30 years.
 - Payment of appropriate rent is a matter between the trustee and the trustee lessee, however, the rent charged should consider the reserves management objectives and community benefit. Any proceeds are to be used for the development and maintenance of the reserve land.
 - May also be sub-leased, provided the sub-lease does not diminish the purpose of the reserve.
 - Access by the public to the reserve land, provided the community purpose does not restrict the rights of the public to be there, is to be maintained and protected.
 - Other requirements may include: DNRME Application forms (no application fee), draft trustee lease document and draft Titles Registry Form 7, survey, payment of lodgement fees (currently \$192.00) and registration in the Titles Registry Office of the Department of Natural Resources, Mines and Energy.

Unallocated State land

- Will need to be allocated to the most appropriate use and tenure.
- Allocation of land under the *Land Act 1994* requires:
 1. most appropriate use and tenure assessment based on the objects of the *Land Act 1994*, as well as state, regional and local planning objectives;
 2. consultation with relevant stakeholders and public utility providers;
 3. assessment of the status of native title;
 4. a formal decision being made by an appropriate delegate;
 5. a written offer sent to the proposed tenure holder/applicant setting out various conditions and requirements;
 6. acceptance of offer and compliance with all requirements (which may include native title to be addressed by the proposed tenure holder and survey, also to be undertaken by proposed tenure holder);
 7. once all conditions have been complied with, the Department of Natural Resources, Mines and Energy would issue tenure.

Our reference: 1908-12771 SPL
Your reference: Wangetti Trail (SP2)

20 September 2019

Department of Innovation, Tourism Industry Development and the Commonwealth Games
C/- GHD Pty Ltd
Level 13 - The Rocket
203 Robina Town Centre Drive
ROBINA QLD 4226
Sarah.Wilson@ghd.com

Attention: Sarah Wilson

Dear Sir/Madam

Pre-lodgement meeting record

This pre-lodgement record provides a summary of the matters discussed at the pre-lodgement meeting in addition to providing further advice prepared subsequent to the meeting. This record provides advice regarding the likely major issues relevant to the development proposal to assist in the timely processing of a development application. While this advice is provided in good faith, if the proposal is changed from that which was discussed with the department during the pre-application meeting, this advice is not binding.

Reference information

Departmental role:	Referral agency
Departmental jurisdiction:	Material change of use <ul style="list-style-type: none"> Schedule 10, Part 6, Division 3, Subdivision 3, Table 2, Item 1 – Material change of use involving removal, destruction or damage of marine plants Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material change of use of premises near a State transport corridor Schedule 10, Part 17, Division 3, Table 6, Item 1 – Material change of use involving work in a coastal management district (if applicable) Operational work <ul style="list-style-type: none"> Schedule 10, Part 6, Division 3, Subdivision 3, Table 1, Item 1 – Operational work that is the removal, destruction or damage of a marine plants (as there is no development approval in effect for a material change of use)

- Schedule 10, Part 6, Division 4, Subdivision 3, Table 1, Item 1 – Operational work that is constructing or raising waterway barrier works
- Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational work that is tidal works or work in a coastal management district

Pre-lodgement meeting date: 6 September 2019

Meeting attendees:

Name	Position	Organisation
Brett Nancarrow	Manager (Planning)	Department of State Development, Manufacturing, Infrastructure and Planning
Joanne Manson	Principal Planning Officer	Department of State Development, Manufacturing, Infrastructure and Planning
Jarrod Clarke	Planning Support Officer	Department of State Development, Manufacturing, Infrastructure and Planning
Chris Clague	Senior Fisheries Biologist	Department of Agriculture and Fisheries
Bronwyn Rutherford	Senior Environmental Officer	Department of Environment and Science
Inga Kamps	Natural Resources Officer	Department of Natural Resources, Mines and Energy
Tatum Taffs	Natural Resources Officer	Department of Natural Resources, Mines and Energy
Tim Gale	Senior Natural Resources Officer	Department of Natural Resources, Mines and Energy
Mace Bragg	Natural Resources Officer	Department of Natural Resources, Mines and Energy
Bernadette Nicotra	Natural Resources Officer	Department of Natural Resources, Mines and Energy
Jacinta Ryan	A/Manager	Department of Natural Resources, Mines and Energy
Peter McNamara	Principal Engineer (Civil)	Department of Transport and Main Roads
Steve Zelenika	Senior Town Planner	Department of Transport and Main Roads
Peter Boyd	Manager Strategic Planning & Approvals	Cairns Regional Council
Kristy Nicoloua	Community Services Officer	Cairns Regional Council
Paul Hoyer	Manager, Environment and Planning	Douglas Shire Council
Neil Beck	Team Leader Planning	Douglas Shire Council
Geraldine Squires	Project Director	GHD

Sarah Wilson	Senior Town Planner	GHD
Kerry Nisbit	Project Manager	Department of Innovation, Tourism Industry Development and the Commonwealth Games
Wade Oestreich	Special Advisor, Natural Resources Officer	Department of Environment and Science
Megan Cummins	A/Principal Policy Officer, Ecotourism Development Protected Area Strategy and Investment	Department of Environment and Science

Location details

Street address:	Between Mowbray and Palm Cove
Real property description:	Lot 117 on SR898; Lot 119 on SR598; Lot 121 on RP749352; Lot 122 on NPW911; Lot 12 on USL9994; Lot 174 on NPW930; Lot 1 on SP309094; Lot 2 on AP15771; Lot 2 on SP309107; Lot 31 on SP129117; Lot 32 on SP165924; Lot 47 on SP307120; Lot 6 on SP309107; Lot 0 on BUP70885; Lot 1 on RL4724
Local government area:	Cairns Regional Council and Douglas Shire Council
Existing use:	Various uses/tenures (Freehold, Road reserve, National Park, State land, Land lease)

Details of proposal

Development type:	Material change of use and Operational work
Development description:	<p>The Department of Innovation, Tourism Industry Development and the Commonwealth Games is proposing to establish the Wangetti Trail, a 94 km dual use trail (mountain bikers and hikers) from Palm Cove in the south, the Port Douglas in the north.</p> <p>The project is split into two sections, with section 2 (SP2) located between Mowbray and Palm Cove and the subject of this pre-lodgement advice.</p> <p>SP2 comprises of eight sections:</p> <ul style="list-style-type: none"> • Section 1 -Palm Cove • Section 2 - Macalister Range/ Wangetti • Section 3 - Wangetti • Section 4 - Wangetti • Section 5 - Wangetti • Section 6- Wangetti • Section 7 -Wangetti • Section 8- Mowbray <p>SP2 involves:</p> <ul style="list-style-type: none"> • Single track consisting of a mixture of natural ground trail and surface treatments to accommodate both mountain bike users and hikers • Bridges over waterway including Hartley Creek bridge, boulder rock crossings and gully crossing style bridge from minor waterway crossings

- Lookouts platforms
- Benches/ rock seats
- Five campsites
- Amenity block

Supporting information

Drawing/report title	Prepared by	Date	Reference no.	Version/issue
Request for pre-lodgement advice form	GHD	21/08/2019	-	-
Wangetti Trail Overview – Mowbray to Palm Cove	GHD – maps 1 to 10	20/08/2019	-	-
State Assessment and Referral Agency Lot plan report	Queensland Government (Department of State Development, Manufacturing, Infrastructure and Planning)	20/08/2019	Various lots	-

Meeting minutes

Meeting discussion		
1.	<ul style="list-style-type: none"> • GHD gave a presentation of an overview of SP2 Wangetti Trail project. • SP2 Wangetti Trail straddles over two local government areas - Douglas Shire Council and Cairns Regional Council. • The majority of SP2 Wangetti Trail is located in Douglas Shire Council local government area. • Will require an assessment manager determination from the Minister for the development application. • The proposed development is considered Government Supported Transport Infrastructure. • The trail from Mowbray to Wangetti is to accommodate dual uses - walking and mountain bike riding. • The trail from Wangetti to Palm Cove is to accommodate mountain bike riding only. • A 20 metre corridor is proposed on either side of the trail. The corridor allows for the flexibility in constructing the trail infrastructure within the to minimise development impacts on the natural environment. • Clearing within the corridor will be limited to the trail track which is approximately 1.5 metres wide and will be restricted to a minimum width of 1 metre within areas. • Campsites will be elevated pads with dedicated paths leading to the campsites. • Ongoing field studies informing design elements of the trail, in particular waterway crossings. • Proposed Wangetti Hub is not part of SP2 Wangetti Trail and a separate development application will be lodged. 	

2.	<ul style="list-style-type: none"> The Department of State Development, Manufacturing, Infrastructure and Planning to provide high level advice. Further pre-lodgement advice can be requested once design elements has been finalised. 	
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The following information is provided as further advice prepared subsequent to the meeting and is valid for a period of nine months from the date of issue, unless a change in legislation or policy occurs that would affect the pre-lodgement advice.

Combined material change of use and operational work application		
1.	<p>The combined application for the Wangetti Trail Project covering project area SP2 Wangetti Trail Mowbray is located on land between Mowbray and Palm Cove and includes the trail, boardwalk and gully/creek crossings.</p> <p>Potential referral requirements under the Planning Regulation 2017 and referral agency assessment fees are as follows:</p> <p><u>Material change of use triggers</u></p> <p>Removal, destruction or damage of marine plants</p> <ul style="list-style-type: none"> Schedule 10, Part 6, Division 3, Subdivision 3, Table 2, Item 1 – Material change of use involving removal, destruction or damage of marine plants. The potential assessment fee is scaled at \$3,313.00, \$6,625.00 or \$13,248.00 depending on the area of marine plants disturbance. Refer to item 6 for application requirements. <p>State transport corridor</p> <ul style="list-style-type: none"> Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 – Material change of use of premises near a State transport corridor. The potential assessment fee is \$3,313.00 is proposed development involves a new or changed access to the state-controlled road, otherwise the fee is \$1,655.00. Refer to item 7 for application requirements. <p>Coastal management district</p> <ul style="list-style-type: none"> Schedule 10, Part 17, Division 3, Table 6, Item 1 – Material change of use involving work in a coastal management district (if applicable). The potential assessment fee is \$3,313.00. Refer to item 8 for application requirements. <p><u>Operational work triggers</u></p> <p>Removal, destruction or damage of marine plants</p> <ul style="list-style-type: none"> Schedule 10, Part 6, Division 3, Subdivision 3, Table 1, Item 1– Operational work that is the removal, destruction or damage of a marine plants (as there is no development approval in effect for a material change of use). The potential assessment fee is scaled at \$3,313.00, \$6,625.00 or \$13,248.00 depending on the area of marine plants disturbance. Refer to item 6 for application requirements <p>Constructing or raising waterway barrier works</p>	

	<ul style="list-style-type: none"> Schedule 10, Part 6, Division 4, Subdivision 3, Table 1, Item 1 –Operational work that is constructing or raising waterway barrier works (if applicable). The potential assessment fee for each waterway barrier is scaled at \$3,313.00, \$6,625.00 or \$13,248.00. The fee is based on the risk category of the waterway. Under section 36 of the Planning Regulation 2017, where there is one or more waterway barrier the assessment fee is capped at \$13,248.00. Refer to item 7 for application requirements. <p>Tidal works or work in a coastal management district</p> <ul style="list-style-type: none"> Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational work that is tidal works or work in a coastal management district. The potential assessment fee is \$3,313.00. Refer to item 8 for application requirements.
Determination of assessment manager	
2.	<p>As the proposed SP2 Wangetti Trail is located over two local government areas, an assessment manager determination is required.</p> <p>In accordance with Section 48(6) of the Planning Act 2016 the Minister may decide who is the assessment manager for the development application or require the development application to be split into two applications.</p> <p>The determination request is to be addressed to:</p> <p style="padding-left: 40px;">Hon Cameron Dick MP Minister for State Development, Manufacturing, Infrastructure and Planning PO Box 15009 City East QLD 4001 Email: statedevelopment@ministerial.qld.gov.au</p> <p>To assist the Minister in making a determination, it is recommended the following information is provided with the request:</p> <ul style="list-style-type: none"> overview of the SP2 Wangetti Trail project including a description of the proposed development within each local government area maps showing the project area within each local government area; and any written communication from Douglas Shire Council and/or Cairns Regional Council advising of its view on the appropriate assessment manager for the proposed development application.
Owners consent	
3.	<p>Owner's consent from the Department of Natural Resources, Mines and Energy is required in order to lodge a properly made development application under the <i>Planning Act 2016</i> for the following:</p> <ul style="list-style-type: none"> A material change of use development application which includes: <ul style="list-style-type: none"> reserve land where there is no secondary interest (i.e. trustee lease) - Lot 31 on SP129117, Lots 3, 4 and 6 on SP309107, Lot 32 on SP165924 and Lot 117 on SR898

	<ul style="list-style-type: none"> o Douglas Shire Council, as registered trustee for any reserve land, must also provide owner's consent to the development application o any dedicated local road corridors (including esplanade); and o unallocated State land - Lots 1 and 2 on SP309094, Lot 12 on USL9994). <ul style="list-style-type: none"> • An operational work development application which involves work below high water. <p>There is no fee for an owner's consent application. The forms to apply for owner's consent can be found on the Department of Natural Resources, Mines and Energy's website:</p> <ul style="list-style-type: none"> • Application form Contact and Land Details Part A • Application for owners consent to development applications Part B <p>The application for owner's consent should also include:</p> <ul style="list-style-type: none"> • Development application details — DA Form 1 with all other necessary forms or attachments including sketches/plans of existing and proposed improvements proposed to be lodged with the assessment manager. • If acting on a person's behalf, a letter from the person advising that you are acting on their behalf. • A letter from the leaseholder or trustee, if the development proposal relates to a secondary interest in the land (e.g. sublease, trustee lease), and • Any additional attachments, as requested. <p>Further information on owner's consent is available on Queensland Government's website.</p> <p>An application for owner's consent can be lodged by email to SLAMlodgement@dnrme.qld.gov.au or posted to:</p> <p style="padding-left: 40px;">State Land Asset Management Department of Natural Resources, Mines and Energy PO Box 5318, Townsville QLD 4810</p> <p>The progress of the application can be tracked online.</p> <p>NOTE: Lots 1 and 2 on SP309094 are currently proposed for declaration as transferable land under section 10(1)(c) of the <i>Aboriginal Land Act 1991</i>. The Department of Natural Resources, Mines and Energy is currently in the process of transferring Lots 1 and 2 to aboriginal freehold land.</p> <p>If the proponent is seeking to gain tenure over Lots 1 and 2 on SP309094 prior to the transfer, please contact Kylie Eddie, Senior Project Officer, Indigenous Land Operations via Kylie.Eddie@dnrme.qld.gov.au. If the proponent is seeking to gain tenure after the land transfer, the proponent should negotiate with the landholders.</p>
	<p>Government supported transport infrastructure</p> <p>4. Government supported transport infrastructure is defined under Schedule 24 of the Planning Regulation as transport infrastructure that is:</p> <ul style="list-style-type: none"> (a) funded, wholly or partly, by the State or Commonwealth; or (b) provided by a person, other than under a development approval or infrastructure agreement, on conditions that – <ul style="list-style-type: none"> (i) are agreed to by the Government; and, (ii) are intended to support the commercial viability of the infrastructure. <p>Under Schedule 5, Part 1 of the Planning Regulation, infrastructure for transport relates to:</p> <ul style="list-style-type: none"> (i) Ancillary works and encroachments

- (ii) Transport infrastructure, including transport infrastructure stated in schedule 2 of the Act, definition *development infrastructure*
- (iii) Wharves, public jetties, port facilities and navigational facilities
- (iv) Storage and works depots and similar facilities, including administrative facilities relating to the provision or maintenance of infrastructure stated in this part
- (v) Any other facility for transport not stated in this part that is intended mainly to accommodate government functions.

Development infrastructure mentioned in Schedule 2 of the [Planning Act 2016](#) means:

- (a) Land or works, or both land and works for –
 - (i) water cycle management infrastructure, including infrastructure for water supply, sewerage, collecting water, treating water, stream managing, disposing of waters and flood mitigation, but not water cycle management infrastructure that is State infrastructure; or
 - (ii) transport infrastructure, including roads, vehicle lay-bys, traffic control devices, dedicated public transport corridors, public parking facilities predominantly serving a local area, cycle ways, pathways and ferry terminals; or
 - (iii) public parks infrastructure, including playground equipment, playing fields, courts and picnic facilities; or
- (b) Land, and works that ensure the land is suitable for development, for local community facilities, like:
 - (i) community halls or centres; or
 - (ii) public recreation centres; or
 - (iii) public libraries.

In addition, the definition of government supported transport infrastructure under the *Transport Infrastructure Act 1994* is transport infrastructure that—

- (a) is funded, wholly or partly, by appropriations from the consolidated fund; or
- (b) is funded, wholly or partly, by borrowings made by the Government (other than commercial borrowings made by the Queensland Treasury Corporation acting as an agent); or
- (c) is funded, wholly or partly, by borrowings guaranteed by the Government other than borrowings for commercial investments; or
- (d) is provided by a person on the basis of conditions agreed to by the Government that are intended to support the commercial viability of the infrastructure.

Transport Infrastructure is also defined under the [Transport Infrastructure Act 1994](#) and includes the term active transport infrastructure, which is defined under the [Transport Planning and Coordination Act 1994](#) as infrastructure for use in connection with active transport, including, for example, the following—

- (a) a path or walkway for use by pedestrians;
- (b) a path, lane or other infrastructure for use by cyclists;
- (c) a device or facility designed and constructed for parking bicycles;
- (d) an end of trip facility.

If the proposed development meets the definition of government supported transport infrastructure, referral agency assessment for the following matters of interest may not be

	<p>applicable:</p> <ul style="list-style-type: none"> • native vegetation clearing • tidal works (maritime safety) • operational work near a state transport corridor • wetland protection area.
Native vegetation clearing	
5.	<p>The proposed development traverses a variety of land tenures and mapped regulated vegetation of various categories under the Vegetation Management Act 1999.</p> <p>Vegetation information on specific land parcels can be obtained through:</p> <ul style="list-style-type: none"> • Queensland Globe • A vegetation management report The report includes relevant property information and a series of maps and supporting information outlining the requirements for clearing vegetation on this land; and • The Regional Ecosystem Description Database. <p>Please note:</p> <ul style="list-style-type: none"> • The <i>Vegetation Management Act 1999</i> does not apply to any native vegetation clearing within a protected area (i.e. national park) under the <i>Nature Conservation Act 1992</i>. • Under Schedule 21, Part 1, Item 1 (19) of the Planning Regulation 2017, an exemption applies to native vegetation clearing that the <i>Vegetation Management Act 1999</i> does not apply to or affect. <p>The department's advice only relates to any proposed native vegetation clearing outside of the national park and includes any clearing for the proposed campsite on Lot 117 on SR898.</p> <p>The Department of Natural Resources, Mines and Energy and the department are of the view that the dual use trail and the campsite on Lot 117 on SR898 associated with SP2 Wangetti Trail is consistent with the meaning of government supported transport as discussed in Item 4 of this pre-lodgement advice.</p> <p>Under Schedule 21, part 1, section 1, item 14(b) of the Planning Regulation 2017, an exemption applies for the clearing of native vegetation for constructing or maintaining infrastructure stated in Schedule 5 of the Planning Regulation if the infrastructure is government supported transport infrastructure. Therefore, referral agency assessment is not required for native vegetation clearing on the basis the proposal is considered to be government supported transport infrastructure.</p>
Removal, destruction or damage of marine plants	
6.	<p>The proposed works are likely to involve the removal, destruction or damage of marine plants. Marine plants include:</p> <ul style="list-style-type: none"> • any plant (a tidal plant (including marine algae) that usually grows on or adjacent to tidal lands whether it is living, dead, standing or fallen; or • any plant material on tidal land (up to the level of Highest Astronomical Tide (HAT)). <p>Plants such as mangroves, mangrove fern, saltcouch or samphire species are considered</p>

marine plants regardless of whether or not they are above or below the level of HAT.

Marine plants do not include:

- a plant that is prohibited matter or restricted matter under the *Biosecurity Act 2014*; or
- a plant that is controlled biosecurity matter or regulated biosecurity matter under the *Biosecurity Act 2014*.

Marine plant protection applies irrespective of the tenure (e.g. unallocated state land and all state tenured lands, including private freehold and leasehold lands) of the land on which the plant occurs, the time the plant has been growing at the location, or the degree of or purpose of the disturbance.

Under the Planning Regulation works involving the removal, destruction or damage of marine plants must be undertaken in accordance with the Department of Agriculture and Fisheries [Accepted development requirements for operational work that is the removal, destruction or damage of marine plants](#) or under a development approval (assessable development).

The proposed works are unlikely to comply with the accepted development requirements as the proposal is likely to exceed the area of marine plant disturbance permissible.

The proposal development requires referral agency assessment under:

- Schedule 10, Part 6, Division 3, Subdivision 3, Table 2, Item 1 – Material change of use involving removal, destruction or damage of marine plants; and
- Schedule 10, Part 6, Division 3, Subdivision 3, Table 1, Item 1– Operational work that is the removal, destruction or damage of a marine plants (as there is no development approval in effect for a material change of use).

Assessment benchmarks

The development application will be assessed against the current State Development Assessment Provisions, State code 11: Removal, destruction or damage of marine plants.

The development application should provide a response against State code 11, addressing:

- All development – PO1 to PO15 and PO31; and
- Temporary works – PO26 to PO28.

Particular attention should be paid to the following performance outcomes (PO):

- **PO1** - the development application must demonstrate the need for the development and justify why alternatives that avoid or minimise impacts to marine plants are not viable. The development application should discuss why alternatives such as aligning the track east along the already cleared highway corridor in the vicinity of Wangetti Beach or west upstream of the marine plant areas are not viable options.
- **PO2** – only those aspects of a development that have a functional requirement to be located on tidal land create the requirement to remove, destroy or damage marine plants. The development application should address the need for the proposed alignment to cross tidal lands in the vicinity of Wangetti Beach. The construction of a walkway/bikeway that does not have an overriding need to be located on tidal lands and generally would not meet this performance outcome. [Fish Habitat Management Operational Policy FHMOP001](#) may provide guidance on how the proposal can address this matter.
- **PO3** – rights to access the area and undertake the works. The development application should demonstrate the rights of the developer to access the lands containing marine

	<p>plants. Fish Habitat Management Operational Policy FHMOP001 may provide guidance on how the proposal can address this matter.</p> <ul style="list-style-type: none"> • PO4 - the spatial extent of disturbance to marine plants is minimised. The development application should discuss alternatives and steps undertaken to reduce the loss of marine plants. The alignment of the trail within the construction corridor should demonstrate best efforts to firstly avoid and then minimise the spatial extent of impacts on marine plants. Note that laydown areas for equipment and materials should be identified and be sited so as not to impact marine plants. • PO5 - the timing of works avoids marine plant flowering, fish spawning and fish migration periods. The timing of mangrove flowering is of particular importance in this area. Mechanisms to avoid this period should be discussed in the development application. • PO6 - the works should avoid unnecessary loss, degradation or fragmentation of fish habitats and their values. The development application should provide a discussion on the minimisation of aquatic habitat fragmentation and the ongoing access of fish to areas up stream of the proposed works. • PO7 - the development does not increase the risk of mortality, disease or injury, or compromise fisheries resources. The development application should discuss how the design and works methodology avoid releasing sediments or have other harmful effects on the fisheries resource. • PO8 - the works are undertaken to encourage fish habitats and fisheries resource values to naturally regenerate. The development application should provide details of the work methodology as well as clearly marking areas of permanent and temporary marine plant disturbance on provided plans. • PO9 - development likely to cause drainage or disturbance to acid sulfate soils, prevents the release of contaminants and impacts on fisheries resources and fish habitats. The development application should provide information on the management of acid sulfate soils should they be encountered during the works. • PO10 - the tidal and freshwater inundation and drainage patterns, extent and timing are maintained or restored such that ecological processes continue, and associated fish habitat values and conditions are maintained. The application should describe how planning and the work method will minimise changes or disruption to drainage patterns. • PO11 - maintenance of natural erosion and accretion processes; no increased risk of waterway bed or bank scour or erosion. The development application should clearly identify and discuss any likely changes to the natural accretion and erosion patterns of the areas where marine plants are disturbed. • PO12 - avoidance of additional or indirect impacts to fish habitats (including dredging to maintain access; trimming of marine plants; and warning signs or protective structures). The proposed ongoing maintenance of the trail where it passes through areas of marine plants should be described in the application material. • PO26 to PO28 - temporary disturbance or temporary structures involving the removal, destruction or damage of marine plants can have both direct and indirect impacts and cause the loss of fisheries productivity. • PO31 – the department maintains an ‘avoid, mitigate, offset’ requirement that applies to those activities that will, or are likely to, have a significant residual impact on matters of state environmental significance. <p>This framework requires that impacts to marine plants are firstly avoided. Where avoidance cannot be achieved, it must be demonstrated that impacts have been carefully managed and minimised. Notwithstanding any measures to avoid or mitigate</p>
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	<p>impacts to marine plants, the works may still result in a significant residual impact, in which case an offset will be required.</p> <p>Any rehabilitation of marine plants on site may help to reduce the scale of the significant residual impact. Options to mitigate the significant residual impact to marine plants must be pursued before an offset can be considered.</p> <p><u>Application material</u></p> <p>The development application should include relevant plans as per the department's DA Forms guide: Relevant plans, including:</p> <ul style="list-style-type: none"> • the total amount of marine plants that will be disturbed, identifying the areas of permanent and/or temporary disturbance (in square metres or hectares); • the location of the marine plants to be disturbed in relation to the development works; • the level of HAT, mean high water spring tide, and low water spring tide; • location and extent of fish habitat within the development area, including creeks, sand and/or yabby banks, drainage lines, lagoons and marshes; and • if applicable, a plan clearly showing the location of the marine plants to be disturbed that will result in a significant residual impact (SRI) as defined under the <i>Environmental Offsets Act 2014</i>.
Constructing or raising waterway barrier works	
7.	<p>The proposed works cross waterways that are mapped grey (tidal) purple, red, amber and green according to the <i>Queensland waterway for waterway barrier works</i> spatial data layer. Further information is required to determine if the proposed works are likely to constitute waterway barrier works.</p> <p>Coastal sites that are located beyond the tidal (grey) zone but which, on ground, have tidal features, such as marine plants (mangroves, seagrass or salt marsh), marine fauna, salt or brackish water, or tidal ebb and flow, should be treated as tidal (grey) waterways. This will apply to all waterways throughout the proposed works locations.</p> <p>The following factsheets provide more information on waterway barrier works:</p> <ul style="list-style-type: none"> • What is a waterway? • What is a waterway barrier work? • What is not a waterway barrier work? <p>Under the Planning Regulation 2017, works involving constructing or raising waterway barrier works must be undertaken in accordance with the Department of Agriculture and Fisheries Accepted development requirements for operational work that is constructing or raising waterway barrier works or under a development approval (assessable development).</p> <p>The proposed works may not be able to comply with the relevant accepted development requirements. The following options would remove the need for an approval for this component of the works:</p> <ul style="list-style-type: none"> • avoiding waterways mapped under the Queensland waterways for waterway barrier works spatial data layer; and/or • constructing any works (e.g. bridges) in accordance with Fisheries Queensland's factsheet, 'What is not a waterway barrier work?' <p>If the proposed works constitute waterway barrier works and are unable to comply with the Department of Agriculture and Fisheries relevant accepted development requirements, the development application will require referral agency assessment under Schedule 10, Part 6,</p>

Division 4, Subdivision 3, Table 1, Item 1 –Operational work that is constructing or raising waterway barrier works of the [Planning Regulation 2017](#).

Assessment benchmarks

The development application will be assessed against the current State Development Assessment Provisions, State code 18: Constructing or raising waterway barrier works in fish habitats.

The development application should provide a response against State code 18, addressing:

- All development - PO1 to PO18 and PO36; and
- Temporary waterway barrier works - PO32 to PO35.

Particular attention should be paid to the following performance outcomes (PO):

- **PO1** - there is a demonstrated need for the development and alternatives (locations and designs) which do not involve constructing or raising waterway barrier works are not viable. Alternatives and their feasibility shown be discussed in the development application. In particular for crossings such as the “stepping stones- Boulder Rock Crossing” which are likely to modify the characteristics of the low flow channel.
- **PO2** - only those aspects of a development that have a functional requirement to be located within a waterway are supported. Under the *Fisheries Act 1994* a waterway includes a river, creek, stream, watercourse, drainage feature or inlet of the sea. To address this performance outcome the applicant should discuss the reasons why a bridge that spans high bank to high bank is not viable at the specific site or why a track alignment that avoids the waterway completely is not viable.
- **PO4 and PO5** - adequate fish passage must be provided and maintained for the life of the waterway barrier works. The works must be designed and constructed, operated and maintained to provide lateral, longitudinal passage for all members of the fish community. The development application should describe design features and management actions to ensure that the structure maintains fish passage.
These performance outcomes are of particular relevance if the boulder rock crossing model is selected. Consideration must be made to the unimpeded movement of fish. This include fish of all size classes and swimming abilities likely to be present in the waterway.
- **PO6** - development must be designed and operated so that all components of the waterway barrier works and all pathways of potential fish movement provide safe fish passage. The development application should address how the design and operation of stream crossings will provide safe passage. This includes consideration regarding the size or apertures that fish can potentially become wedged in, and the nature of the material used.
- **PO7** – drownout characteristics of the waterway barrier works, drownout frequency, timing and duration of these events. Information should be provided to describe the frequency of expected drownout, how fish and biomass will achieve passage during drownout periods as well as the anticipated time between the structures being at capacity until drownout is achieved.
- **PO8** - the development does not increase the risk of mortality, disease or injury, or compromise the health, productivity, marketability or suitability for human consumption of fisheries resources. Consideration must be given to:
 - o the design of the structures,
 - o impact on reproductive success by not restricting access to habitat,
 - o effect on fish energy reserves by not providing suitable fish passage design

	<p>elements, and</p> <ul style="list-style-type: none"> o whether fish may be physically damaged, injured, killed, trapped or stranded by the development. <p>The development application should address the impacts of the proposed structure(s) on these factors with a strong emphasis on design elements.</p> <ul style="list-style-type: none"> • PO9 - development should avoid non-essential hardening or unnatural modification of the main channel as well as avoiding channelisation and works during period of elevated flows. Works such as the proposed boulder rock crossings should avoid the main channel of waterways. • P10 - where waterway barrier works will modify water levels or flow characteristics of the waterway, existing up and downstream structures are upgraded to provide adequate fish passage in accordance with the new levels or flow characteristics. The development application should address the potential for the creation of water pooling due to water 'back-up' created by the proposed boulder rock crossings or other proposed infrastructure. • PO12 - development likely to cause drainage or disturbance to acid sulfate soils, prevents the release of contaminants and impacts on fisheries resources and fish habitats. The development application should include information on the management of acid sulfate soils should they be encountered during the works. • PO13 and PO14 - construction avoids direct and indirect disturbance to beds, banks and vegetation adjacent to the permanent development footprint. Where disturbance cannot be avoided, the bed and banks outside of the permanent development footprint must be returned to their original profile. The development application should include a thorough discussion on the works methodology of waterway barrier construction and how impacts to surrounding fish habitats will be minimised. • PO15 - the natural substrate of the waterway is retained or reconstructed so that the post-construction substrate is comparable to the natural substrate, for example in terms of size and consistency. Any scour protection to be included in the development should be clearly marked on any plans and the nature of the material used described. Rock boulders are not considered to be comparable to the natural substrate and may impede fish passage. • PO32 - PO35 - all temporary waterway barrier works will exist only for a specified temporary period and are removed at the end of their design life. Provision must be made for species requiring downstream movement during the works and the condition of aquatic plants (macrophytes) and fish habitats is maintained. <p>If any proposed temporary waterway barrier works are unable to meet the accepted development requirements, this aspect of the works must be included in the development application and PO32 to PO35. Please be aware of additional requirements for temporary waterway barriers in tidal areas (refer to sections 4.3 (standards), and work type 7.1 of the accepted development requirements).</p> <ul style="list-style-type: none"> • PO36 - the department maintains an 'avoid, mitigate, offset' requirement that applies to those activities that will, or are likely to, have a significant residual impact on matters of state environmental significance. <p>Depending on the type of works being proposed and impact to waterways providing for fish passage matters of state environmental significance, the works may have a Significant Residual Impact.</p>
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	<p>The development application should include details on how the impacts to waterways providing for fish passage will be avoided or minimised and where this cannot be reasonably achieved, offset.</p> <p><u>Application material</u></p> <p>The development application should include relevant plans as per the department's DA Forms guide: Relevant plans, including:</p> <ul style="list-style-type: none"> • detailed plans clearly showing the location of the proposed works in relation to existing mapped waterways; • detailed plans clearly showing a cross section of the proposed waterway barrier works in relation to the existing bed and banks of each impacted waterway; • a longitudinal section of the proposed waterway barrier works in relation to the bed of the waterway upstream and downstream of the works; <p><i>Note – all plans should be able to be read to scale at A3 size</i></p> <p>Written documentation discussing the following:</p> <ul style="list-style-type: none"> • details of the purpose of the proposed works (e.g. single/multi-span bridge for pedestrian and bicycle access etc.) • a description of the waterway proposed to be impacted (e.g. condition, size, connectivity, general hydrology) and nature of the impact; • a description of the work method (e.g. timing, equipment to be used); • a detailed description of the alternatives considered to reduce impacts on the waterway, as applicable (e.g. alternative designs, locations, setbacks/buffer distances, etc.); • details of on-site mitigation actions, during and after the development; • the extent of any future maintenance works required for the continued safe operation of the proposed structure or facility; and • impacts to fish passage. It must firstly be demonstrated that impacts to waterways providing for fish passage have been avoided. Where avoidance is not reasonably possible, impacts to waterways providing for fish passage must be mitigated. An environmental offset pursuant to the Environmental Offsets Act 2014 may need to be provided for any significant residual impact.
State transport corridor	
8.	<p>Part of the SP2 Wangetti Trail is located within the Captain Cook Highway road reserve including access for emergency and service vehicles via the Captain Cook Highway.</p> <p>The development application will trigger referral agency assessment under Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 - material change of use near a State transport corridor of the Planning Regulation 2017.</p> <p>Referral agency assessment under Schedule 10, Part 9, Division 4, Subdivision 2, Table 5, Item 1 – operational work near a state transport corridor of the Planning Regulation 2017 is not required on the basis the proposal is considered to be government supported transport infrastructure.</p> <p><u>Assessment benchmarks</u></p> <p>The development application will be assessed against the current State Development Assessment Provisions, State code 1: Development in a state-controlled road environment.</p> <p>The development application should provide a response State code 1 in its entirety, identifying</p>

	<p>how the proposed development meets each performance outcome.</p> <p>The Department of Transport and Main Roads has prepared a guideline to assist applicants in responding to State code 1.</p> <p><u>Application material</u></p> <p>Provide scaled and sufficiently detailed plans and supporting documentation which clearly identify all aspects of the proposed development in relation to the state-controlled road. In particular, the include the following:</p> <ul style="list-style-type: none"> • location of vehicle access points and access arrangements for emergency and service vehicles to access SP2 Wangetti Trail: Mowbray to Palm Cove via the Captain Cook Highway; • confirm all pedestrian (hikers) / cycling (mountain bike) crossing points over the Captain Cook Highway for SP2 Wangetti Trail; and • confirm that proposed buildings and camping grounds along SP2 Wangetti Trail are located a sufficient distance from the Captain Cook Highway.
Coastal management district and/or Tidal works or work in a coastal management district	
9.	<p>If the proposed material change of use development application involves operational work in the coastal management district that carried out completely or partly in an erosion prone area and:</p> <ul style="list-style-type: none"> • is extracting, excavating or filling more than 1000m³, or • clearing more than 1000m² of native vegetation, <p>referral agency assessment is required under Schedule 10, Part 17, Division 3, Table 6, Item 1 – Material change of use involving work in a coastal management district of the Planning Regulation 2017.</p> <p>Referral agency assessment is required under Schedule 10, Part 17, Division 3, Table 1, Item 1 – Operational work that is tidal works or work in a coastal management district of the Planning Regulation 2017 if the proposal involves:</p> <ul style="list-style-type: none"> (a) tidal works; or (b) any of the following carried out completely or partly in a coastal management district— <ul style="list-style-type: none"> i. interfering with quarry material, as defined under the Coastal Act, on State coastal land above high-water mark; ii. disposing of dredge spoil, or other solid waste material, in tidal water; iii. constructing an artificial waterway; iv. removing or interfering with coastal dunes on land, other than State coastal land, that is in an erosion prone <p><u>Assessment benchmarks</u></p> <p>The development application will be assessed against the current State Development Assessment Provisions, State code 8: Coastal development and tidal works.</p> <p>The development application should provide a response State code 8 in its entirety, identifying how the proposed development meets each performance outcome.</p> <p>Mapping indicates the erosion prone area exists within the area of development. Development is not supported within the erosion prone area unless it can be justified that it is coastal-dependant development.</p> <p>Coastal-dependant development is defined in State code 8 as:</p> <ul style="list-style-type: none"> 1. means development that in order to function must be located in tidal waters or be able to access tidal water; and 2. may include, but is not limited to:

- a. industrial and commercial facilities such as ports, harbours and navigation channels and facilities, aquaculture involving marine species, desalination plants, tidal generators, coastal protection works, erosion control structures, public marine development and beach nourishment
 - b. tourism facilities for marine (boating) purposes
 - c. community facilities and sporting facilities which require access to tidal water in order to function, such as surf clubs, marine rescue, rowing and sailing clubs; or
 - d. co-located residential and tourist uses that are part of an integrated development proposal (e.g. mixed use development) incorporating a marina, if these uses are located directly landward of the marina and appropriately protected from natural hazards; but
3. does not include:
- a. residential development, including canal development, as the primary use
 - b. waste management facilities, such as landfills, sewerage treatment plants; or
 - c. transport infrastructure, other than for access to the coast.

Adequate justification for any permanent structure(s) proposed within the erosion prone area or information on how the hazards associated with the development will be avoided or mitigated should be included with the application.

Particular attention should be paid to the following performance outcomes (PO):

- **PO1, PO2, PO3, PO4 and PO5** - justify why the development cannot be relocated outside the high coastal hazard area.

DES's [Coastal Hazard Technical Guide](#) provides information on coastal hazards as well as information on recalculating the erosion prone area using a standard, approved formula in the event that the currently mapped erosion prone area is believed not to be a true indicator of the potential hazard.
- **PO11** - issues regarding acid sulfate soils should be addressed, including consideration of the risk of disturbing acid sulfate soils, as well as providing a statement about how the risk is intended to be managed. The [Queensland Acid Sulfate Soil Technical Manual](#) outlines relevant scientific information and guidelines for Acid Sulfate Soil Management.
- **PO12** – The proposed development area is mapped as containing areas of regulated vegetation Category R. The development application should:
 - o Provide a targeted assessment to ground truth any values identified;
 - o Demonstrate how the development avoids adverse impacts on each value to the greatest extent practicable;
 - o Where the above is not reasonably possible, demonstrate how impacts on values have or will be minimised and/or mitigated to the greatest extent practicable.
- **PO16** - it will be required to determine if there are any matters of state environmental significance on or adjacent to the proposed development site.

[Environmental Reports Online](#) can be used to conduct a desktop analysis to identify any mapped [matters of state environmental significance](#) that exists on (using the lot on plan option to search) and near the proposed site/s (using the central coordinates option to search).

Where matters of state environmental significance are identified, the development application should:
 - provide a targeted assessment to ground truth any matters of state environmental

significance identified;

- demonstrate how the development avoids adverse impacts on each matters of state environmental significance to the greatest extent practicable;
- where the above is not reasonably possible, demonstrate how impacts on matters of state environmental significance have or will be minimised and/or mitigated to the greatest extent practicable;
- demonstrate whether the development will have a Significant Residual Impact on any identified matters of state environmental significance using the department's [Significant Residual Impact Guideline](#). An assessment will need to be undertaken for each matters of state environmental significance to determine whether the proposed development will result in a significant residual impact; and
- identify any potential offset obligation as per PO16 (3) of State Code 8.

For further advice on environmental offsets can be found on the Department of Environment and Science's [website](#). The following tools may be helpful for a desktop analysis and assessment:

- [Environmental Reports Online](#)
- [Property Reports and Regulated Vegetation Mapping](#)
- [Map of Referable Wetlands](#)
- [Wetland/Info](#)
- [Queensland Wetland Buffer Guideline](#)
- [Protected Plants Flora Survey Trigger Map](#)
- [Species List](#)
- [State Planning Policy Interactive Mapping](#)

Rehabilitation/Vegetation Management Plan

To assist in mitigating impacts on matters of state environmental significance, it is recommended the development application include a rehabilitation/vegetation management plan prepared by an appropriately qualified person.

This rehabilitation plan should identify:

- the areas to be rehabilitated
- a list of species proposed to be used in revegetating the site (these should be native to the area)
- proposed rehabilitation methodology
- proposed maintenance
- proposed monitoring
- proposed weed management.

The Department of Environment and Science has also prepared a [guideline](#) to assist applicants in responding to State Code 8. The guideline provides background information and key concepts relevant for coastal processes and resources and coastal protection and management applicable to complying with the code.

Application material

The development application should include a detailed description of the proposed development and a description of the existing site conditions of the proposed development location. In particular, the following documentation should be provided:

- description of the land intended to be developed, including the property address, tenure and real property description of the land; and
- description of the development, including:
 - o location of all built structures, or structures to be modified or demolished, as a result of the proposed development;

	<ul style="list-style-type: none"> o description of any operational works occurring on site including expected timeframes; o any machinery to be used or stored on the site; o staging of the development if applicable; and <ul style="list-style-type: none"> • detailed and appropriately scaled drawings and/or plans which clearly identify the location of proposed development, including: <ul style="list-style-type: none"> o adjacent real property boundaries; o adjacent riverbanks, walls, sandbanks, structures, the limit of vegetation, and/or other principal features of the immediate area; o relevant tidal planes (e.g. Highest Astronomical Tide, Mean High Water Springs); o the location and setting out details for cross-sections; and o any other information required to accurately define the area and to allow the site to be readily identified from the plan. <p>All plans/drawings should include title, date and numbering suitable to identify the plan and should be mapped to GDA94 projection.</p>
Tidal work in tidal waters	
10.	<p>Referral agency assessment is not required under Schedule 10, Part 17, Division 3, Table 2, Item 1 – Operational work that is the tidal works or work in a coastal management district of the Planning Regulation 2017 as the proposal is considered to be government supported transport infrastructure.</p> <p>It is recommended you contact the Harbour Master at Maritime Safety Queensland on 4052 7494 prior to commencement of any approved tidal works.</p>
State Development Assessment Provisions	
11.	<p>State Development Assessment Provisions version 2.5 took effect on 1 July 2019. To assist applicants in preparing a development application the department has prepared SDAP version 2.5 response templates.</p> <p>An application that complies with all applicable acceptable outcomes is considered to satisfy the corresponding performance outcome. If an application does not comply with one or more of the applicable acceptable outcomes, compliance with the performance outcome should be demonstrated.</p>
Environmental offset	
12.	<p>Schedule 2 of the Environmental Offsets Regulation 2014 provides a definition for matters of state environmental significance.</p> <p>The department's Significant Residual Impact Guideline provides guidance for which an environmental offset condition may be imposed for certain prescribed environmental matters (matters of state environmental significance) where the department has a role in assessing a development application against the State Development Assessment Provisions.</p> <p>Where a significant residual impact will occur on matters of state environmental significance, the offsets framework provides three offset delivery options:</p> <ul style="list-style-type: none"> • proponent-driven offsets i.e. land-based offsets or a Direct Benefit Management Plan; • financial settlement offset; or • a combination of the two.

	For further information on environmental offsets visit Queensland Government's website .
Further pre-lodgement advice	
13.	<p>It is recommended further pre-lodgement advice is requested once further information and technical drawings are available on the design elements for SP2 Wangetti Trail.</p> <p>To request further pre-lodgement advice please use the 'related actions' tab in the 1908-12771 SPL MyDAS2 record and select 'Request more pre-lodgement advice from SARA'. You will be given an option to select either a meeting or written advice.</p>
Further advice outside SARA's jurisdiction	
Tenure	
14.	<p><u>General advice</u></p> <p>The proposed development will traverse a variety of state land tenures, including reserves, unallocated state land, dedicated road corridors (including esplanade), a road licence, Mowbray River and Spring Creek. The proposed development will also traverse numerous freehold properties. Tenure options for state-owned and private land are provided in Attachment 1.</p> <p>It is recommended you continue liaising with the Department of Natural Resources, Mines and Energy via Townsville.SLAMS@dnrme.qld.gov.au with respect to tenure over state-owned land.</p> <p><u>Proposed campsite – Lot 117 on SR898</u></p> <p>Lot 117 on SR898 is a reserve for camping purposes held by Douglas Shire Council as registered trustee. A reserve for camping purposes is generally considered a reserve for travelling stock and is associated with the stock route network. Historically, these reserves were used as places where stock can be camped, watered, rested or trucked.</p> <p>The proposed campsite on Lot 117 on SR898 is not considered consistent with the current purpose of the reserve. The Department of Natural Resources, Mines and Energy may consider a change of the reserve purpose from camping to a community purpose prescribed under Schedule 1 of the <i>Land Act 1994</i>. This is contingent upon Lot 117 on SR898 no longer being required as part of Queensland stock route network. As trustee, Douglas Shire Council is required to request and support any change in purpose.</p> <p>As discussed during at the meeting on 6 September 2019, it has not yet established if the proposed campsite will be operated in a commercial nature or open to non-exclusive public use. Once the purpose of the reserve has been changed, if the proponent is seeking to develop a commercial campsite, an additional authority will be required (i.e. a trustee permit authorised by Douglas Shire Council or a trustee lease under the <i>Land Act 1994</i>). A trustee lease under the <i>Land Act 1994</i> will involve the development of a Land Management Plan.</p> <p>If Lot 117 on SR898 continues to be required for its gazetted purpose as part of the stock route network, any commercial/tourism activities would be considered inconsistent with the purpose of the reserve. The Department of Natural Resources, Mines and Energy would not support the purpose of the reserve being amended and alternative locations for the campsite should be investigated.</p> <p>It is recommended you contact the Department of Natural Resources, Mines and Energy email Townsville.SLAMS@dnrme.qld.gov.au for further advice.</p>

Category R vegetation	
15.	<p>If the proposed development includes clearing vegetation in any Category R areas you should ensure this clearing can be undertaken as exempt clearing work under Schedule 21 of the Planning Regulation 2017 or in accordance with its Accepted development vegetation clearing code.</p> <p>Clearing vegetation in any Category R areas that is not exempt or in accordance with an accepted development vegetation clearing code is prohibited development. Locating the proposal solely within in the Category X area does not require any assessment for native vegetation clearing.</p>
Water Act 2000	
16.	<p>The proposed alignment intersects a number of unmapped features on the Department of Natural Resources, Mines and Energy's watercourse identification map.</p> <p>A watercourse determination may be required to determine if these features are considered to be watercourses or drainage features for the purpose of the <i>Water Act 2000</i>.</p> <p>If a feature is determined to be a drainage feature, no approvals are required under the <i>Water Act 2000</i>.</p> <p>If a feature is determined to be a watercourse, approval may be required under the <i>Water Act 2000</i> to undertake the following activities:</p> <ul style="list-style-type: none"> • taking or interfering with water • placement of fill, excavation of material or vegetation clearing within a watercourse; and, • excavation of riverine quarry materials. <p>Given the number of unmapped feature crossings associated with the trail, it is recommended the proponent review the riverine protection permit exemption requirements prior to requesting a determination.</p> <p>If the scope of the works are able to meet the minimum requirements, approval is not required under the <i>Water Act 2000</i> and a watercourse determination will not be required.</p> <p>Further information on riverine protection permit exemption requirements is provided in Item 17 of this pre-lodgement advice.</p>
17.	<p>If riverine quarry material is needed, there are differing requirements under the <i>Water Act 2000</i> depending on the purpose for which riverine material is to be used.</p> <p>Option 1: Riverine protection permit – material disposed as waste</p> <p>A riverine protection permit may be required to authorise the placement of fill, clearing of vegetation and excavation of waste material within a declared watercourse. A riverine protection permit is not required if an eligible entity, or a contractor of an eligible entity, can meet the exemption criteria outlined in the Riverine Protection Permit Exemptions Requirements. Material excavated as a waste product must be disposed of in accordance with the exemption document.</p> <p>If the minimum requirements of the riverine protection permit exemption document cannot be met, it is recommended a request for a watercourse determination be submitted to WaterInfoNorth@dnrme.qld.gov.</p> <p>If the works do not meet the exemption requirements, a riverine protection permit must be obtained under section 218 of the <i>Water Act 2000</i>. There is no fee for this permit. The application form is available on Business Queensland's website. It is recommended applications</p>

are submitted with supporting information including design drawings illustrated by a suitably qualified person. Riverine protection permit applications require the consent of the relevant landholder. A riverine protection permit can only authorise the excavation of material disposed as waste.

It is recommended you contact the Department of Natural resources, Mines and Energy on WaterInfoNorth@dnrme.qld.gov.au or 447 9141 for further advice.

Option 2: Quarry material allocation notice – material used for a beneficial purpose

If you intend to excavate riverine material from watercourse for a beneficial purpose (i.e. construction material) a Quarry Material Allocation Notice (QMAN) is required. These notices are issued by the Department of Natural Resources, Mines and Energy under section 227 of the *Water Act 2000* and will be in addition to a development permit under the *Planning Act 2016*.

There is a biannual fee of \$182.60 associated with a QMAN. Royalties are also payable at a rate of \$2.22 per cubic metre removed. Application fees and royalties are reassessed and updated on July 1st each year.

Relevant information and application forms are available on Business Queensland's [website](#). It is recommended you contact the Department of Natural Resources, Mines and Energy on WaterInfoNorth@dnrme.qld.gov.au or 4447 9141 for further advice.

Option 3: Lodging a development application – material used for a beneficial purpose

A quarry material allocation notice can only be used in conjunction with a development permit under the *Planning Act 2016*.

If the proposal requires approval for removal of quarry material, referral agency assessment is required under Schedule 10, Part 19, Division 2, Subdivision 3, Table 1 – removing quarry material. The development application will be assessed against the current State Development Assessment Provisions, State code 15: Removal of quarry material from a watercourse or lake.

It is recommended further pre-lodgement advice is sought if proposal requires development approval for the removal of quarry material.

Taking water – constructing authorities

As the Department of Innovation, Tourism Industry Development and the Commonwealth Games is a constructing authority under Schedule 2 of the *Acquisition of Land Act 1967*, water may be taken in accordance with sections 23 and 24 of the *Water Regulation 2016* without the need for a water authority for the purpose of constructing or maintaining infrastructure that the constructing authority may lawfully construct or maintain.

The water must be taken in accordance with the [Exemption requirements for constructing authorities for the take of water without a water entitlement](#). The constructing authority must notify the Department of Natural Resources, Mines and Energy in writing of the proposal to take water 10 business days prior to taking any water under this exemption document.

If the proposed works can meet the requirements outlined under the exemption document, a water authority under the *Water Act 2000* will not be required. Despite this, development approval may be required for the take of water, dependent upon the source of water to be taken, and the method of extraction (i.e. water pumps).

If the take of water does not comply with the exemption document, a water permit will be required. Water permits have no prescribed fee and must be applied for under section 137 of the *Water Act 2000*. The application form for a water permit is available online Business

	Queensland's website .
Approvals under the <i>Transport Infrastructure Act 1994</i>	
18.	<p><u>Road works approval (s33) – State-controlled road</u></p> <p>Under section 33 of the <i>Transport Infrastructure Act 1994</i>, written approval is required from the Department of Transport and Main Roads to carry out road works on a state-controlled road.</p> <p>Please contact the Cairns regional office of the Department of Transport and Main Roads on 4045 7144 to make an application for road works approval.</p> <p>This approval must be obtained prior to commencing any works on the state-controlled road reserve. The approval process will require the approval of engineering designs of the proposed works, certified by a Registered Professional Engineer of Queensland (RPEQ).</p> <p>The road works approval process takes time – please contact Transport and Main Roads as soon as possible to ensure that gaining approval does not delay construction.</p> <p><u>Road corridor permit (s50) – State-controlled road</u></p> <p>A Road Corridor Permit is required for any ancillary works and encroachments on the state-controlled road under section 50(2) and Schedule 6 of the <i>Transport Infrastructure Act 1994</i> and Part 5 and Schedule 1 of the Transport Infrastructure (State-Controlled Roads) Regulation 2006.</p> <p>To undertake works within the state-controlled road reserve, the proposed development will require a Road Corridor Permit under s50 under the Transport Infrastructure Act.</p> <p>Ancillary works and encroachments include but are not limited to advertising signs or other advertising devices, paths or bikeways, buildings/shelters, vegetation clearing, landscaping and planting.</p> <p>Please contact the Cairns regional office of the Department of Transport and Main Roads on 4045 7144 to make an application for a Road Corridor Permit.</p>
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	
19.	<p>Matters of National Environmental Significance, or other matters protected by the <i>Environment Protection and Biodiversity Conservation Act 1999</i> are likely to occur in the area of development.</p> <p>Further information relating to matters protected by the <i>Environment Protection and Biodiversity Conservation Act 1999</i> can be obtained from the Department of the Environment and Energy website.</p>
<i>Nature Conservation Act 1992 – National Park</i>	
20.	<p>It is recommended you continue to engage with Queensland Parks and Wildlife Service and Partnerships within the Department of Environment and Science regarding approval requirements under the <i>Nature Conservation Act 1992</i>.</p> <p>Executive Director – Ecotourism Development, Fiona Wright can be contacted on 3338 9319 or email Fiona.wright@des.qld.gov.au.</p>
<i>Nature Conservation Act 1992 – breeding places</i>	
21.	Under the Nature Conservation (Wildlife Management) Regulation 2006, tampering with an

	<p>animal breeding place of a protected species (identified in the <i>Nature Conservation Act 1992</i>) requires appropriate authorisation.</p> <p>Further guidance on protected animal breeding places can be found on the Species Management Program information page.</p>
Nature Conservation Act 1992 – protected plants	
22.	<p>In Queensland, all native plants are considered “protected plants” under the <i>Nature Conservation Act 1992</i>. Anyone proposing to clear protected plants ‘in the wild’ for any reason may require a permit from the Department of Environment and Science.</p> <p>Prior to any clearing of protected plants, a person must check the flora survey trigger map to determine if the clearing is within a high risk area. This trigger map is available as part of the Vegetation Management Report which can be accessed on Queensland Government’s website.</p> <p>In a high risk area, a flora survey must be undertaken and a clearing permit may be required for clearing endangered, vulnerable and near threatened plants (‘EVNT plants’) and their supporting habitat.</p> <p>The Department of Environment and Science can be contacted via email at palm@des.qld.gov.au or by contacting 1300 130 372 for information regarding clearing requirements under the <i>Nature Conservation Act 1992</i> protected plant framework.</p> <p>Further information on protected plants can be found in the Department of Environment and Science’s Operational Policy.</p>
Wet Tropics World Heritage Area	
23.	<p>Queensland Parks and Wildlife Service and Partnerships have advised that a separate application will need to be made with the Wet Tropics Management Authority regarding any approvals for development in the Wet Tropics World Heritage Area.</p> <p>It is recommended you seek advice from the Wet Tropics Management Authority about its requirements for the proposed development.</p> <p>Angus McLeod, Senior Conservation Officer can be contacted on 4241 0518 or email angus.mcleod@wtma.qld.gov.au.</p>
Allocation of Quarry Material	
24.	<p>As the proposed development may involve removing quarry material from land under tidal water to above the high water mark (mean high water spring) on State coastal land, an allocation of quarry material under section 73 of the <i>Coastal Management and Protection Act 1995</i> may be required.</p> <p>Please note the following two circumstances are considered to constitute a reasonable excuse for removing quarry material without an allocation notice—</p> <ol style="list-style-type: none"> 1. The material is removed as a necessary part of the construction of an approved tidal work (e.g. excavation or boring of footings), and <ul style="list-style-type: none"> • is of no commercial value or commercial benefit, and • is not required for maintaining coastal processes in adjacent areas and cannot be returned to tidal water. 2. The material is removed as part of an investigative process (coring, sediment sampling, bulk sampling), and <ul style="list-style-type: none"> • the quantity of material removed is less than 10m³ per site/project, and • will be analysed for its chemical, physical or stratigraphic properties, and • a Pre-work notification form (ESR/2018/4175) is lodged with Permit and Licence Management (PALM) palm@des.qld.gov.au prior to commencement of the work.

	Please contact the Department of Environment and Science at palm@des.qld.gov.au if there is any doubt about whether an allocation of quarry material is required.
Marine Park Permit	
25.	Given the location of proposal and its proximity to the Great Barrier Reef Coast catchment, it is recommended you contact the Department of Environment and Science, Permissions Management on 4222 5240 to discuss any Marine Park permit that may be required.

For further information please contact Joanne Manson, Principal Planning Officer, SARA Far North QLD on 4037 3228 or via email CairnsSARA@dsdmip.qld.gov.au who will be pleased to assist.

Yours sincerely



Brett Nancarrow
Manager (Planning)

Enc: **Attachment 1** – Tenure options

Attachment 1 – Tenure options

Note: the following options do not include land allocated under the *Nature Conservation Act 1992* i.e. National Park.

Road

Road Licence

- Road Licences are issued under the *Land Act 1994* (the Act) over a temporarily closed road and only to an adjoining land owner (Licensee).
- Cannot be sub-let and is for exclusive use by Licensee for the purpose the Road Licence was granted for.
- Would need to be cancelled/surrendered (either wholly or partially) to allow for the underlying road to be used for road purposes.
- A cancellation is initiated by either the State or the local government.
- A surrender is initiated by the licensee.
- If a road licence is cancelled or surrendered, the road will be reopened for public use.
- Any improvements in the road licence area will be required to be removed and the area left in a clean and tidy state.
- The Department of Natural Resources, Mines and Energy's application forms and payment of application fee of \$140.00 is required for surrender of a road licence.

Road opening

- Land (private and state owned), or part thereof, may be dedicated as road (including esplanade).
- Once dedicated, control of the road will fall under the relevant local government.
- Where only part of land is to become road, a plan of survey will need to be lodged identifying the area proposed to be dedicated, and the balance area of the parcel.
- Where the entirety of the land is to become road, a dedication notice can be lodged identifying the entirety of the area to be opened as road.

Freehold

Private commercial lease

- A lease agreement between two parties being the land owner/s and potentially a State entity.
- A legally binding contract that gives a party certain rights to a property for a set term and details what the responsibilities are for each party for the lease area.
- Both parties are required to agree on the terms and conditions of the lease agreement.
- The lease agreement terms may include public liability and indemnity clauses, and provide for subletting and options for renewal of the lease.
- Will be subject to payment of rent/consideration to the landowner/s.
- Other requirements may include: drafting of lease document and Titles Registry Form 7, survey of the lease area, payment of lodgement fees (currently \$187.00 per lease) and registration in the Titles Registry Office of the Department of Natural Resources, Mines and Energy.

Public thoroughfare easement

- Provides access to the public (as opposed to a 'right of way (access)' easement, which is an agreement between landowners where the benefiting landowner can access a specific area of their neighbour's property).
- Use of this type of easement (public thoroughfare) is limited to: pedestrians, cyclists and vehicles reasonably needed for the building and maintenance of the easement.
- The easement is between the land owner/s and either the local government or the State (represented by the Department of Transport and Main Roads).
- Any proposed public thoroughfare easement over common property within a community titles scheme must be granted by the body corporate in a way provided for under its relevant

regulation module (i.e. for Standard, Small Schemes, Accommodation and Commercial Modules a copy of the resolution certified under the body corporate seal to the granting or accepting of the easement must be deposited with the easement.)

- May be subject to payment of a consideration.
- Other requirements may include: drafting of easement document and Titles Registry Form 9, survey of the easement area, payment of lodgement fees (currently \$187.00) and registration in the Titles Registry Office of the Department of Natural Resources, Mines and Energy.

Reserve – Land Act

- Reserve purpose should be complimentary to the proposed use (i.e. Recreation).
- A Reserve can be for more than one community purpose.
- Available community purposes for Reserves are set out in Schedule 1 of the Land Act.
- The Department of Natural Resources, Mines and Energy may require the Trustee to prepare a Land Management Plan, particularly where there are secondary uses of the Reserve.

Trustee Lease

- Secondary use of Reserve land is authorised by the issue of a Trustee Lease or Trustee Permit, if required.
- Before issuing a trustee lease to authorise the use and occupation of the reserve land by third parties, the trustee must obtain the approval by the Department of Natural Resources, Mines and Energy.
- However, State or local government trustees may not need to obtain approval from the Department of Natural Resources, Mines and Energy for a trustee lease provided:
 1. the trustee lease is consistent with the purpose of the reserve,
 2. the trustee lease complies with the requirements of section 15(2) of the *Land Regulation 2009*,
 3. the lease is shown as subject to the Mandatory Standard Terms Document No 711932933, and
 4. a copy of the Written Authority forms part of the trustee lease documents lodged for registration in the Titles Registry Office.
- Mandatory Standard Terms Document No 711932933 must form part of all trustee lease documents.
- The proposed secondary use must be complimentary to the Reserve purpose, and cannot be commercial or exclusive in nature.
- The maximum term for a trustee lease and trustee sublease is 30 years.
- Payment of appropriate rent is a matter between the trustee and the trustee lessee however, the rent charged shall be in consideration of management objectives for the reserve land and community benefit. Any proceeds are to be used for the development and maintenance of the reserve land.
- May also be sub-leased, provided it does not diminish the purpose of the Reserve.
- Access by the public to the reserve land, provided the community purpose does not restrict the rights of the public to be there, is to be maintained and protected.
- Other requirements may include: Department of Natural Resources, Mines and Energy application forms (no application fee applies), draft Trustee Lease document and draft Titles Registry Form 7, survey, payment of lodgement fees (currently \$187.00) and registration in the Titles Registry Office of the Department of Natural Resources, Mines and Energy.

Unallocated State land

- Will need to be allocated to the most appropriate use and tenure.
- Allocation of land under the Land Act requires:
 1. most appropriate use and tenure assessment based on the objects of the Act, as well as State, regional and local planning objectives;

2. consultation with relevant stakeholders and public utility providers;
3. assessment of the status of native title;
4. a formal decision being made by an appropriate delegate;
5. a written offer sent to the proposed tenure holder/applicant setting out various conditions and requirements;
6. acceptance of offer and compliance with all requirements (which may include native title to be addressed by the proposed tenure holder and survey, also to be undertaken by proposed tenure holder);
7. once all conditions have been complied with the Department of Natural Resources, Mines and Energy would attend to administrative processes to issue tenure.

Appendix B – Assessment of State Development Assessment Codes

State code 1: Development in a state-controlled road environment

Table 1.2.1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response																		
Buildings and structures																				
PO1 The location of buildings, structures, infrastructure, services and utilities does not create a safety hazard in a state-controlled road, or cause damage to, or obstruct road transport infrastructure.	AO1.1 Buildings, structures, infrastructure, services and utilities are not located in a state-controlled road. AND	<p>AO1.1 – Complies</p> <p>Parts of Wangetti South alignment are located within state-controlled road reserve, namely Captain Cook Highway. The proposed development is to occur within state-controlled road reserve as it is not feasible for the project to be located elsewhere.</p> <p>The road reserve is located along the coastline of Port Douglas and the intended purpose of the proposed ecotourism development is to highlight this coastal area.</p> <p>Within the project area, there are a number of locations of where the Captain Cook Highway (state-controlled) road reserve is impacted by the proposed works and they are outlined in the table below:</p> <table> <tr> <th>Road name</th><th>Ownership</th><th>Proposed use</th></tr> <tr> <td>Captain Cook Highway</td><td>DTMR</td><td>The trail will provide for 7 access tracks to the Captain Cook Highway and various locations south west of the town of Wangetti.</td></tr> <tr> <td>Quaids Road</td><td>DSC</td><td>The trail will require a crossing over Quaids Road near the intersection of Quaids Road – Captain Cook Highway</td></tr> <tr> <td>Unnamed track near Rifle Range Road (Service Track A)</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.67833,145.57187 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107</td></tr> <tr> <td>Unnamed track (Service Track B)</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Ellis Beach. Location: Captain Cook Highway -16.68024,145.57396 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107</td></tr> <tr> <td>Unnamed track near</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Palm Cove. Location:</td></tr> </table>	Road name	Ownership	Proposed use	Captain Cook Highway	DTMR	The trail will provide for 7 access tracks to the Captain Cook Highway and various locations south west of the town of Wangetti.	Quaids Road	DSC	The trail will require a crossing over Quaids Road near the intersection of Quaids Road – Captain Cook Highway	Unnamed track near Rifle Range Road (Service Track A)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.67833,145.57187 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107	Unnamed track (Service Track B)	DR	Existing dirt track from Captain Cook Highway at Ellis Beach. Location: Captain Cook Highway -16.68024,145.57396 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107	Unnamed track near	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location:
Road name	Ownership	Proposed use																		
Captain Cook Highway	DTMR	The trail will provide for 7 access tracks to the Captain Cook Highway and various locations south west of the town of Wangetti.																		
Quaids Road	DSC	The trail will require a crossing over Quaids Road near the intersection of Quaids Road – Captain Cook Highway																		
Unnamed track near Rifle Range Road (Service Track A)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.67833,145.57187 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107																		
Unnamed track (Service Track B)	DR	Existing dirt track from Captain Cook Highway at Ellis Beach. Location: Captain Cook Highway -16.68024,145.57396 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107																		
Unnamed track near	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location:																		

Performance outcomes	Acceptable outcomes	Response		
		(Service Track C)		Captain Cook Highway -16.68274,145.57536 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107
		Unnamed track near (Service Track D)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.68589,145.57816 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930
		Unnamed track near (Service Track E)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69439,145.60329 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930
		Unnamed track near (Service Track F)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69680,145.60884 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930
	AO1.2 Buildings, structures, infrastructure, services and utilities can be maintained without requiring access to a state-controlled road.	AO1.2 – Complies Existing vehicle access that adjoins on to Captain Cook Highway will be used for emergencies, maintenance and during the construction phase of the development. No new access tracks are necessary to be constructed for the proposed works.		
PO2 The design and construction of buildings and structures does not create a safety hazard by distracting users of a state-controlled road.	AO2.1 Facades of buildings and structures facing a state-controlled road are made of non-reflective materials. OR	AO2.1 – AO2.3 – Complies The proposed development is an ecotourism shared use hiking trail through largely undeveloped land which has been designed to be responsive to the natural environmental values. The structures are sympathetic and embedded within the surrounding landscape and are to be constructed with natural materials where possible. Consequently, buildings and structures will not impact users of state-controlled roads. The only structures proposed as part of Wangetti South Section A include Dark Jungle. Dark Jungle is not proposed within the road reserve and is located approximately 390 m south west of the Captain Cook Highway. Refer to Appendix J, Plan: Wangetti Trail		
	AO2.2 Facades of buildings and structures do not reflect point light sources into the face of oncoming traffic on a state-controlled road. AND			

Performance outcomes	Acceptable outcomes	Response
	AO2.3 External lighting of buildings and structures is not directed into the face of oncoming traffic on a state-controlled road and does not involve flashing or laser lights. AND	South Section A Locality Plan – shared use trail, waterway crossings, service tracks and trail head, Plan 4 of 5. No external lighting is proposed within Captain Cook Highway Road reserve.
	AO2.4 Advertising devices visible from a state-controlled road are located and designed in accordance with the Roadside Advertising Guide, 2 nd Edition, Department of Transport and Main Roads, 2017.	AO2.4 – Not Applicable Given the nature of the proposed development, being an ecotourism shared use hiking trail, no advertising devices will be constructed and/or visible from the state-controlled road.
PO3 Road, pedestrian and bikeway bridges over a state-controlled road are designed and constructed to prevent projectiles from being thrown onto a state-controlled road.	AO3.1 Road, pedestrian and bikeway bridges over a state-controlled road include throw protection screens in accordance with section 4.9.3 of the Design Criteria for Bridges and Other Structures Manual, Department of Transport and Main Roads, 2018.	AO3.1 – Not Applicable No road, pedestrian and bikeway bridges will be constructed over a state-controlled road and therefore throw protection screens are unnecessary.
Filling, excavation and retaining structures		
PO4 Filling and excavation does not interfere with, or result in damage to, infrastructure or services in a state-controlled road. Note: Information on the location of services and public utility plants in a state-controlled road can be obtained from the Dial Before You Dig service. Where development will impact on an existing or future service or public utility plant in a state-controlled road such that the service or public utility plant will need to be relocated, the alternative alignment must comply with the standards and design	No acceptable outcome is prescribed.	PO4 – Complies The proposed development is an ecotourism shared use hiking trail and therefore does not involve major filling and excavation. Anticipated structures and activities proposed within the state-controlled road reserve are limited to signs/devices, fences, gates, formalisation of existing access tracks and minimal earthworks (including vegetation clearing). The proposed development will not interfere with or result in damage to infrastructure or services to the state-controlled roads.

State Development Assessment Provisions – version 2.6

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
<p>specifications of the relevant service or public utility provider, and any costs of relocation are to be borne by the developer.</p> <p>Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>		
<p>PO5 Filling, excavation, building foundations and retaining structures do not undermine, or cause subsidence of, a state-controlled road.</p> <p>Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment, prepared in accordance with the Road Planning and Design Manual 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016, is provided.</p> <p>Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.</p>	<p>No acceptable outcome is prescribed.</p>	<p>PO5 – Complies</p> <p>The proposed development is an ecotourism shared use hiking trail. Proposed works within the state-controlled road corridor will not involve major filling, excavation, building foundations and retaining structures. Anticipated structures and activities proposed within the state-controlled road reserve are limited to signs/devices, gates, formalisation of existing access tracks and minimal earthworks (including vegetation clearing).</p> <p>AO2.1 – Complies</p> <p>The proposed development within the state-controlled road corridor is for a shared use hiking trail and therefore excavation will be limited to that establishing the natural trail.</p> <p>The shared use trail is anticipated to have an average gradient of <10% and a maximum gradient no greater than 15% (for short distances only). The purpose of the project is to provide a shared use trail for hikers and mountain bikers within the Wet Tropics World Heritage.</p> <p>Wangetti South Section A has been designed to have the following rating:</p> <ul style="list-style-type: none"> • Mountain Biking – Intermediate (blue square with blue outline) as defined in the Australian Mountain Bike Trail Guidelines Trail Difficulty Rating System (MTBA TDRS); • Hiking – Grade 3 for hikers, as defined in the Australian Walking Track Grading System (AWTGS), which also equates to Class 3 in the Australian Standard for Walking Tracks, Part 1: Classification and Signage (AS 2156.1-2001) <p>Therefore, the shared use trail will comprise of moderate gradient, variable surface and show short steep sections. The average trail gradient will be 10% or less. The proposed development will follow the natural contour of the land.</p> <p>The following earthworks (cut and fill) activities are proposed for the shared use trail:</p>

Performance outcomes	Acceptable outcomes	Response
		<ul style="list-style-type: none"> • Trail benching is the main construction technique to be used to construct the vast majority of the trail. The earthworks will be undertaken by a mini excavator to construct the bench which becomes the tread of the trail. • When cutting the trail bench, the topsoil and mineral earth removed from the inner side of the bench are used to build up the outer edge of the bench. The benches will be approximately 1 – 1.5 m in width. It is noted that the cut material will be moved along the trail to areas where fill material is required, with no fill material removed off site. • Grade reversals will be constructed where appropriate along the trail and are points at which trail gradient changes from up to down (or down to up) as the trail moves across a side slope. • Rock walling is used to retain soils of height between 0 and 500 mm. They may be used to retain the upslope or downslope batter. • Ballast surfacing is used in high traffic areas, sunken or low-lying areas, wet or boggy areas, or areas requiring the passage of vehicles. Due to the high bulk material requirements, it is usually only used in areas where vehicle access is available nearby to import materials. • Rock and concrete spoon drains will be constructed to convey surface runoff across the trail at a concentrated location. It could be used to manage the intersection of a small seasonal waterway and the trail, as per the description for rock armouring. • Raised embankments will be constructed of extra 'fill' material to build the trail tread up higher. The fill material will usually be sourced from another area where there is an excess of material and moved along the trail to where it is required. <p>The proposed development will not interfere with or undermine the integrity of state-controlled road.</p>
<p>PO6 Filling, excavation, building foundations and retaining structures do not cause ground water disturbance in a state-controlled road.</p> <p>Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment, prepared in accordance with the Road</p>	No acceptable outcome is prescribed.	<p>PO6 – Complies</p> <p>Refer to the response in PO5. The proposed development will not cause groundwater disturbance in a state-controlled road. Survey and geotechnical technical investigations have been carried out by the construction contractor to determine the suitable depths for foundations for the proposed structures and building associated with the project.</p>

Performance outcomes	Acceptable outcomes	Response
<p>Planning and Design manual 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016, is provided.</p> <p>Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.</p>		
<p>PO7 Excavation, boring, piling, blasting or fill compaction during construction of a development does not result in ground movement or vibration impacts that would cause damage or nuisance to a state-controlled road, road transport infrastructure or road works.</p> <p>Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment, prepared in accordance with Road Planning and Design Manual 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016, is provided.</p> <p>Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.</p>	No acceptable outcome is prescribed.	<p>PO6 – Complies</p> <p>The proposed works will consist of some excavation and filling for some of the structures, however they are not considered to cause groundwater disturbance in a state-controlled road. Survey and geotechnical technical investigations have been carried out by the construction contractor to determine the suitable depths for foundations for the proposed structures and building associated with the project.</p>
<p>PO8 Development involving the haulage of fill, extracted material or excavated spoil material exceeding 10,000 tonnes per year does not damage the pavement of a state-controlled road.</p> <p>Note: It is recommended a pavement impact assessment is provided.</p>	AO8.1 Fill, extracted material and spoil material is not transported to or from the development site on a state-controlled road.	<p>PO8 Complies</p> <p>The proposed development within the state-controlled road corridor is for a shared use hiking trail and therefore excavation and earthworks will be limited to establishing the shared use trail and ancillary infrastructure. Haulage of fill and extract materials will therefore be minimal and will not exceed 10, 000 tonnes per year.</p>

Performance outcomes	Acceptable outcomes	Response
Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, and the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a pavement impact assessment.		
<p>PO9 Filling and excavation associated with the construction of vehicular access to a development does not compromise the operation or capacity of existing drainage infrastructure for a state-controlled road.</p> <p>Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>	No acceptable outcome is prescribed.	<p>PO9 Not applicable</p> <p>No new vehicular access roads are to be constructed by the proposed development, the proposed development will use existing access tracks along the Captain Cook Highway. The development will not compromise the operation or capacity of existing drainage infrastructure for a state-controlled road.</p>
<p>PO10 Fill material used on a development site does not result in contamination of a state-controlled road.</p> <p>Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>	<p>AO10.1 Fill material is free of contaminants including acid sulfate content.</p> <p>Note: Soils and rocks should be tested in accordance with AS 1289.0 – Methods of testing soils for engineering purposes and AS 4133.0-2005 – Methods of testing rocks for engineering purposes.</p> <p>AND</p>	<p>PO10 Complies</p> <p>The fill material acquired for the project will be sourced from existing material on site and will be free of contaminants. Therefore, no fill material will result in contamination of a state-controlled road.</p> <p>The proposed finished surface or wearing course for the majority of the Wangetti Trail is the natural soil – that is, the in situ mineral earth soil already in place beneath the vegetation, leaf litter and organic topsoil. This is true for both standard and hand-built trail construction. Where extra soil is required, for example, to build up over a low depression or to fill in between roots or to rake into the cracks between rock armouring, it can usually be sourced from the balanced cut and fill process used to create the bench which becomes the finished trail. While overall the cut and fill process is balanced, locally, soil may be moved up or down the trail, to manage local excesses or deficiencies.</p> <p>If sufficient soil is not available in situ, it may be necessary to import soil, with agreement from the land manager. This scenario is seen as unlikely and difficult to</p>

Performance outcomes	Acceptable outcomes	Response
		achieve, given the large volume of materials that would be required and the remote setting of the trail. Where imported soil is required, preference must be given to local, approved suppliers. Imported material must be free of weeds and pathogens. All material brought onto site must be accompanied by a certificate indicating that it is free of contaminants, pathogens and weed species.
	AO10.2 Compaction of fill is carried out in accordance with the requirements of AS 1289.0 2000 – Methods of testing soils for engineering purposes.	The construction process to be used for the construction of the shared use trail is outlined in Section 3.2 <i>Standard Construction Process</i> in the Wangetti Trail Construction Methodology.
PO11 Filling and excavation does not cause wind-blown dust nuisance in a state-controlled road. Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	AO11.1 Compaction of fill is carried out in accordance with the requirements of AS 1289.0 2000 – Methods of testing soils for engineering purposes. AND	<p>PO11 Complies</p> <p>TDPD has developed a number of management plans in order to address the impacts to the surrounding environment. These mitigation measures have been developed in accordance with legislative requirements with respect to Commonwealth, State (Queensland) and local legislation and those statutory approvals that are associated with the project. Considerations of relevant authorities including but not limited to the Wet Tropics Management Authority (WTMA), Department of Environment and Science (DES), Queensland Parks and Wildlife Service (QPWS)), State emergency services (police/fire/ambulance) and Department of Transport and Main Roads will be undertaken by TDPD. This includes a Construction Environmental Management Plan (CEMP).</p> <p>The CEMP guides construction activities associated with the Wangetti South Section A and B to prevent or minimise the environmental impacts and disturbance on site and to the surrounding environment during the construction phase. This CEMP has been prepared to satisfy the environmental obligations during the construction phase and complements the overarching Wangetti South Section A and B Environmental Management Plan.</p> <p>The CEMP adopts a risk-based approach to identify and prioritise actions, which</p>
	AO11.2 Dust suppression measures are used during filling and excavation activities such as wind breaks or barriers and dampening of ground surfaces.	

Performance outcomes	Acceptable outcomes	Response
		<p>addresses the key environmental values, uses and sensitive components. The CEMP adopts provisions based on industry standard practices for minimisation and rehabilitation of environmental impacts during construction. The provisions reflect the potential for indirect and direct impacts posed by construction activities, such as unauthorised clearing, dust emissions during high winds and collisions with wildlife. The CEMP is broken down into the following sections:</p> <p>Section 1: Introduction</p> <p>Section 2: Potential environmental impacts and risks</p> <p>Section 3: CEMP Provisions</p> <p>Section 4: Rehabilitation of works areas</p> <p>Section 5: Monitoring</p> <p>Section 6: Audit</p> <p>Section 7: Review</p> <p>Section 8: Emergency incident planning and response.</p> <p>It is anticipated that limited air quality nuisances will be generated as a result of the Project, with the construction phase representing the highest potential for air quality changes. During construction, the use of machinery will have the most significant impact on air quality. However, these impacts are anticipated to be minor and short term and intermittent as works progress along the trail alignment. The following mitigation measures will be implemented to reduce impacts to air quality:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Consider weather conditions and prevailing winds when conducting construction activities that may result in air emissions. Reduce clearing during periods of high wind. <input type="checkbox"/> Wetting the road/work area during dry periods to reduce dust being generated. <input type="checkbox"/> Construction vehicles to be cleaned of soils before driving on sealed roads to reduce dust being generated. <input type="checkbox"/> A maximum speed limit of 40 km/hr shall apply to access roads and tracks to minimise the potential for dust generation. <input type="checkbox"/> All temporary soil stockpiles will be covered, stabilised and/or moistened as

Performance outcomes	Acceptable outcomes	Response
		<p>required to prevent generation of dust particles.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Soil stockpiles will be located in areas not susceptible to wind erosion. <input type="checkbox"/> Stockpiles that are anticipated to be present in the medium and long term are to be covered to minimise dust emissions. <input type="checkbox"/> All vehicles carrying loads with the potential to create dust shall cover their loads. <input type="checkbox"/> Minimal ground disturbance during construction to reduce dust emissions . <input type="checkbox"/> At the commencement of the construction, the entire trail will be broken into Construction Segments. The Construction Segments assist in reducing the amount of area to be exposed during the construction phase, which in turns reduces impacts to the natural environment and reduces the impact to the movement of wildlife in the area. <input type="checkbox"/> Vehicles, plant and equipment will be regularly serviced and comply with Australian Design Standards. <input type="checkbox"/> All machinery and equipment are to have proprietary emission control equipment fitted and in working order. <input type="checkbox"/> When not in use, vehicles and machinery shall be turned off.
Stormwater and drainage		
<p>PO12 Development does not result in an actionable nuisance, or worsening of, stormwater, flooding or drainage impacts in a state-controlled road.</p> <p>Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>	No acceptable outcome is prescribed.	<p>PO12 Complies</p> <p>The proposed development within the state-controlled road corridor is an ecotourism shared use hiking trail, which has been designed such that it is responsive to the natural environmental values, enhancing conservation and protection of a cherished part of Tropical North Queensland. No modifications to state controlled roads are anticipated. Consequently, stormwater and drainage channels will not be impacted during the construction and operation phases of the proposed developments.</p> <p>TDPD has developed a number of management plans in order to address potential impacts to the surrounding environment. These mitigation measures have been developed in accordance with legislative requirements with respect to Commonwealth, State (Queensland) and local legislation and those statutory approvals that are associated with the project. Considerations of relevant authorities including but not limited to the Wet Tropics Management Authority (WTMA), Department of Environment and Science (DES), Queensland Parks and Wildlife</p>

Performance outcomes	Acceptable outcomes	Response
		<p>Service (QPWS)), State emergency services (police/fire/ambulance) and Department of Transport and Main Roads will be undertaken by TDPD.</p> <p>As a result, a number of management plans have been developed for the construction and operational phase of the project and they include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Environmental Management Plan (EMP) <input type="checkbox"/> Construction Environmental Management Plan (CEMP) <input type="checkbox"/> Concept Erosion and Sediment Control Plan (CESCP) <input type="checkbox"/> Weeds, Pest and Diseases Management Plan (WPDMP) <input type="checkbox"/> Traffic Management Plan (TMP) <p>The CESCP provides preliminary guidance to establish appropriate site erosion and sediment control (ESC) management measures to reduce potential adverse impacts during the construction phase of the Project. It is expected that prior to any construction activity for the Project, a detailed work specific ESCP will be developed by the contractor as part of the CEMP. The contractor will review the preliminary guidance provided in the CESCP and provide greater detail based on construction methodology, geotechnical conditions, and timing of works.</p> <p>The CESCP does not prescribe or locate any permanent or temporary erosion or sediment control measures in detail but provides indicative locations for erosion and responsibilities.</p> <p>The CESCP has been developed in general accordance with International Erosion Guidelines (2008). As part of the construction of the shared use trail, as outlined in the Wangetti Trail Construction Methodology (World Trail 2020), where appropriate and required various design features are proposed, which include the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Grade reversals <input type="checkbox"/> points at which trail gradient changes from up to down (or down to up) as the trail moves across a side slope. Grade reversals push water off the trail at the low point of the grade reversal, preventing erosion. Grade reversals effectively divide the trail into short, individual watersheds, so section. <input type="checkbox"/> Switchbacks - a 180 degree turn on a hillside, engineered for drainage. The upper approach is usually insloped and the lower approach is usually outsloped. The switchback turn reverses the direction of a trail, and is located on a relatively

Performance outcomes	Acceptable outcomes	Response
		<p>level, constructed landing.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rock walling - (up to 500 mm) smaller structures designed to restrain soil to a slope that it would not naturally keep to (typically a steep, near-vertical or vertical slope). <input type="checkbox"/> Retaining walls - larger structures designed to restrain soil to a slope that it would not naturally keep to (typically a steep, near-vertical or vertical slope). <input type="checkbox"/> Ballast surfacing - a two course surfacing treatment, used to raise and/or harden the surface of the trail. Ballast surfacing is used in high traffic areas, sunken or low-lying areas, wet or boggy areas, or areas requiring the passage of vehicles. Due to the high bulk material requirements, it is usually only used in areas where vehicle access is available nearby to import materials. For the Wangetti Trail, this treatment is proposed to treat sections of existing, eroded, sunken four-wheel drive tracks in the flat terrain immediately south of Wangetti. In this area, the trail comes very close to the Captain Cook Highway to skirt around a military firing range. This proximity to the highway provides good access for trucks.
<p>PO13 Run-off from the development site is not unlawfully discharged to a state-controlled road.</p> <p>Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>	<p>AO13.1 Development does not create any new points of discharge to a state-controlled road.</p> <p>AND</p>	<p>PO13 PO14 Complies</p> <p>Refer to the response in P012.</p>
	<p>AO13.2 Stormwater run-off is discharged to a lawful point of discharge.</p> <p>Note: Section 3.9 of the Queensland Urban Drainage Manual, Institute of Public Works Engineering Australasia (Queensland Division) Fourth Edition, 2016, provides further information on lawful points of discharge.</p> <p>AND</p>	

Performance outcomes	Acceptable outcomes	Response
	AO13.3 Development does not worsen the condition of an existing lawful point of discharge to the state-controlled road.	
PO14 Run-off from the development site during construction does not cause siltation of stormwater infrastructure affecting a state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	AO14.1 Run-off from the development site during construction is not discharged to stormwater infrastructure for a state-controlled road.	PO13 PO14 Complies Refer to the response in P012.
Vehicular access to a state-controlled road		
PO15 Vehicular access to a state-controlled road that is a limited access road is consistent with government policy for the management of limited access roads. Note: Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	AO15.1 Development does not require new or changed access to a limited access road. Note: Limited access roads are declared by the transport chief executive under section 54 of the <i>Transport Infrastructure Act 1994</i> and are identified in the DA mapping system. OR	AO15.1 Complies Existing vehicle access that adjoins on to Captain Cook Highway will be used for emergencies, maintenance and during the construction phase of the development. No new access tracks are necessary to be constructed for the proposed works. Consequently, access arrangement will not change from existing approvals.
	AO15.2 A new or changed access to a limited access road is consistent with the limited access policy for the state-controlled road. Note: Limited access policies for limited access roads declared under the <i>Transport Infrastructure Act 1994</i> can be obtained by contacting the relevant Department of Transport and Main Roads regional office. AND	AO15.2 Not Applicable Existing vehicle access that adjoins on to Captain Cook Highway will be used for emergencies, maintenance and during the construction phase of the development. There are no mapped limited access roads within the project area that will be affected.
	AO15.3 Where a new or changed access is for a service centre,	Not applicable. The proposed development does not involve a service centre.

Performance outcomes	Acceptable outcomes	Response
	<p>access is consistent with the Service centre policy, Department of Transport and Main Roads, 2013 and the Access policy for roadside service centre facilities on limited access roads, Department of Transport and Main Roads, 2013, and the Service centre strategy for the state-controlled road.</p> <p>Note: The Service centre policy, Department of Transport and Main Roads, 2013, Access policy for roadside service centre facilities, Department of Transport and Main Roads, 2013 and the relevant Service centre strategy for a state-controlled road can be accessed by contacting the relevant Department of Transport and Main Roads regional office.</p>	
<p>PO16 The location and design of vehicular access to a state-controlled road (including access to a limited access road) does not create a safety hazard for users of a state-controlled road or result in a worsening of operating conditions on a state-controlled road.</p> <p>Note: Where a new or changed access between the premises and a state-controlled road is proposed, the Department of Transport and Main Roads will need to assess the proposal to determine if the vehicular access for the development is safe. An assessment can be made by Department of Transport and Main Roads as part of the development assessment process and a decision under section 62 of <i>Transport Infrastructure Act 1994</i> issued.</p>	<p>AO16.1 Vehicular access is provided from a local road.</p> <p>OR all of the following acceptable outcomes apply:</p> <p>AO16.2 Vehicular access for the development is consistent with the function and design of the state-controlled road.</p> <p>AND</p> <p>AO16.3 Development does not require new or changed access between the premises and the state-controlled road.</p> <p>Note: A decision under section 62 of the <i>Transport Infrastructure Act 1994</i> outlines the approved conditions for use of an existing vehicular access to a state-</p>	<p>AO16.1 AO16.4 Complies</p> <p>The proposed development within the state-controlled road corridor will not compromise the safety or efficiency of the transport network for the following reasons:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The project will include service tracks to allow for restricted vehicle access along the alignment during the construction phase, operational phase, and maintenance phase and for emergency access. These services tracks will use existing access tracks that connect to the to the existing road network <input type="checkbox"/> This service track will be gated and signed to restrict use by the public <input type="checkbox"/> A trail head is proposed at Ellis Beach and Palm Cove providing a safe designated starting point for trail users <input type="checkbox"/> A preliminary TMP has been developed for the project and provides preliminary guidance to help establish appropriate traffic control and traffic management procedures manage potential hazards associated with the traffic environment during the Project and to reduce potential adverse impacts to

Performance outcomes	Acceptable outcomes	Response
Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	controlled road. Current section 62 decisions can be obtained from the relevant Department of Transport and Main Roads regional office. AND	<p>people and wildlife during the construction and operational phases of the Project.</p> <p>It is expected that prior to any construction and operational activity for the Project, a detailed work specific TMP will be developed by the contractor as part of the Environmental Management Plan. The contractor should review the preliminary guidance provided in this TMP and provide greater detail based on construction methodology, operational activities, and timing of works. The TMP will also need to be in general accordance with the MUTCD, Austroads Guide to Traffic Management and Transport and Main Roads Specifications MRTS02 Provision for Traffic.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Site access/vehicle movement plan will be developed by a suitable qualified traffic personnel to show where all site access points within the project area. <input type="checkbox"/> A TMP and Traffic Guidance Scheme (TGS) will be prepared by a suitable qualified person. The TGS shows all traffic control devices and their layouts on a plan and shall be consistent with the approved TMP. Where any change to existing traffic arrangements is proposed or where construction conflicts with normal traffic movements, the Contractor shall prepare a TGS which clearly details the revised traffic arrangements at all locations affected by the change or conflict. A separate TGS is required for each stage of the works where changes are made to the traffic control devices. <input type="checkbox"/> Traffic shall be controlled at all times, during construction, in accordance with the provisions of the MUTCD Part 3 and the TMP. <input type="checkbox"/> Signage erected along tracks and roads where the trail connects to inform construction crew of access points to the project area <input type="checkbox"/> Site inductions at the start of the construction phase with construction crews regarding: <ul style="list-style-type: none"> o undertaking works and the movement of vehicles within road reserves, existing access tracks. o Wildlife present within the project area that could pose a hazard to vehicles and mobile plant o Incident response procedures will be developed to detail actions to be taken in the event of wildlife injury or mortality during clearing <input type="checkbox"/> Gates with locks to be installed at service tracks where they connect to the existing road network to restrict the illegal use of the tracks by members of the public. <input type="checkbox"/> Appropriate scheduling of deliveries of construction material to reduce

Performance outcomes	Acceptable outcomes	Response
		<p>frequency and a nominated set out area to be agreed upon with TDPD and the construction contractor away from MNES and areas of high ecological significance.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Visitors including visiting drivers to be made aware of the work area layout, given a copy of the site access plan prior to visiting the site. Provide drivers with safe access to amenities away from loading areas or other vehicular traffic. <input type="checkbox"/> Construction traffic to use nominated roads and nominated service tracks when accessing and exiting the project area. <input type="checkbox"/> Designated vehicle routes within the project area to have a firm and even surface, be wide and high enough for the largest vehicle using them and be well maintained and free from obstructions. <input type="checkbox"/> Service tracks to be clearly sign-posted to indicate speed limits and traffic calming measures (if required) <input type="checkbox"/> Reducing speed is very important where administrative control measures are the only reasonably practicable approach. Speed limits to be implemented and enforced. <input type="checkbox"/> Speed limits for to be adopted for the construction phase to be developed in consultation with the construction contractor, TDPD, DES, WTMA and DTMR.
	<p>AO16.4 Use of any existing vehicular access to the development is consistent with a decision under section 62 of the <i>Transport Infrastructure Act 1994</i>.</p> <p>Note: The development which is the subject of the application must be of an equivalent use and intensity for which the section 62 approval was issued and the section 62 approval must have been granted no more than 5 years prior to the lodgement of the application.</p> <p>AND</p>	<p>A separate section 62 of the <i>Transport Infrastructure Act 1994</i> has not been applied for the project. Approval is sought from TMR under the Planning Regulation 2017.</p>
	<p>AO16.5 On-site vehicle circulation is designed to give priority to entering vehicles at all times so vehicles do not queue in a road intersection or on the state-controlled road.</p>	<p>AO16.5 Complies</p> <p>Roads adjoining state-controlled roads will be designed to ensure visibility at the crossing points and procedures are to be implemented indicating who has right of way at crossings. Appropriate road marking and signage will be installed.</p>

Performance outcomes	Acceptable outcomes	Response																		
Vehicular access to local roads within 100 metres of an intersection with a state-controlled road																				
<p>PO17 The location and design of vehicular access to a local road within 100 metres of an intersection with a state-controlled road does not create a safety hazard for users of a state-controlled road.</p> <p>Note: Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>	<p>AO17.1 Vehicular access is located as far as possible from the state-controlled road intersection. AND</p>	<p>PO18 Complies</p> <p>No new access roads are to be constructed by the project to provide access to the trail and amenities from the Captain Cook Highway. Existing access tracks will be used for maintenance, emergencies and during the construction phase of the proposed development and gates secured to impede the public access. Consequently, there will be no major interruptions of normal operation.</p> <p>The list of existing access roads along the Captain Cook Highway to be used for the project are outlined below:</p> <table><tr><th>Road name</th><th>Ownership</th><th>Proposed use</th></tr><tr><td>Captain Cook Highway</td><td>DTMR</td><td>The trail will provide for 7 access tracks to the Captain Cook Highway and various locations south west of the town of Wangetti.</td></tr><tr><td>Quaids Road</td><td>DSC</td><td>The trail will require a crossing over Quaids Road near the intersection of Quaids Road – Captain Cook Highway</td></tr><tr><td>Unnamed track near Rifle Range Road (Service Track A)</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.67833,145.57187 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107</td></tr><tr><td>Unnamed track (Service Track B)</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Ellis Beach. Location: Captain Cook Highway -16.68024,145.57396 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107</td></tr><tr><td>Unnamed track near</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Palm Cove. Location:</td></tr></table>	Road name	Ownership	Proposed use	Captain Cook Highway	DTMR	The trail will provide for 7 access tracks to the Captain Cook Highway and various locations south west of the town of Wangetti.	Quaids Road	DSC	The trail will require a crossing over Quaids Road near the intersection of Quaids Road – Captain Cook Highway	Unnamed track near Rifle Range Road (Service Track A)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.67833,145.57187 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107	Unnamed track (Service Track B)	DR	Existing dirt track from Captain Cook Highway at Ellis Beach. Location: Captain Cook Highway -16.68024,145.57396 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107	Unnamed track near	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location:
	Road name		Ownership	Proposed use																
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	Quaids Road		DSC	The trail will require a crossing over Quaids Road near the intersection of Quaids Road – Captain Cook Highway																
Unnamed track near Rifle Range Road (Service Track A)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.67833,145.57187 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107																		
Unnamed track (Service Track B)	DR	Existing dirt track from Captain Cook Highway at Ellis Beach. Location: Captain Cook Highway -16.68024,145.57396 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107																		
Unnamed track near	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location:																		
<p>AO17.2 Vehicular access is in accordance with parts, 3, 4 and 4A of the Road Planning and Design Manual, 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016. AND</p>	<p>AO17.3 On-site vehicle circulation is designed to give priority to entering vehicles at all times so vehicles do not queue in the intersection or on the state-controlled road.</p>																			

Performance outcomes	Acceptable outcomes	Response												
		<table> <tr> <td>(Service Track C)</td><td></td><td>Captain Cook Highway -16.68274,145.57536 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107</td></tr> <tr> <td>Unnamed track near (Service Track D)</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.68589,145.57816 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930</td></tr> <tr> <td>Unnamed track near (Service Track E)</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69439,145.60329 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930</td></tr> <tr> <td>Unnamed track near (Service Track F)</td><td>DR</td><td>Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69680,145.60884 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930</td></tr> </table> <p>When existing vehicular access tracks are used the crossing point will be free and clear of obstacles and procedures indicating who has right of way at crossings will be established. Further to this, appropriate road marking and signage will be installed.</p>	(Service Track C)		Captain Cook Highway -16.68274,145.57536 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107	Unnamed track near (Service Track D)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: Captain Cook Highway -16.68589,145.57816 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930	Unnamed track near (Service Track E)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69439,145.60329 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930	Unnamed track near (Service Track F)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69680,145.60884 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930
(Service Track C)		Captain Cook Highway -16.68274,145.57536 Real property descriptions: Captain Cook Highway Road reserve, 6SP309107												
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Unnamed track near (Service Track E)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69439,145.60329 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930												
Unnamed track near (Service Track F)	DR	Existing dirt track from Captain Cook Highway at Palm Cove. Location: -16.69680,145.60884 Captain Cook Highway Real property descriptions: Captain Cook Highway Road reserve, 6SP309107, 174NPW930												
Public passenger transport infrastructure on state-controlled roads														
PO18 Development does not damage or interfere with public passenger transport infrastructure, public passenger services or	AO18.1 Vehicular access and associated road access works are not located within 5 metres of	There are no mapped public passenger transport facilities adjacent to where the nominated existing vehicular access points are.												

Performance outcomes	Acceptable outcomes	Response
<p>pedestrian or cycle access to public passenger transport infrastructure and public passenger services.</p> <p>Note: Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>	<p>existing public passenger transport infrastructure.</p> <p>AND</p>	
	<p>AO18.2 Development does not necessitate the relocation of existing public passenger transport infrastructure.</p> <p>AND</p>	<p>There are no mapped public passenger transport facilities adjacent to where the nominated existing vehicular access points are.</p>
	<p>AO18.3 On-site vehicle circulation is designed to give priority to entering vehicles at all times so vehicles using a vehicular access do not obstruct public passenger transport infrastructure and public passenger services or obstruct pedestrian or cycle access to public passenger transport infrastructure and public passenger services.</p> <p>AND</p>	<p>There are no mapped public passenger transport facilities adjacent to where the nominated existing vehicular access points are.</p>
	<p>AO18.4 The normal operation of public passenger transport infrastructure or public passenger services is not interrupted during construction of the development.</p>	<p>There are no mapped public passenger transport facilities adjacent to where the nominated existing vehicular access points are.</p>
Planned upgrades		

Performance outcomes	Acceptable outcomes	Response
PO19 Development does not impede delivery of planned upgrades of state-controlled roads.	AO19.1 Development is not located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of a state-controlled road. Note: Land required for the planned upgrade of a state-controlled road is identified in the DA mapping system . OR	There are no mapped planned upgrades adjacent to where the nominated existing vehicular access points are.
	AO19.2 Development is sited and designed so that permanent buildings, structures, infrastructure, services or utilities are not located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of a state-controlled road.	There are no mapped planned upgrades adjacent to where the nominated existing vehicular access points are.
	OR all of the following acceptable outcomes apply: AO19.3 Structures and infrastructure located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of a state-controlled road are able to be readily relocated or removed without materially affecting the viability or functionality of the development. AND	

Performance outcomes	Acceptable outcomes	Response
	AO19.4 Vehicular access for the development is consistent with the function and design of the planned upgrade of the state-controlled road. AND	There are no mapped planned upgrades adjacent to where the nominated existing vehicular access points are.
	AO19.5 Development does not involve filling and excavation of, or material changes to, land required for a planned upgrade to a state-controlled road. AND	There are no mapped planned upgrades adjacent to where the nominated existing vehicular access points are.
	AO19.6 Land is able to be reinstated to the pre-development condition at the completion of the use.	There are no mapped planned upgrades adjacent to where the nominated existing vehicular access points are.
Network impacts		
PO20 Development does not result in a worsening of operating conditions on the state-controlled road network. Note: To demonstrate compliance with this performance outcome, it is recommended that an RPEQ certified traffic impact assessment is provided. Please refer to the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	PO20 Complies A marginal increase in vehicle traffic (approx. a maximum of 10 vehicles per day) is expected along the Captain Cook Highway associated with the construction phase of the project. Once the trail is operational, a marginal increase in vehicle traffic is expected by users of the facility (return trips by car from Ellis Beach, Wangetti or Port Douglas) (estimated <20 cars per day). The proposed works within the state-controlled road corridor are minor in nature and therefore operation conditions will remain. No permanent road closures or short-term occupation and construction within state-controlled roads will occur. There will be minimal interruptions and the development is not expected to interfere with operation conditions.
PO21 Development does not impose traffic loadings on a state-controlled road which could be accommodated on the local road network.	AO21.1 The layout and design of the development directs traffic generated by the development to the local road network.	PO21 Complies A marginal increase in vehicle traffic (approx. a maximum of 10 vehicles per day) is expected along the Captain Cook Highway associated with the construction phase of the project. Once the trail is operational, a marginal increase in vehicle traffic is

Performance outcomes	Acceptable outcomes	Response
		<p>expected by users of the facility (return trips by car from Ellis Beach, Wangetti or Port Douglas) (estimated <20 cars per day).</p> <p>The proposed works within the state-controlled road corridor are minor in nature and therefore will not impose traffic loading.</p>
PO22 Upgrade works on, or associated with, a state-controlled road are built in accordance with Queensland road design standards.	<p>AO22.1 Upgrade works required as a result of the development are designed and constructed in accordance with the <i>Road Planning and Design Manual</i>, 2nd edition, Department of Transport and Main Roads, 2016.</p> <p>Note: Road works in a state-controlled road require approval under section 33 of the <i>Transport Infrastructure Act 1994</i> before the works commence.</p>	<p>PO22 Not Applicable</p> <p>The proposed development within the state-controlled road corridor is for a shared use hiking trail. Therefore, no upgrade works on, or associated with the state-controlled road is intended.</p>

Table 1.2.2: Environmental emissions

Statutory note: Where a **state-controlled road** is co-located in the same transport corridor as a railway, the development should instead comply with table 2.2.2: Environmental emissions in State code 2: Development in a railway environment.

Refer to the SDAP Supporting Information: Environmental emissions in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcomes in Table 1.2.2.

Performance outcomes	Acceptable outcomes	
Noise		
Accommodation activities		
PO23 Development involving an accommodation activity or land for a future accommodation activity minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in habitable rooms.	<p>AO23.1 A noise barrier or earth mound is provided which is designed, sited and constructed:</p> <ol style="list-style-type: none"> 1. to meet the following external noise criteria at all facades of the building envelope: <ol style="list-style-type: none"> a. ≤60 dB(A) L₁₀ (18 hour) façade corrected (measured L₉₀ (8 hour) free field between 10pm and 6am ≤40 dB(A)) 	<p>The project will involve a campsite which will be setback about 350 m from Captain Cook Highway. It will be located on land above the road reserve surrounded by existing vegetation. No additional noise barrier or earth mounds are required for the camp.</p>

Performance outcomes	Acceptable outcomes	
	<p>b. ≤ 63 dB(A) L_{10} (18 hour) façade corrected (measured L_{90} (8 hour) free field between 10pm and 6am > 40 dB(A))</p> <p>2. in accordance with chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013.</p> <p>Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state-controlled road environment, Department of Transport and Main Roads, 2017.</p> <p>If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used.</p> <p>In some instances, the design of noise barriers and mounds to achieve the noise criteria above the ground floor may not be reasonable or practicable. In these instances, any relaxation of the criteria is at the discretion of the Department of Transport and Main Roads.</p>	
	<p>OR all of the following acceptable outcomes apply:</p> <p>AO23.2 Buildings which include a habitable room are setback the maximum distance possible from a state-controlled road or type 1 multi-modal corridor.</p> <p>AND</p>	The project will involve a campsite which will be setback about 350 m from Captain Cook Highway. It will be located on land above the road reserve surrounded by existing vegetation. No additional noise barrier or earth mounds are required for the camp.
	<p>AO23.3 Buildings are designed and oriented so that habitable rooms are located furthest from a state-controlled road or type 1 multi-modal corridor.</p> <p>AND</p>	

Performance outcomes	Acceptable outcomes	
	<p>AO23.4 Buildings (other than a relevant residential building or relocated building) are designed and constructed using materials which ensure that habitable rooms meet the following internal noise criteria:</p> <ol style="list-style-type: none"> 1. ≤ 35 dB(A) L_{eq} (1 hour) (maximum hour over 24 hours). <p>Note: Noise levels from a state-controlled road or type 1 multi-modal corridor are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise.</p> <p>To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017.</p> <p>Habitable rooms of relevant residential buildings located within a transport noise corridor must comply with the Queensland Development Code MP4.4 Buildings in a transport noise corridor, Queensland Government, 2015. Transport noise corridors are mapped on the State Planning Policy interactive mapping system.</p>	Not applicable to the project.
<p>PO24 Development involving an accommodation activity or land for a future accommodation activity minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in outdoor spaces for passive recreation.</p>	<p>AO24.1 A noise barrier or earth mound is provided which is designed, sited and constructed:</p> <ol style="list-style-type: none"> 1. to meet the following external noise criteria in outdoor spaces for passive recreation: <ol style="list-style-type: none"> a. ≤ 57 dB(A) L_{10} (18 hour) free field (measured L_{90} (18 hour) free field between 6am and 12 midnight ≤ 45 dB(A)) b. ≤ 60 dB(A) L_{10} (18 hour) free field (measured L_{90} (18 hour) free field between 6am and 12 midnight > 45 dB(A)) 2. in accordance with chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice – Volume 1 Road Traffic Noise, Department of Transport and Main Roads, 2013. <p>Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is</p>	<p>The project will involve a campsite which will be setback about 350 m from Captain Cook Highway. It will be located on land above the road reserve surrounded by existing vegetation. No additional noise barrier or earth mounds are required for the camp.</p>

Performance outcomes	Acceptable outcomes	
	provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017 OR	
	AO24.2 Each dwelling has access to an outdoor space for passive recreation which is shielded from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure. AND	The project will involve a campsite which will be setback about 350 m from Captain Cook Highway. It will be located on land above the road reserve surrounded by existing vegetation. No additional noise barrier or earth mounds are required for the camp.
	AO24.3 Each dwelling with a balcony directly exposed to noise from a state-controlled road or type 1 multi-modal corridor has a continuous solid gap-free balustrade (other than gaps required for drainage purposes to comply with the Building Code of Australia).	The project will involve a campsite which will be setback about 350 m from Captain Cook Highway. It will be located on land above the road reserve surrounded by existing vegetation. No additional noise barrier or earth mounds are required for the camp.
Childcare centres and educational establishments		
PO25 Development involving a: 1. childcare centre; or 2. educational establishment minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in indoor education areas and indoor play areas.	AO25.1 A noise barrier or earth mound is provided which is designed, sited and constructed: <ol style="list-style-type: none"> 1. to meet the following external noise criteria at all facades of the building envelope: <ol style="list-style-type: none"> a. $\leq 58 \text{ dB(A)} L_{10}$ (1 hour) façade corrected (maximum hour during normal opening hours) 2. in accordance with chapter 7 – Integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013. <p>Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017.</p>	Not applicable to the project.

Performance outcomes	Acceptable outcomes	
	If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used.	
	OR all of the following acceptable outcomes apply: AO25.2 Buildings which include indoor education areas and indoor play areas are setback the maximum distance possible from a state-controlled road or type 1 multi-modal corridor. AND	Not applicable to the project.
	AO25.3 Buildings are designed and oriented so that indoor education areas and indoor play areas are located furthest from the state-controlled road or type 1 multi-modal corridor. AND	Not applicable to the project.
	AO25.4 Buildings are designed and constructed using materials which ensure indoor education areas and indoor play areas meet the following internal noise criteria: 1. ≤ 35 dB(A) L_{eq} (1 hour) (maximum hour during opening hours). Note: Noise levels from a state-controlled road or type 1 multi-modal corridor are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise. To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017.	Not applicable to the project.

Performance outcomes	Acceptable outcomes	
<p>PO26 Development involving a:</p> <ol style="list-style-type: none"> 1. childcare centre; or 2. educational establishment <p>minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in outdoor education areas and outdoor play areas.</p>	<p>AO26.1 A noise barrier or earth mound is provided which is designed, sited and constructed:</p> <ol style="list-style-type: none"> 1. to meet the following external noise criteria in each outdoor education area or outdoor play area: <ol style="list-style-type: none"> a. ≤ 63 dB(A) L_{10} (12 hour) free field (between 6am and 6pm) 2. in accordance with chapter 7 – Integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013. <p>Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017.</p> <p>OR</p>	Not applicable to the project.
	<p>AO26.2 Each outdoor education area and outdoor play area is shielded from noise generated from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure.</p>	Not applicable to the project.
Hospitals		
<p>PO27 Development involving a hospital minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in patient care areas.</p>	<p>AO27.1 Hospitals are designed and constructed using materials which ensure patient care areas meet the following internal noise criteria:</p> <ol style="list-style-type: none"> 1. ≤ 35 dB(A) L_{eq} (1 hour) (maximum hour during opening hours). <p>Note: Noise levels from a state-controlled road or type 1 multi-modal corridor are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise.</p>	Not applicable to the project.

Performance outcomes		Acceptable outcomes
		To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017.
Vibration		
Hospitals		
PO28 Development involving a hospital minimises vibration impacts from vehicles using a state-controlled road or type 1 multi-modal corridor in patient care areas.	AO28.1 Hospitals are designed and constructed to ensure vibration in the treatment area of a patient care area does not exceed a vibration dose value of $0.1\text{m/s}^{1.75}$. AND	Not applicable to the project.
	AO28.2 Hospitals are designed and constructed to ensure vibration in the ward area of a patient care area does not exceed a vibration dose value of $0.4\text{m/s}^{1.75}$. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified vibration assessment report is provided.	Not applicable to the project.
Air and light		
PO29 Development involving an accommodation activity minimises air quality impacts from a state-controlled road or type 1 multi-modal corridor in outdoor spaces for passive recreation.	AO29.1 Each dwelling has access to an outdoor space for passive recreation which is shielded from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure.	The project will involve a campsite which will be setback about 350 m from Captain Cook Highway. It will be located on land above the road reserve surrounded by existing vegetation.
PO30 Development involving a: <ol style="list-style-type: none"> 1. childcare centre; or 2. educational establishment minimises air quality impacts from a state-controlled road or type 1 multi-modal corridor in outdoor education areas and outdoor play areas.	AO30.1 Each outdoor education area and outdoor play area is shielded from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure.	Not applicable to the project.

Performance outcomes	Acceptable outcomes	
PO31 Development involving an accommodation activity or hospital minimises lighting impacts from a state-controlled road or type 1 multi-modal corridor.	AO31.1 Buildings for an accommodation activity or hospital are designed to minimise the number of windows or transparent/translucent panels facing a state-controlled road or type 1 multi-modal corridor. OR	Not applicable to the project.
	AO31.2 Windows facing a state-controlled road or type 1 multi-modal corridor include treatments to block light from a state-controlled road or type 1 multi-modal corridor.	Not applicable to the project.

Table 1.2.3: Development in a future state-controlled road environment

Performance outcomes	Acceptable outcomes	
PO32 Development does not impede delivery of a future state-controlled road.	AO32.1 Development is not located in a future state-controlled road. OR	The project is note located within or adjacent to a future state-controlled road.
	AO32.2 Development is sited and designed so that permanent buildings, structures, infrastructure, services or utilities are not located in a future state-controlled road.	The project is note located within or adjacent to a future state-controlled road.
	OR all of the following acceptable outcomes apply: AO32.3 Structures and infrastructure located in a future state-controlled road are able to be readily relocated or removed without materially affecting the viability or functionality of the development. AND	The project is note located within or adjacent to a future state-controlled road.
	AO32.4 Development does not involve filling and excavation of, or material changes to, a future state-controlled road. AND	The project is note located within or adjacent to a future state-controlled road.
	AO32.5 Land is able to be reinstated to the pre-development condition at the completion of the use.	The project is note located within or adjacent to a future state-controlled road.

Performance outcomes	Acceptable outcomes	
<p>PO33 Vehicular access to a future state-controlled road is located and designed to not create a safety hazard for users of a future state-controlled road or result in a worsening of operating conditions on a future state-controlled road.</p> <p>Note: Where a new or changed access between the premises and a future state-controlled road is proposed, the Department of Transport and Main Roads will need to assess the proposal to determine if the vehicular access for the development is safe. An assessment can be made by Department of Transport and Main Roads as part of the development assessment process and a decision under section 62 of <i>Transport Infrastructure Act 1994</i> issued.</p>	<p>AO33.1 Development does not require new or changed access between the premises and a future state-controlled road.</p> <p>AND</p>	<p>PO32 Complies</p> <p>The proposed development is for a shared use hiking trail located within a nature reserve and is therefore a protected area. Consequently, the proposed development will not impede delivery of a future state-controlled road.</p> <p>There are no further state controlled road corridors mapped within the project area.</p>
	<p>AO33.2 Vehicular access for the development is consistent with the function and design of the future state-controlled road.</p>	<p>The project is not located within or adjacent to a future state-controlled road.</p>
<p>PO34 Filling, excavation, building foundations and retaining structures do not undermine, or cause subsidence of, a future state-controlled road.</p> <p>Note: To demonstrate compliance with this performance outcome, it is recommended that an RPEQ certified geotechnical assessment is provided, prepared in accordance with the Road Planning and Design Manual, 2nd edition: Volume 3, Department of Transport and Main Roads, 2016.</p> <p>Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.</p>	<p>No acceptable outcome is prescribed.</p>	<p>PO32 Complies</p> <p>The proposed development is for a shared use hiking trail located within a nature reserve and is therefore a protected area. Consequently, the proposed development will not impede delivery of a future state-controlled road.</p> <p>There are no further state controlled road corridors mapped within the project area.</p> <p>Survey and geotechnical technical investigations have been carried out by the construction contractor to determine the suitable depths for foundations for the proposed structures and building associated with the project.</p>

Performance outcomes	Acceptable outcomes	
<p>PO35 Fill material from a development site does not result in contamination of land for a future state-controlled road.</p> <p>Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.</p>	<p>AO35.1 Fill material is free of contaminants including acid sulfate content.</p> <p>Note: Soil and rocks should be tested in accordance with AS1289 – Methods of testing soils for engineering purposes and AS4133 2005 – Methods of testing rocks for engineering purposes.</p> <p>AND</p>	<p>PO32 Complies</p> <p>The proposed development is for a shared use hiking trail located within a nature reserve and is therefore a protected area. Consequently, the proposed development will not impede delivery of a future state-controlled road.</p> <p>There are no further state controlled road corridors mapped within the project area.</p> <p>The fill material acquired for the project will be sourced from existing material on site and will be free of contaminants. Therefore, no fill material will result in contamination of a state-controlled road. The proposed finished surface or wearing course for the majority of the Wangetti Trail is the natural soil – that is, the in situ mineral earth soil already in place beneath the vegetation, leaf litter and organic topsoil. This is true for both standard and hand-built trail construction. Where extra soil is required, for example, to build up over a low depression or to fill in between roots or to rake into the cracks between rock armouring, it can usually be sourced from the balanced cut and fill process used to create the bench which becomes the finished trail. While overall the cut and fill process is balanced, locally, soil may be moved up or down the trail, to manage local excesses or deficiencies.</p> <p>If sufficient soil is not available in situ, it may be necessary to import soil, with agreement from the land manager. This scenario is seen as unlikely and difficult to achieve, given the large volume of materials that would be required and the remote setting of the trail. Where imported soil is required, preference must be given to local, approved suppliers. Imported material must be free of weeds and pathogens. All material brought onto site must</p>

Performance outcomes	Acceptable outcomes	
		be accompanied by a certificate indicating that it is free of contaminants, pathogens and weed species.
	AO35.2 Compaction of fill is carried out in accordance with the requirements of AS1289.0 2000 – Methods of testing soils for engineering purposes.	PO32 Complies The proposed development is for a shared use hiking trail located within a nature reserve and is therefore a protected area. Consequently, the proposed development will not impede delivery of a future state-controlled road. There are no further state controlled road corridors mapped within the project area.
PO36 Development does not result in an actionable nuisance, or worsening of, stormwater, flooding or drainage impacts in a future state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	PO32 Complies The proposed development is for a shared use hiking trail located within a nature reserve and is therefore a protected area. Consequently, the proposed development will not impede delivery of a future state-controlled road. There are no further state controlled road corridors mapped within the project area.
PO37 Run-off from the development site is not unlawfully discharged to a future state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	AO37.1 Development does not create any new points of discharge to a future state-controlled road. AND	The project is not located within or adjacent to a future state-controlled road.
	AO37.2 Stormwater run-off is discharged to a lawful point of discharge. Note: Section 3.9 of the Queensland Urban Drainage Manual, Institute of Public Works Engineering Australasia (Queensland Division), Fourth Edition, 2016, provides further information on lawful points of discharge. AND	The project is not located within or adjacent to a future state-controlled road.

Performance outcomes	Acceptable outcomes	
	AO37.3 Development does not worsen the condition of an existing lawful point of discharge to the future state-controlled road.	The project is not located within or adjacent to a future state-controlled road.

Appendix C – Planning Report for Wangetti South Section A in Wangetti to support an Operational Works Development Application for works in a Coastal Management District

Attached separately due to file size.

Appendix D – Wangetti Trail Construction Manual

WANGETTI TRAIL

CONSTRUCTION METHODOLOGY

APRIL 2020

FINAL

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1 INTRODUCTION

This Construction Methodology has been prepared to guide construction activities associated with the Wangetti Trail project to minimise impacts to the environment and ensure compliance with all permits, approvals and legislative requirements. This document is intended to provide a high-level amount of information for contractors to inform the eventual Construction Environmental Management Plan. Note that information relating to the following is not covered in this document and will be required by WTMA of the successful contractor as part of the subsequent detailed Construction Environmental Management Plan:

- Weed and disease management;
- Flora management such as for fallen trees, old growth trees and vegetation clearing;
- Fauna management such as general and species-specific prescriptions.

The Department of Innovation and Tourism Industry Development Tourism Development Projects Division is proposing to establish the Wangetti Trail. The trail is proposed to be 94km dual use, stretching from Port Douglas in the north to Palm Cove in the south.

The Wangetti Trail will be an iconic overnight hiking/mountain biking trail, unique in Australia and the world. It traverses some of the most magnificent and picturesque scenery imaginable, with endless views out over the coast and the Great Barrier Reef. It passes through a myriad of different vegetation communities and aspects, including dense vine draped rainforests, more open rainforests with minimal understory, grassy open Eucalypt forests, fern and Cycad groves, mangroves and crystal-clear rainforest streams, providing a constantly changing backdrop and personality to the trail.

2 THE WANGETTI TRAIL

2.1 WHAT IS THE WANGETTI TRAIL?

The trail is proposed to be an approximately 94km dual-use trail used by hikers and mountain bikers, between Port Douglas and Palm Cove in northern Queensland.

The trail comprises two separable portions (SPs):

- SP1 Mowbray North – The northern section of the trail, from Port Douglas to the Mowbray River (northern bank);
- SP2 Wangetti Balance – The southern section of the trail, from the Mowbray River (southern bank) to Palm Cove, which will include campsites and supporting ancillary facilities.

This Construction Methodology is intended to address requirements for SP2.

The SP2 Wangetti Balance is a dual-use trail involving accommodation nodes and supporting ancillary facilities to support an expected 28,000 annual visitors. The length of the trail for SP2 is 82.15km, to a width of up to 1.5m, encompassing an area from the south of Mowbray River to Palm Cove.

Within the Wet Tropics World Heritage Area, the following components are proposed:

- Single dual use trail to accommodate both mountain bike users and hikers, consisting of natural ground and surface treatments;
- A number of low-level bridges and crossings including Hartley Creek bridge, boulder rock crossings and gully crossing style bridge from minor waterway crossings;
- Five public campsites;
- Four private campsites;
- Utilisation of existing access tracks;
- Mountain bike trail using existing access tracks associated with Twin Bridges Road (Black Mountain Road East) and Quaid Road.
- Landscaping treatments using natural materials available in-situ, including rock armouring, rock retaining walls, etc.;
- Landscaping treatments using imported materials such as pre-cast concrete steps, adjustable rock matting etc.;
- Upgrades, improvements or extensions to access roads as required for either construction or ongoing operational access purposes.

A fifth public and private campsite is located outside of the Wet Tropics Management Zone.

2.2 TRAIL ALIGNMENT

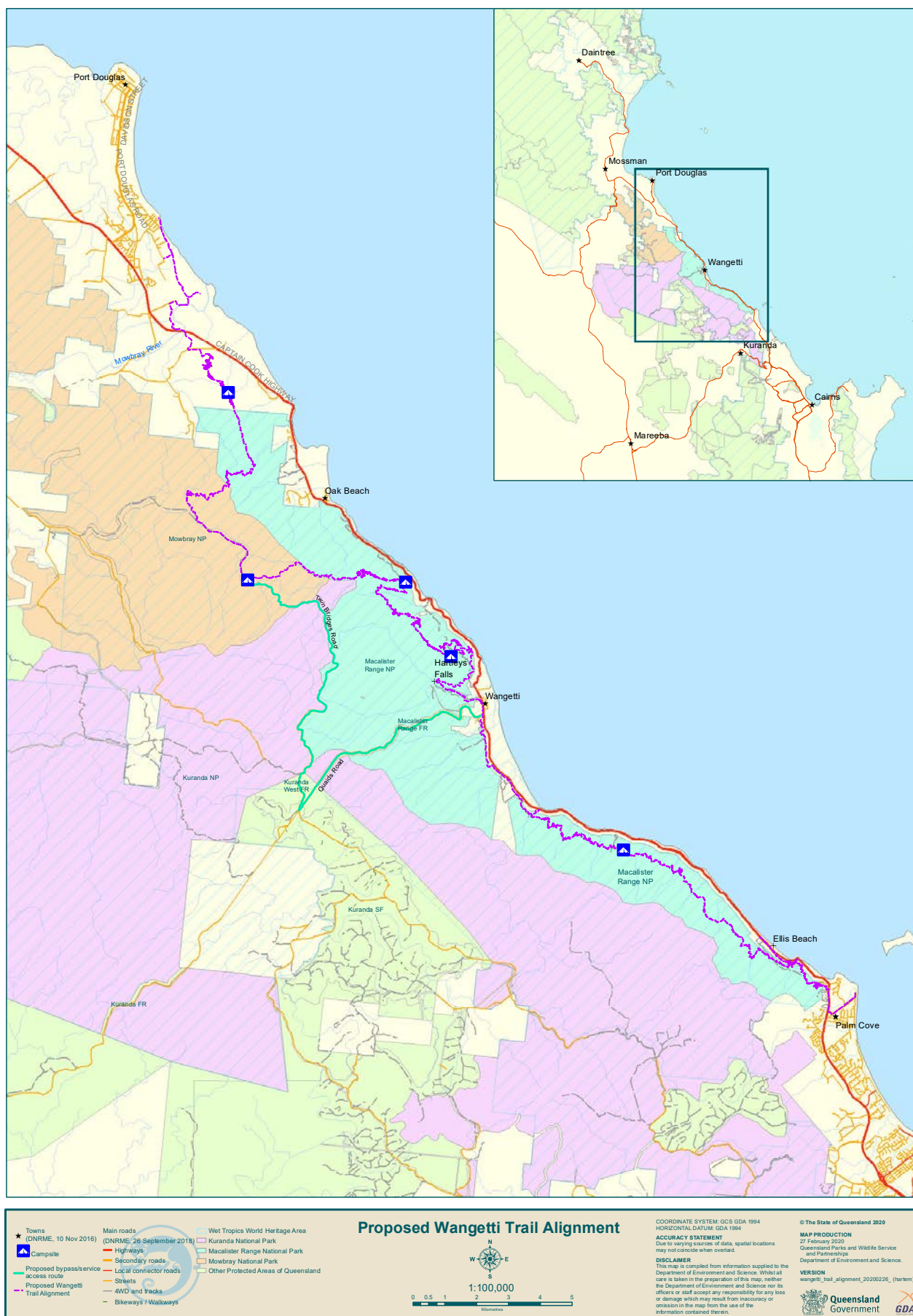
The Wangetti Trail is located between Port Douglas and Palm Cove, approximately 30km north of Cairns, in northern Queensland.

The trail alignment is constrained by the Pacific Ocean to the east and the Macalister Ranges to the west, and is mostly contained within the Mowbray and Macalister Range National Parks. The landscape is comprised of coastal floodplains, volcanic mountain ranges and estuarine mudflats, although the trail is generally aligned upon the elevated eastern slopes of the Macalister Ranges.

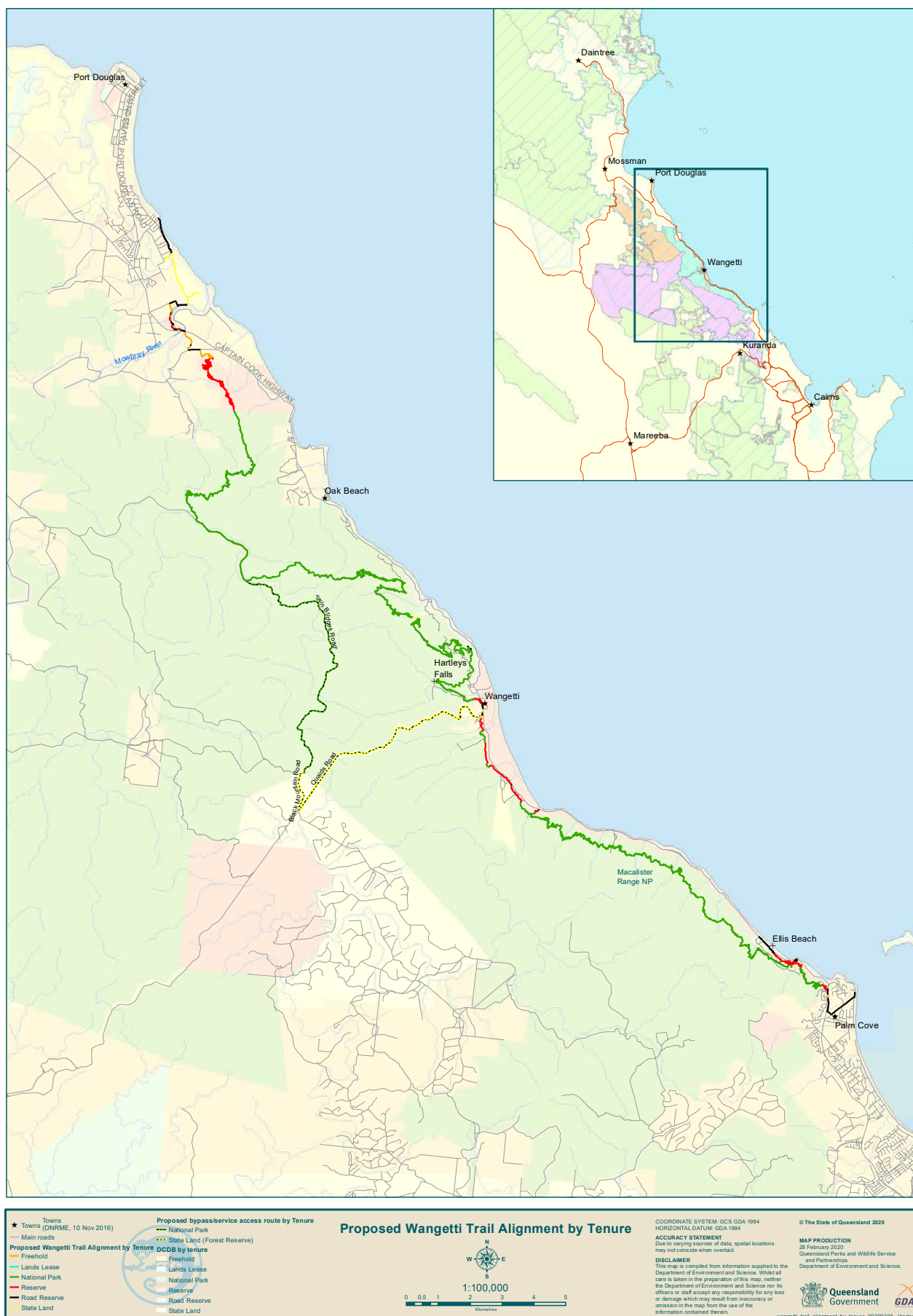
The proposed trail currently traverses undeveloped rural land, wet tropics conservation park, national park, unallocated state land, existing tracks, service roads and road reserve. It comprises of seven sections and one mountain bike only trail section that will traverse Twin Bridges Road (Black Mountain East Road) and Quaid Road.

Map 1 and Map 2, on the following pages show the proposed Wangetti Trail alignment.

Map 1 – Proposed Wangetti Trail Alignment



Map 2 – Proposed Wangetti Trail Alignment by Tenure



2.3 STYLE PHILOSOPHY

The Wangetti Trail experience will be uniquely Australian, emphasising the culture, history and way of life of the Traditional Owners, the Yirrganydji people. It will encourage a sense of exploration and a spirit of adventure. It will foster an appreciation of the natural environment and the diversity of flora and fauna within it.

For the Wangetti Trail to be a world-class trail, the construction must be of the highest quality, but the end result needs to look like it has been in place for thousands of years, blending into the landscape seamlessly and harmoniously.

The trail will be predominantly natural surface, constructed from the natural soil and rock found along the trail. Imported surfacing materials such as fine crushed rock may be used from time to time, but only in high traffic areas or where other requirements dictate its use. Imported materials can be visually unappealing and can introduce weeds and pathogens. Any surfacing materials that are used should be of local provenance and suitable for the intended purpose.

The Wangetti Trail has been designed to minimise built structures like bridges, boardwalks and viewing platforms. These built structures pose a number of challenges:

- They are normally constructed from imported materials and can be intrusive in the natural environment;
- They can burn during bushfires or prescribed burns;
- They can be difficult to construct in remote areas, due to the challenges of importing the materials;
- They increase the maintenance burden.

Where built structures are required, the design and finish will prioritise the use of local timbers and other materials that will age gracefully with time. Above all, the materials must be durable enough to withstand the harsh tropical climate and natural environment.

Any built structures must be designed and engineered to be fit-for-purpose, to have minimal impact to the surrounding environment, to have minimal maintenance requirements and will need to take a minimalistic approach to materials given the remote nature of the trail and difficulties getting materials into the locations where they are required.

The Wangetti Trail will utilise the natural rock and stone to maximum advantage, including rock slabs, rock outcrops and loose surface rock. Rock is the ultimate trail building material, especially when it is locally sourced. Loose surface rock provides the raw materials for rock walls, rock armouring and even the construction of trail-side furniture like bench seats.

The suite of different signs required along the Wangetti Trail must be complementary to each other, but also to the overall look and feel and aesthetic of the trail. The materials should be as natural as possible and durable within the outdoor environment; the colour palette should feature muted, earthy natural tones; styling should be elegant, timeless and understated.

The final position, character, style and finish of a trail is a combination of the design choices made by the construction team (particularly the machine operator), the terrain and environment, the intended user group and any permit conditions stipulated by the land manager and regulatory authorities. Constraints and no-go areas as marked and defined within plans and as part of the construction environmental management plan must also be considered.

2.4 TRAIL DIFFICULTY

As a dual-use trail for hikers and mountain bikers, the difficulty of the trail must match the expectations of the two main user groups.



To this end, the Wangetti Trail is proposed to have the following rating:

- Mountain Biking – Intermediate (blue square with blue outline) as defined in the Australian Mountain Bike Trail Guidelines Trail Difficulty Rating System (MTBA TDRS);
- Hiking – Grade 3 for hikers, as defined in the Australian Walking Track Grading System (AWTGS), which also equates to Class 3 in the Australian Standard for Walking Tracks, Part 1: Classification and Signage (AS 2156.1-2001).

In general, the Intermediate rating for mountain biking and Grade 3 rating for walking are fairly similar and complimentary and seem as the 'best fit' for the Wangetti Trail as described in this document, with the following comments/observations:

- The AWTGS specifies a distance of no more than 20km for a Grade 3 trail. As each section of the Wangetti Trail is proposed as a single stand-alone day walk, it will comply with this criterion;
- The MTBA TDRS states a width of 600mm plus or minus 300mm for an Intermediate trail, while the AWTGS simply states a width of less than 1200mm for a Grade 3 trail. Given the dual-use status and expected high usage of the Wangetti Trail, a width of 1000-1500mm is recommended, which is not deemed to contradict either of these ratings. Note that trail width in the MTBA TDRS is deemed one of the 'Guiding Criteria' and allows some deviation from the parameters provided;
- The AWTGS states that steps may be common. The MTBA TDRS doesn't discuss steps per se, but they would be treated as 'unavoidable obstacles'. An Intermediate trail can have unavoidable obstacles up to 200mm high, hence single steps of less than 200mm would be acceptable. Flights of steps however, are not acceptable on a mountain bike trail, especially one that is dual directional. The trail has been designed to minimise any steps on the main trail – any steps that have been specified are located on alternative optional 'detour' sections.

Table 1. Summary of Trail Difficulty Ratings

Rating System	MTBA TDRS	AWTGS
Rating	Intermediate	Grade 3
Symbol		
General Description	<p>Single trail with moderate gradients, variable surface and obstacles.</p> <p>Dual use or preferred use.</p>	<p>Short steep hills.</p> <p>Formed track, some obstacles.</p> <p>Sign posted.</p> <p>Some bushwalking experience recommended.</p>
Distance	Not specified.	Total distance of track must not exceed 20km.
Signage	Not specified.	Track head signage and route markers at intersections and where track is indistinct.
Trail Width	600mm plus or minus 300mm.	Less than 1200mm.
Trail Surface	Possible sections of rocky or loose tread.	Formed earthen track, few obstacles. Generally, a modified surface, sections may be hardened. Mostly clear of intrusions and obstacles.
Average Trail Gradient	<p>Mostly moderate gradients but may include steep sections.</p> <p>Ave. trail grade – 10% or less.</p>	Generally, no steeper than 1:10 (10%).
Maximum Trail Gradient	Max. trail grade – 20%.	May exceed 1:10 (10%) for short sections.
Level of Trail Exposure	Exposure to either side of the trail corridor includes downward slopes of up to 20%.	Not specified.
Natural Obstacles and Technical Trail Features	<p>Unavoidable obstacles to 200mm high, such as logs, roots and rocks.</p> <p>Avoidable, obstacles to 600mm may be present.</p> <p>Unavoidable bridges 600mm wide.</p> <p>Short sections may exceed these criteria.</p>	Not specified.
Experience Required	<p>Suitable for skilled mountain bikers with basic mountain bike skills.</p> <p>Suitable mountain bikes.</p>	Users need no bushwalking experience and minimum level of specialised skills. Users may encounter natural hazards such as steep slopes, unstable surfaces and minor water crossings. They are responsible for their own safety.
Steps	Not specified	Steps may be common.

3 TRAIL DESIGN AND CONSTRUCTION PROCESS

3.1 TRAIL DESIGN PROCESS

The process used to design the Wangetti Trail included two broad stages – Conceptual Design and Detailed Design (also called ground-truthing).

The Conceptual Design stage involved the trail being planned and mapped out based on a sound understanding of the on-ground conditions, knowledge of access points into the trail and the aspirations of the project with regard to user experience, difficulty, trail sustainability etc.

The Detailed Design fieldwork was undertaken in 2018. The primary purpose of the work was to identify, flag and map the exact route in the field for the proposed Wangetti Trail. At completion of this work, the entire route was known and mapped, all construction treatments were allocated and quantified, a construction cost estimate was prepared and all proposed campsite locations were identified.

Over the course of three months in mid 2018, the entire route was walked twice by World Trail personnel, using an iterative 'two-pass process'. During the first pass, the objective was to determine the preferred alignment, mark it with coloured flagging tape and map it with GPS. In the second pass, the objective was to assess the alignment and determine appropriate construction treatments, measuring, photographing and recording them using GPS.

In relation to the flagging tape, the following protocols apply:

- The flagging tape indicates roughly the centreline of the proposed trail alignment;
- Generally, each strip of flagging tape should be visible from the next/previous one, but this can't always be relied on as they can be removed by weather/animals. In thick vegetation, flagging tape is placed more frequently. In sparse vegetation tape is used more sparingly;
- Where the trail performs a sharp turn or switchback, three pieces of tape tied around a single trunk or branch are generally used to indicate the apex of the turn (see **Error! Reference source not found.** on next page);
- Switchbacks are often used in close succession to each other to help a trail climb up or descend a steep slope. In these situations, there can be multiple 'legs' of the trail running roughly parallel to each other. Anyone attempting to follow the proposed trail alignment needs to be aware of where these switchbacks might be and ensure that they look forward along the contour to locate the next piece of flagging tape;
- Where the trail is proposed to follow an existing road flagging may be sporadic.

The alignment of the Wangetti Trail changed considerably during ground-truthing. The changes can be classified as:

- Minor changes, due to environmental factors identified in the field such as impassable barriers like cliffs etc. Minor changes were made at the discretion of field staff, in response to the environmental conditions present;
- Major changes, due to more strategic factors such as the overall length and cost of the trail, the identification of areas of cultural or environmental sensitivity, concerns about the user experience, safety or longevity of the trail and so on. Many such changes were driven by new discoveries in the field or by new information from other projects partners and approved by the client. Where major alignment changes were undertaken, these were also ground-truthed using the same two-pass methodology described above.

Further refinement of the ground-truthed alignment was undertaken by GHD in response to the following:

- Additional field investigations being undertaken of the alignment;
- Additional consultation with key stakeholders including adventure-based tourism operators;
- Additional consultation being undertaken with land owners impacted by the alignment;
- Consultation with WTMA regarding the location of the proposed infrastructure within the Wet Tropics Zone and whether they are considered appropriate for the intent of the zone.

This resulted in some minor amendments to the alignment, amendments to the location of the camps and the inclusion of the separate mountain bike trail (utilising the existing roads). This also resulted in the removal of one of the proposed camps on the basis of sensitive environmental areas being deemed too significant to accommodate a camp site at the proposed location.

Figure 1. Triple taping to indicate apex of switchback corner



3.2 STANDARD CONSTRUCTION PROCESS

The main construction activity to be undertaken in this project, covered by this Construction Methodology, is the construction of a dual-use hiking and mountain biking trail, including all associated landscaping, the campsites, bridges, boardwalks, viewing platforms and signage. The scope of works for this Construction Methodology is limited to the above. It does not include the construction of trail heads, car parks, roads or other supporting infrastructure associated with the broader Wangetti Trail project.

All trail construction activities should align with modern best practice for sustainable trail construction, as outlined below:

- Sustainable trails align with users' needs, provide social and economic benefits, minimise environmental impact and require less maintenance. To achieve sustainable trails, the land manager must develop the right trail, in the right area, the right way and for the right reasons.
- Trail development must be planned, designed and constructed with the highest environmental standards. Trails should be appropriate to the landscape, sense of place, and add value to the area.
- Trails should not destabilise soils or slopes. Vegetation should not be cleared or damaged beyond the required trail footprint. Trails should be used to manage recreation on wildlife and habitats in a positive way. Trails should be designed and constructed in a way that minimises the potential spread of pathogens, diseases and weeds.
- Trail development must be consistent with the sustainable provision of resources to manage the trail and associated infrastructure. Design and construction of trails should minimise maintenance requirements and ongoing costs.

A 40m corridor has been approved for the construction of the trail. This is referred to as the Ground-truthed Corridor. The purpose of the Ground-truthed Corridor is to allow flexibility for the placement of the trail and associated infrastructure, so as to avoid, where possible, impacting on Matters of State Environmental Significance (MSES) and Matters of National Environmental Significance (MNES).

The Ground-truthed Corridor is defined by the flagging tape placed during ground-truthing works, which represents the centreline of the Ground-truthing Corridor. The Ground-truthing Corridor extends 20m outward on both sides from the centreline (measured along the ground, perpendicular to the direction of the centreline). Note that if the flagging tape is no longer in place, the GPS alignment recorded during ground-truthing should be used as the indicative centreline. The successful contractor will be provided with the complete set of GPS coordinates of the final approved trail alignment and 20m corridor either side.

Broadly speaking, the process of constructing a standard mountain biking trail is as follows:

1. Prior to commencing work, each separate trail or section of trail as defined by the land manager, is to be re-walked and assessed as part of a Pre Start Trail Review (PSTR) – refer to Section 7.2 for more information about this process. At the completion of the PSTR the exact alignment of the trail will have been re-marked. There should be no ambiguity or uncertainty about the exact alignment of the trail. Although noting that during construction if something needs to be avoided, the trail can be moved around within the 40m corridor;
2. Clear the Construction Corridor of vegetation. The Construction Corridor is defined as the horizontal corridor from the top of the upslope batter to the toe of the downslope batter and the vertical corridor to about 2.5m high (sufficient to allow passage of the excavator). Clearing of the Construction Corridor is usually undertaken manually using motorized tools such as brush cutters, chainsaws and hedge trimmers and hand tools like loppers, hand saws and secateurs. Large trees do not need to be removed, as the trail can be routed to avoid them, however, it is

likely that small boughs and limbs may need to be removed. All vegetation that is removed is cut into small pieces and dispersed throughout the surrounding area – no large windrows or stockpiles should be present. At this stage, all vegetation is removed except for ground covers, herbs and grasses (which are left in place for later removal by the excavator). For larger trails such as the Wangetti Trail, the Construction Corridor is cleared in section lengths of approximately 100-150m at a time. This process allows a visible amount of vegetation to be cleared ahead of where the machine is operating, the trail construction to be undertaken by the machine operator and trail labourers working behind to clean up before moving ahead to the next section.

3. Cut the bench using cut and fill technique. The topsoil and mineral earth removed from the inner side of the bench are used to build up the outer edge of the bench. The excavator works forwards, cutting the bench ahead of it and then moving forward onto the bench. The bench must be wide enough and stable enough for the excavator to operate safely on. Using a small rubber-tracked mini-excavator (refer Figure 2) with a minimum track width of about 900mm, the bench is generally constructed at 1-1.5m width. Note that the cut material (i.e. the spoil) may be moved locally forward or backwards along the trail to areas where fill material is required. Overall, cut and fill is always balanced, with no fill material removed off-site. On steeper slopes, the outer edge of the bench may need to be retained. This is generally done using dry stone rock walls, built from rock sourced during the construction of the bench, with the excavator creating the foundations for the base course and moving the largest rocks into place;
4. Any additional trail embellishments, such as trail surfacing, steps, rock armouring etc., are generally constructed at this stage, prior to the finishing steps below;
5. Define the preferred riding/hiking line by placing rocks, logs and other obstacles as necessary. Large obstacles work best and should be manoeuvred into place by the excavator. The ideal riding/hiking line is generally on the inner side of the bench, at the toe of the upslope batter, where the soil is firm and compacted. Obstacles are manually and deliberately placed to control rider speed and position riders/hikers towards the inside of the bench;
6. Clean up the trail tread, removing loose rocks and roots, compacting the tread, back sloping the batter and managing drainage (for example, ensuring grade reversals flow correctly or that the trail is outsloped where practical). This step is undertaken manually by trail labourers working behind the excavator.

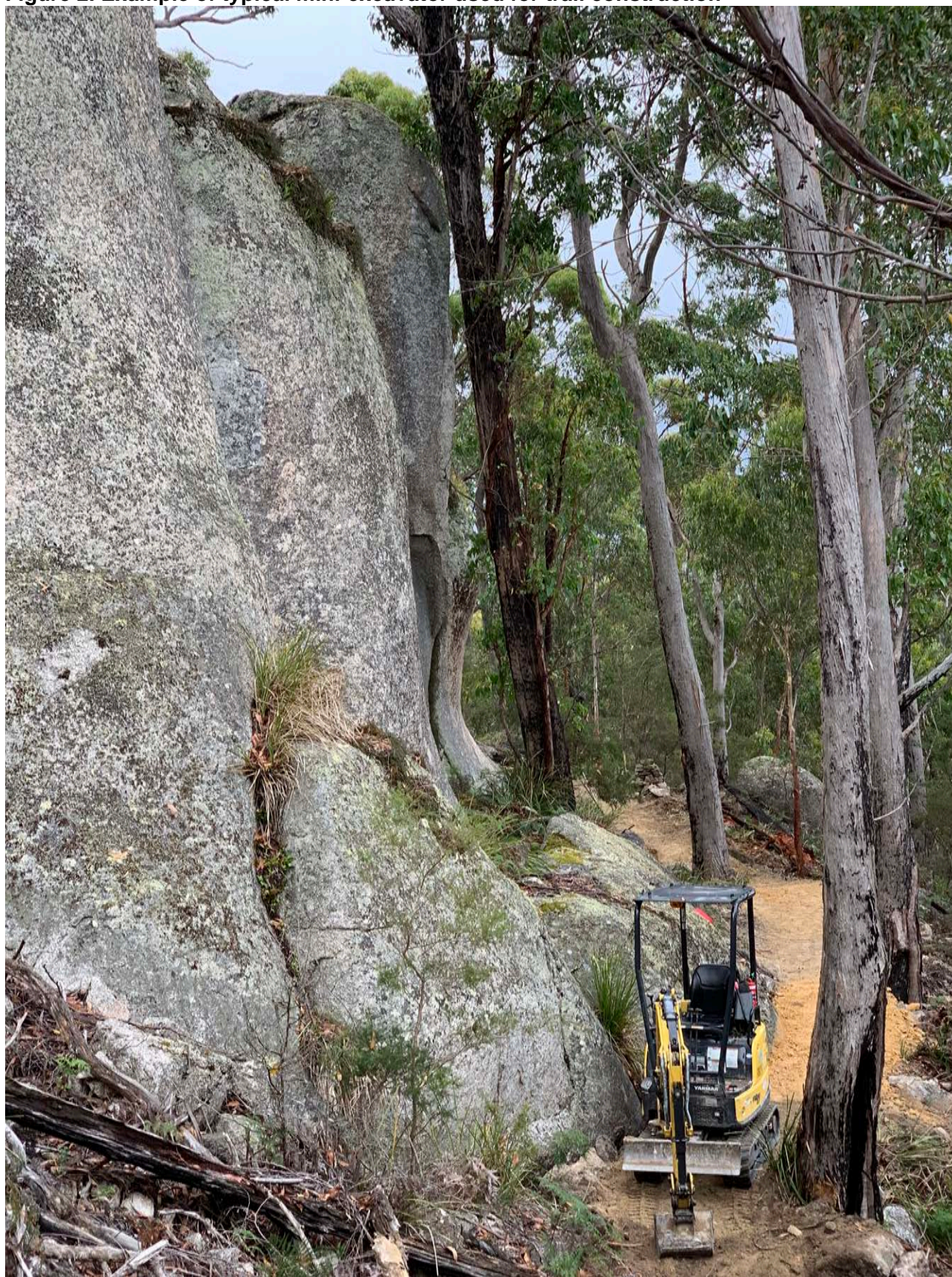
From time to time, step 3 may need to be undertaken by hand. Hand construction may be necessary in the following situations:

- It is not physically possible to get the mini-excavator to the location. For example, there is a steep-sided creek requiring the construction of a bridge, which will not be trafficable by a mini-excavator, or there are large boulders that prevent access of the machine;
- It is not safe to use a mini-excavator. For example, on extremely steep side slopes, or in locations with unstable ground, or on sloping rock slabs, it may not be deemed safe to operate a mini-excavator;
- Areas of high environmental or cultural heritage values, requiring minimal excavation;
- Close to large tree roots, especially buttress style roots running along ground surface;

The trail should be allowed to rest for a period before allowing riders/hikers to use it. This process is called 'curing' and allows the trail tread to settle and harden before being subjected to use.

This process above describes the typical methodology for 80-90% of trails.

Figure 2. Example of typical mini-excavator used for trail construction



3.3 RE-ALIGNMENT PROCESS

From time to time during trail construction, changes need to be made to the proposed trail alignment. These changes occur in response to issues that become apparent once construction commences (for example, unstable ground caused by a former industrial use), or in response to new opportunities that are identified to improve the trail experience.

If the proposed realignment is still within the approved 40m Ground-truthed Corridor, then the proposed realignment must be communicated to the TDPD Project Manager for their records.

If the proposed realignment passes outside the approved 40m Ground-truthed Corridor, then the proposed realignment must be referred to the TDPD Project Manager and will most likely require further investigations prior to approval.

4 CAMP SITE DESIGN AND CONSTRUCTION

The Wangetti Trail will include five high quality, sustainable camp sites, providing an interesting camping experience in a range of stunning tropical rainforest environments.

The Wangetti Trail will provide both public and private camp sites to cater for different user groups and experiences. The exact location and configuration of the proposed camp sites will be determined during further detailed planning to ensure the best sites are utilised to cater for a range of experiences.

Each camp site will be constructed to protect the environment by minimising the impact of people at each location. The use of elevated tent platforms and raised boardwalks has become the recognised means to provide a quality camping experience, while protecting the surrounding, sensitive environment.

All camp site locations along the Wangetti Trail must undergo thorough assessment to select an appropriate site based on the following design and construction considerations.

Table 2. Camp site Design and Construction Considerations

Consideration	Notes
Location	<p>The five camp sites proposed as part of the Wangetti Trail include:</p> <ul style="list-style-type: none"> • Camp site 1: Dark Jungle; • Camp site 2: Pinnacles; • Camp site 3: Vodaphone; • Camp site 4: Twin Bridges; • Camp site 5: Tresize (located outside of the WTWHA). <p>Camp site 1: Dark Jungle An area of up to 0.25 ha will be permanently disturbed to allow for the construction of a public camp site, which will cater for a maximum of 20 people per night and be managed by QPWS. Properties impacted include lot 174 on NPW930. Located within Zone B of the WTWHA.</p> <p>Camp site 2: Pinnacles A conservative disturbance area of up to 3.6 ha has been allowed for the siting of the campsite infrastructure, including construction footprint and buffers for the public and private campsites. The design details of the campsite will be developed further during the detailed detail phase and would result in the permeant disturbance footprint of 0.5 ha. Properties impacted include lot 174 on NPW930. Located within Zone C of the WTWHA.</p> <p>Camp site 3: Vodaphone A conservative disturbance area of up to 3.3 ha has been allowed for the siting of the campsite infrastructure, construction footprint and buffers for the public and private campsites. The design details of the campsite will be developed further during the detailed detail phase and would result in the permeant disturbance footprint of 0.5 ha. Properties impacted include lot 174 on NPW930. Located within Zone C of the WTWHA.</p> <p>Camp site 4: Twin Bridges For campsite 4 a conservative disturbance area of up to 3.6 ha has been allowed for the siting of the campsite infrastructure, including construction footprint and buffers for the public and private campsites. The design details of the campsite will be developed further during the detailed detail phase and would result in the permeant disturbance footprint of 0.5 ha. Properties impacted include lot 174 on NPW930. Located within Zone C of the WTWHA.</p>

Consideration	Notes
	<p>Camp site 5: Tresize</p> <p>For campsite 5 a conservative disturbance area of up to 2.9 ha has been allowed for the siting of the campsite infrastructure, including construction footprint and buffers for the public and private campsites. The design details of the campsite will be developed further during the detailed detail phase and would result in the permeant disturbance footprint of 0.5 ha.</p> <p>This camp site is not located within the WTWHA and therefore does not require assessment as part of this permit. Properties impacted include lot 117 on SR898.</p>
Visitor Experience	<p>Take advantage of views but be well hidden and not obviously visible from the trail.</p> <p>Not detract from the primary experience of the ride/walk or diminish the remote experience.</p>
Environmental Sustainability	<p>Fit sensitively into the landscape with minimal ecological footprint, respectful of the carrying capacity of the site and avoiding damage to environmentally significant area.</p> <p>Be demountable to allow removal / relocation in the future if required.</p> <p>Be located on existing disturbed sites where possible.</p> <p>Avoid impacting areas of cultural significance.</p>
Management and Operation	<p>Be safe for all users and undergo a risk assessment (including tree fall, bushfire, falls from height, flood, drowning);</p> <p>Be in accordance with park management plans, overlays, zoning and legislation, including regard for the WTMA requirements.</p> <p>Be located to allow servicing by vehicle or quad bike where possible.</p> <p>All camp sites will require regular cleaning and maintenance of toilets and camp infrastructure. The frequency of servicing will depend on usage and time of year. Vehicle or side by side access will be important.</p>
Scale	<p>For all camp sites, the total impact footprint for the public and private camp site infrastructure will be 0.25 ha each, within the abovementioned buffer areas. Resulting in a total impact footprint of 0.5 ha at each campsite location, with the exception of Campsite 1 which will have a footprint of only 0.25 ha (as it will be a public only camp site).</p> <p>The buffer areas have been provided at each camp site to accommodate both private and public camp sites, with the exception of campsite 1 which will be a public only campsite. The actual location of the campsites within this buffer area will be determined by the nominated construction contractor.</p> <p>A minimum 100m buffer is allowed for between the public and private camp sites to provide a buffer between public and private users.</p> <p>Camp sites will accommodate a maximum of 20 people per night on 10 tent platforms. Each platform would be large enough to pitch a tent or lay a swag. It would ideally be elevated off the ground and connected by pathways at grade and elevated boardwalks to ensure minimal damage to the surrounding environment The campsite would be a clearly delineated, controlled zone which will reduce camp site 'creep', an important element in the World Heritage Area.</p>

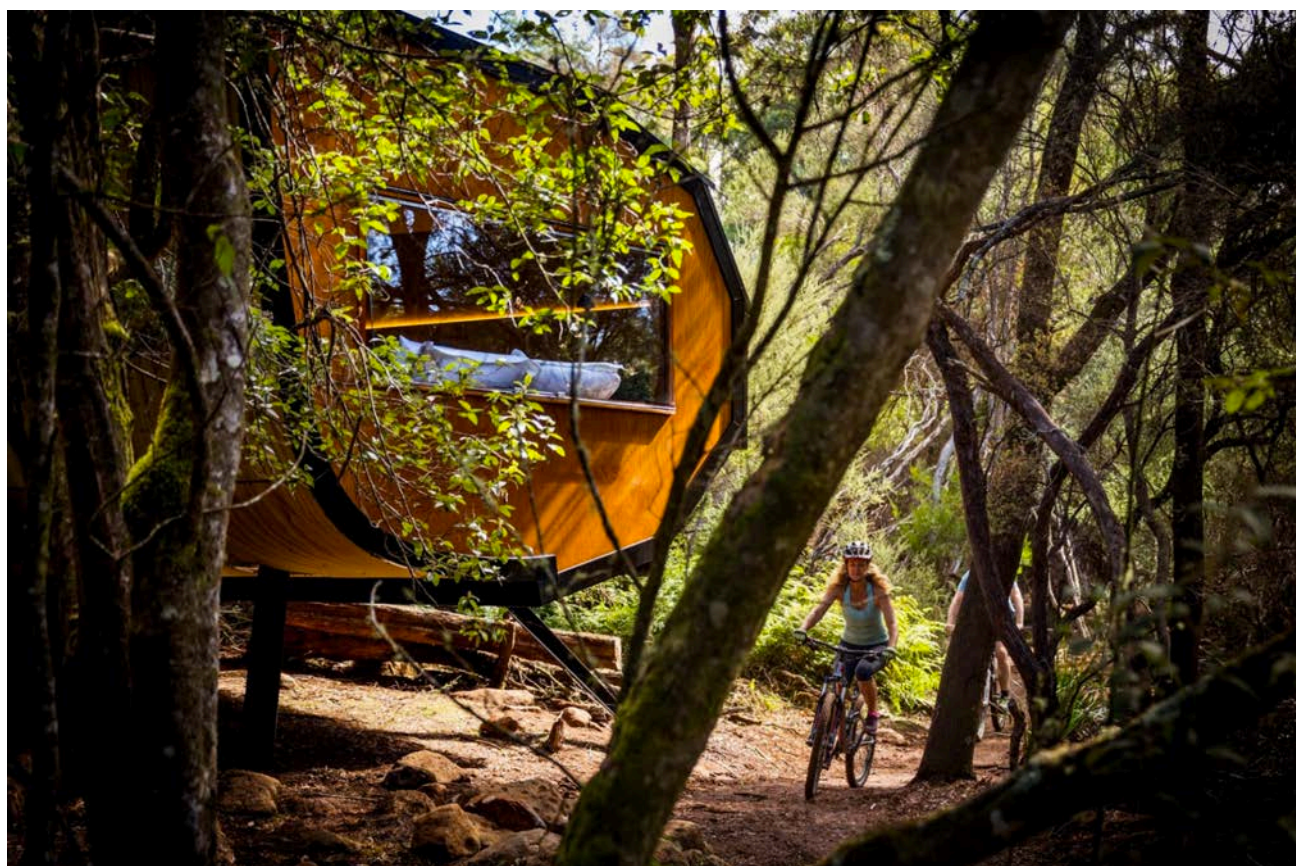
Consideration	Notes
Utility Connections	<p>The camps will have no reliance on reticulated services and would be self-sufficient for power, using a combination of solar and gas with a small back-up generator for emergency power. Water would be sourced from roof capture. Domestic waste would be removed from the site by maintenance staff.</p> <p>Structures will be prefabricated, and assembled on site on screw piles that enable water flows to continue unaffected.</p> <p>Each camp site could provide unobtrusive, solar powered charge points for small electrical devices such as phones, GPS devices and digital cameras. To maintain a true camping experience, charge points will not run larger electrical devices or lights.</p>
Public Camp Site Infrastructure	<p>Each public camp site location shall contain the following infrastructure:</p> <ul style="list-style-type: none"> • 10 x elevated timber camp desks/pads (4m diameter circular or 3mx3m square); • 1 x toilet block containing two toilets (note: Gough hybrid toilets are proposed to be used in accordance with the design in the QPWS Facilities Manual); • 1 x outdoor shower (optional); • 2 x rainwater storage tanks; • 1 x communal shelter facility (camping hub) for use as a gathering place and to provide protection from rain and extreme weather. This facility shall include bench seating and the allowance for 1 x bike rack facility incorporated into the camping hub (for up to 15 x bicycles); • Combination of pathways at grade and elevated boardwalks that interconnect the camp facilities (camping hub and toilet block) and camp decks (width approx. 1.2m); • Camp access tracks - from the camp site area to the main Wangetti Trail (as required). <p>Figure 3 shows an example of public camp site infrastructure.</p>
Private Camp Site Infrastructure	<ul style="list-style-type: none"> • 10 small basic huts; • 1 common building for dining, food preparation and bathrooms; • Interconnecting pathways, boardwalks and access tracks. <p>Figure 4 shows an example of private camp site infrastructure.</p>
Materials and Equipment Methodology	<p>The construction of the camp sites will ultimately be determined by the nominated construction contractor; however the following objectives will be applied to the construction phase:</p> <ul style="list-style-type: none"> • The camp sites must be sympathetic to the terrain and topography – they must blend into the landscape and create a sense of purpose and movement through the landscape; • The camp sites will connect to existing roads, vehicle tracks or walking tracks; • The camp sites will avoid areas of highest environmental significance where possible; • The camp sites will be built to modern best-practice standards for sustainable accommodation and amenities; • The structures at the camp sites will consist of modular, pre-fabricated and easy to assemble construction technologies to reduce construction related impacts; • The nominated contractor will be required to use locally sourced material that is lightweight yet durable; • Renewable, durable, non-toxic and environmentally sustainable materials to be considered during the construction phase of the camp sites; • Waste streams to be managed during construction through re-use of on-site materials that are within the development zone (e.g. soils, vegetation, fabricated materials);

Consideration	Notes
	<ul style="list-style-type: none"> Water sensitive urban design practices such as rainwater tanks, onsite recycling of water/wastewater, swales and bio-retention basins for water treatment and water efficient appliances be considered during the construction phase.
Design Principles	<ul style="list-style-type: none"> There needs to be a degree of physical and visual separation between the public and private campsites; Ideally, no trees should need to be removed for the construction of the camp sites and associated facilities. Tent pads, walkways, communal shelters etc. to be sensitively located to avoid the need for tree removal; Ideally, broad objective is to ensure the retention of as much vegetation as possible – only the area directly beneath each structure (i.e. tent pads, shelters, toilets etc.) and connecting walkways and pathways is to be cleared of vegetation. There should be no broad scale clearing of vegetation across the entire site. This requirement ensures protection of environmental values, but also helps to preserve the intended experience for the users – i.e. immersion in nature, solitude etc.; The use of in-situ materials wherever possible (eg: rock for the access track, pathways, and stormwater deviations); Minimal clearing and grubbing during construction; Liaise with qualified ecological consultants to understand the implications at each camp site, and to adjust (micro-site) the position of each element to achieve the best possible environmental outcomes; The intent of the camp sites is to enhance the trail experience; therefore, camp site arrangements need to sympathise with the environment, prioritise views where possible, allow privacy and space between campers and embrace the uniqueness that is at each location; Where duplication can be achieved, this is encouraged as it may minimise costs, create ease of construction and simplify ongoing maintenance, user booking and actual use by trail hikers / bike riders; Each camp site will be designed in a robust manner to minimise potential damage from vandalism or other anti-social behaviour.

Figure 3. Example of public camp site infrastructure. Bugiga Hiker Camp, Grampians Peaks Trail, Victoria



Figure 4. Example of private camp site infrastructure. Blue Derby Pods, Derby, Tasmania.



5 CONSTRUCTION TREATMENTS

5.1 LOCATION AND QUANTITIES OF CONSTRUCTION TREATMENTS

Section 5.2 of this document lists all of the Construction Treatments that have been specified for the construction of the Wangetti Trail. These Construction Treatments were specified by experienced trail designers working in the field during the Detailed Design stage of the project. Each specific occurrence of a Construction Treatment was measured on the ground and then recorded using high accuracy GPS enabled software. Each specific occurrence of a Construction Treatment consists of a number of pieces of information:

- The name of the Construction Treatment;
- The quantity (usually a length measurement);
- Photo/s;
- GPS coordinates;
- Other data specific to that treatment. For example, for rock armouring, the field worker is required to state whether rock is available on site or not.

Section 5.4 of this document provides specifications for the various Construction Treatments to be implemented.

The full suite of GPS data collected during ground-truthing will be provided to the Contractor, along with a series of maps that show the approximate placement of all of the Construction Treatments. However, it must be understood that the Construction Treatments and associated quantities as determined during ground-truthing and outlined in this document, should be used as a guide only. There are numerous reasons for this:

- GPS error margins – while ground-truthing was conducted using the best available technology, there remain inherent inaccuracies in the data, especially when working under heavy tree canopies. Accuracy of the field data collected is estimated to be generally under 10m;
- GPS recording process – the GPS data for the trail includes a linear trail alignment that should generally correspond to the flagged, ground-truthed alignment on the ground, and waypoints which correspond to the approximate centrepont for a particular construction treatment. For example, a 20m section of rock armouring, is represented by a single waypoint, recorded at the approximate centre point for that specific treatment;
- Reliance on flagging tape – ground-truthing was undertaken in 2018. Flagging tape may or may not still be in place – it can degrade quickly in harsh environments and can be removed by animals, people, or strong wind.

During the construction phase, the Contractor will be required to use their experience and knowledge to determine the best Construction Treatment, understanding that the treatments and quantities specified are a guide only. This requires:

- GIS/GPS capabilities – The ability to interpret and follow the spatial data and flagging tape in the field, to navigate to and identify the locations of the various Construction Treatments;
- Trail design experience – The ability to read the landscape and choose the most appropriate treatment, understanding that the treatment specified and the quantity estimated will be influenced by the final position of the trail within the 40m Ground-truthed Corridor;
- Trail construction experience – The ability to implement the various Construction Treatments outlined in this document.

5.2 BILL OF QUANTITIES

Table 3. Bill of Quantities

Construction Treatment	Unit	Quantity	Drawing Reference	Drawing Title
Trail Benching	Metre	82095	WTSTD-001-WG2	Typical Trail Benching
Trail Benching (Hand Construction)	Metre	55		
Vegetation Clearing	Metre	82150	WTSTD-033-WG2	Vegetation Clearing
Rock Walling (Up to 500mm)	Metre	1501	WTSTD-034-WG2	Rock Walling – Up To 500mm Placement and Dimensions
Retaining Wall (Up to 1000mm)	Metre	901	WTSTD-004-WG2	Rock Retaining Wall Up To 1000mm Placement and Dimensions
Ballast Surfacing	Metre	4595	WGST-045-WG2	Ballast Surfacing Placement and Dimensions
Pre-cast Concrete Steps	Step	1000	WTSTD-003-WG2 WTSTD-043-WG2 WTSTD-030-WG2	Precast Concrete Steps Placement and Dimensions Rock Pavement Treatment Trail Construction Precast Concrete Steps Trail Grading Guidelines
Natural Rock Seats	Stone Seats	20	WTSTD-005-WG2	Natural Rock Seat Placement and Dimensions
Rock Armouring	Metre	2315	WTSTD-007-WG2	Rock Armouring – Dual Use Placement and Dimensions
Boulder Water Crossings	Metre	1166	WTSTD-006-WG2	Boulder Rock Crossing Placement and Dimension
Minor Water Crossings	Metre	468	S030 & S031	Typical Gully Crossing – Sheet 1 & Sheet 2
Major Water Crossings	Metre	35	S010	Hartley's Creek Crossing

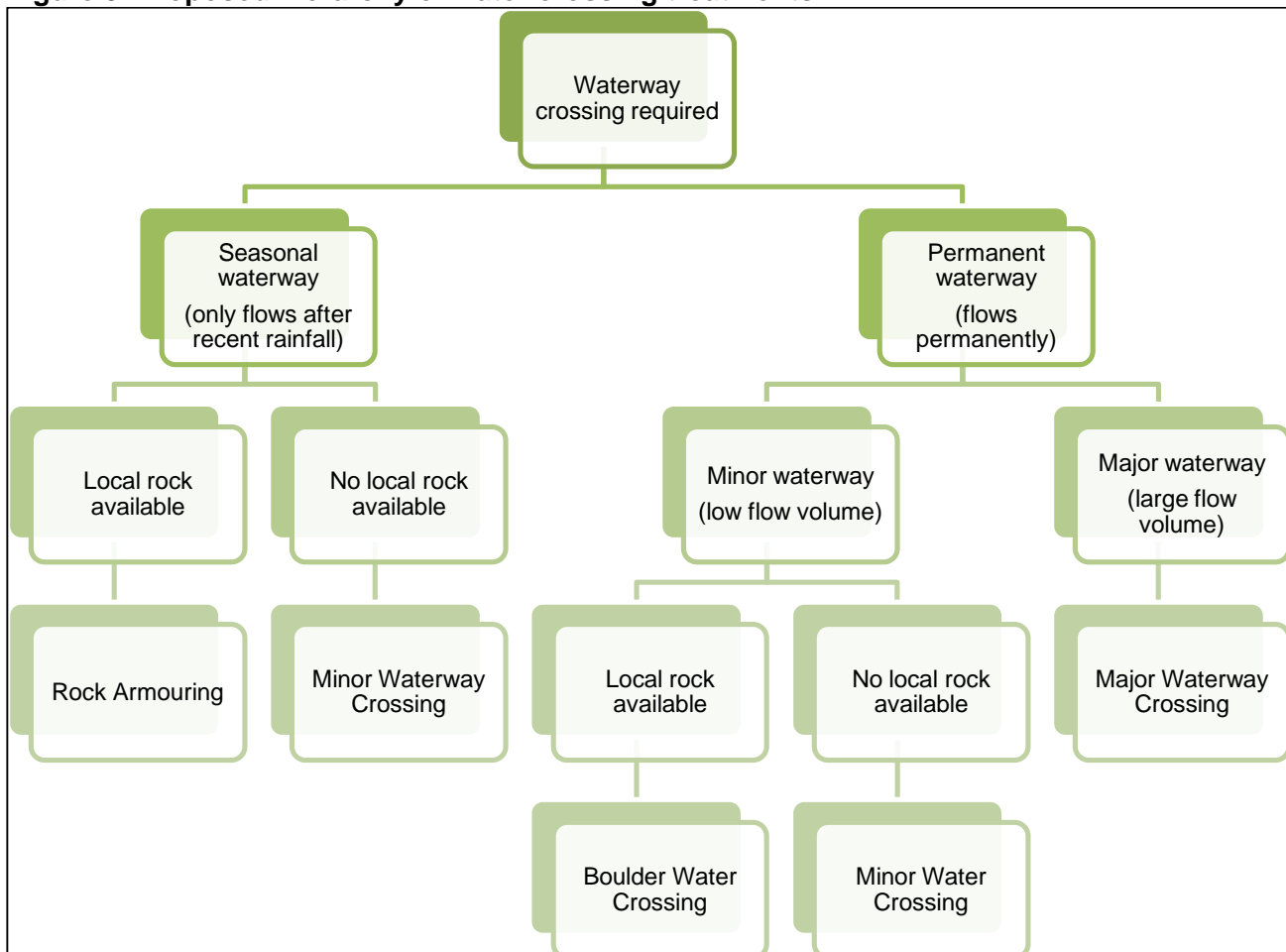
5.3 WATERWAY CROSSINGS

There are a number of different treatments proposed for the crossing of waterways:

- Rock Armouring;
- Boulder Rock Crossing;
- Minor Waterway Crossing;
- Major Waterway Crossing.

Figure 5 below shows the hierarchy for when/how the various treatments are to be applied.



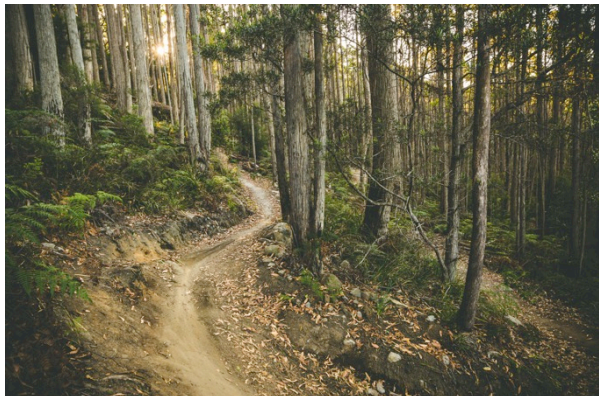
Figure 5. Proposed hierarchy of water crossing treatments

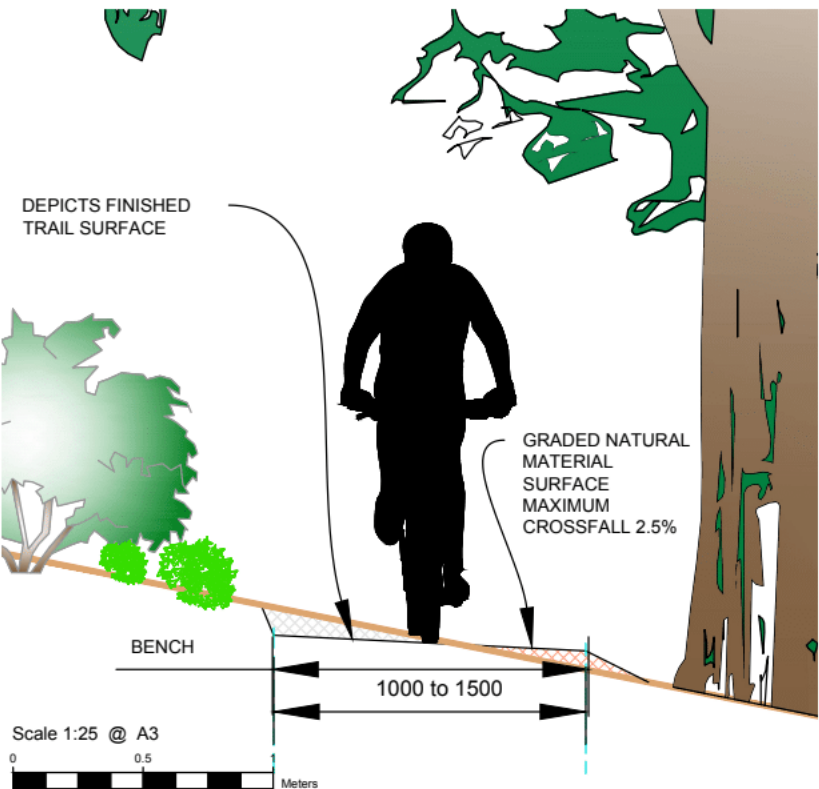


5.4 CONSTRUCTION TREATMENTS – SPECIFIED

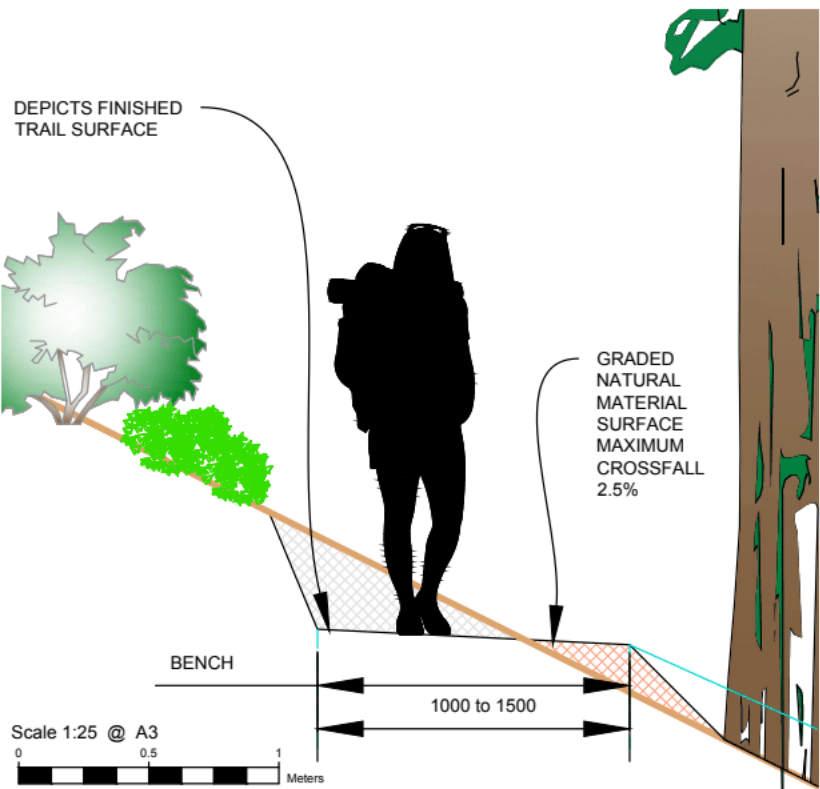
5.4.1 Trail Benching

What is it?		Examples
<p>Trail Benching is the main construction technique to be used to construct the vast majority of the trail. It is the earthworks undertaken by a mini-excavator to construct the bench which becomes the tread of the trail. It is generally a balanced cut and fill process.</p> <p>Trail Benching (Hand Construction) is a construction technique to be used to construct small sections of trail that can't be constructed with mini-excavator. It is otherwise the same as standard Trail benching, but all earthworks are undertaken by hand, using hand tools only.</p>		
When is it Used?		
<p>Trail Benching is used when creating new rolling contour trails in sideslope locations.</p>		
Why is it Used?		
<p>Trail Benching is the most appropriate, effective and least impact method of creating new rolling contour trail. Balanced cut and fill approach ensures that there is no surplus spoil to dispose of.</p> <p>Trail Benching (Hand Construction) is used when it is not possible to use a mini-excavator. This may be due to safety concerns, physical space limitations that prevent the passage of an excavator, slope instability or the desire to create a narrower tread width than is possible with a mini-excavator.</p>		
Notes		
<p>The intended finished width of the Wangetti Trail is 1.5m. This means that the largest excavator that can be used to construct the trail is one with a track width of 1.5m, which would usually be less than 2.5T in weight.</p> <p>While a larger excavator has more power, making it more efficient at moving soil and able to move larger rocks, this needs to be balanced against the larger footprint of the machine and the ability to have it airlifted by helicopter.</p>		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">• In situ soil• No imported materials	<ul style="list-style-type: none">• Rubber tracked mini-excavator;• Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.	
Estimated Length of Treatment	Drawing Reference	
<p>Trail Benching:</p> <ul style="list-style-type: none">• 82,095 metres (of entire 82.15km length of trail) <p>Trail Benching (Hand Construction):</p> <ul style="list-style-type: none">• 55 metres (of entire 82.15km length of trail)	<p>WTSTD-001-WG2 Typical Trail Benching</p>	





TYPICAL SECTION - 5:1 (20%) CROSS SLOPE
FILL BATTER SLOPE - 2:1



TYPICAL SECTION - 2:1 (50%) CROSS SLOPE
FILL BATTER SLOPE - 1:1

NOTES:

GENERAL:

- The trail will provide access along a slightly modified, natural environment alignment, with little provision of interpretive signage and few facilities.
- Users can expect occasional encounters with others.
- Locate and protect any underground or overhead services prior to commencement of works.
- Trail excavation is to be cut and fill.
- Naturally occurring rock is to be used to protect the uphill cut and the downhill toe where available and appropriate.
- Dimensions in millimetres unless otherwise notated.
- Trail excavation is to be cut and fill.
- Cut batters are at 67.5°. Fill batters are as defined.
- Rocks can be used in the toe of the fill batter to provide additional stabilisation at steeper slopes.
- Rocks and/or plants can be placed (or remain) in the bench area between the Ride & Hike Line and the Fill Batter to guide riders and hikers into the appropriate alignment.
- Cut material will need to be transported along the trail from steeper trail cross slope areas.
- All site clearing is to be restricted to the trail alignment and nominal clearances for cut and fill works.
- Trail layout is to be undertaken using the "Sustainability Guidelines" as defined by the MTBA and as summarised below. More detailed information should be obtained through the MTBA.
- The trail is to be constructed to Class 3 Standard, as defined in AS 2156.1-2001.
- The trail is to be constructed in accordance with the "Blue Square" difficulty rating as defined in the IMBA - Australia, Trail Difficulty Rating System, 2014, version 2.0.

NOTES:

MTBA TRAIL SUSTAINABILITY GUIDELINES

THE HALF RULE

- A trail's grade shouldn't exceed half the grade of the hill slope or sideslope that the trail traverses.
- Grades exceeding the half rule may cause water to flow along the trail causing erosion.

THE TEN PERCENT AVERAGE GUIDELINE

- The overall grade of a trail should be 10% or less.
- Some sections may be steeper than 10% and some less steep.
- The ten percent average guideline may need to be adjusted to suit different soil types.

MAXIMUM SUSTAINABLE GRADE

- The maximum sustainable grade is typically 15% to 20% but is dependent on a wide range of factors.
- These factors include soil type, annual rainfall, vegetation and topography constraints and the level of difficulty for users.

GRADE REVERSALS - (see Standard Drawing WTSTD-046-WG2 for details)

- Grade reversals are points at which the trail gradient changes from down to up (or up to down), creating a low point where water is pushed off the trail.
- The more frequent the grade reversals, the smaller the amount of water that needs to cross at each point thereby reducing the potential erosion and the need for drainage infrastructure.

OUTSLOPE

- Outslope is the grading of the trail to a cross slope of 5% following the general slope direction of the local terrain.
- Outsloping enables stormwater to flow across the trail as a sheet rather than as concentrated flow.
- Outslopes will not be appropriate near berms or banked turns or in some loose soil types.

LEGEND:

- AREA OF CUT
- AREA OF FILL
- NATURAL GROUND SURFACE

Rev.	Date	Revision Details	Drn.	Ver.	App.
B	07/04/20	MAJOR LAYOUT & NOTES CHANGES			
A	24/03/20	ISSUED FOR INFORMATION	JR		

Client:	



Project:	


Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

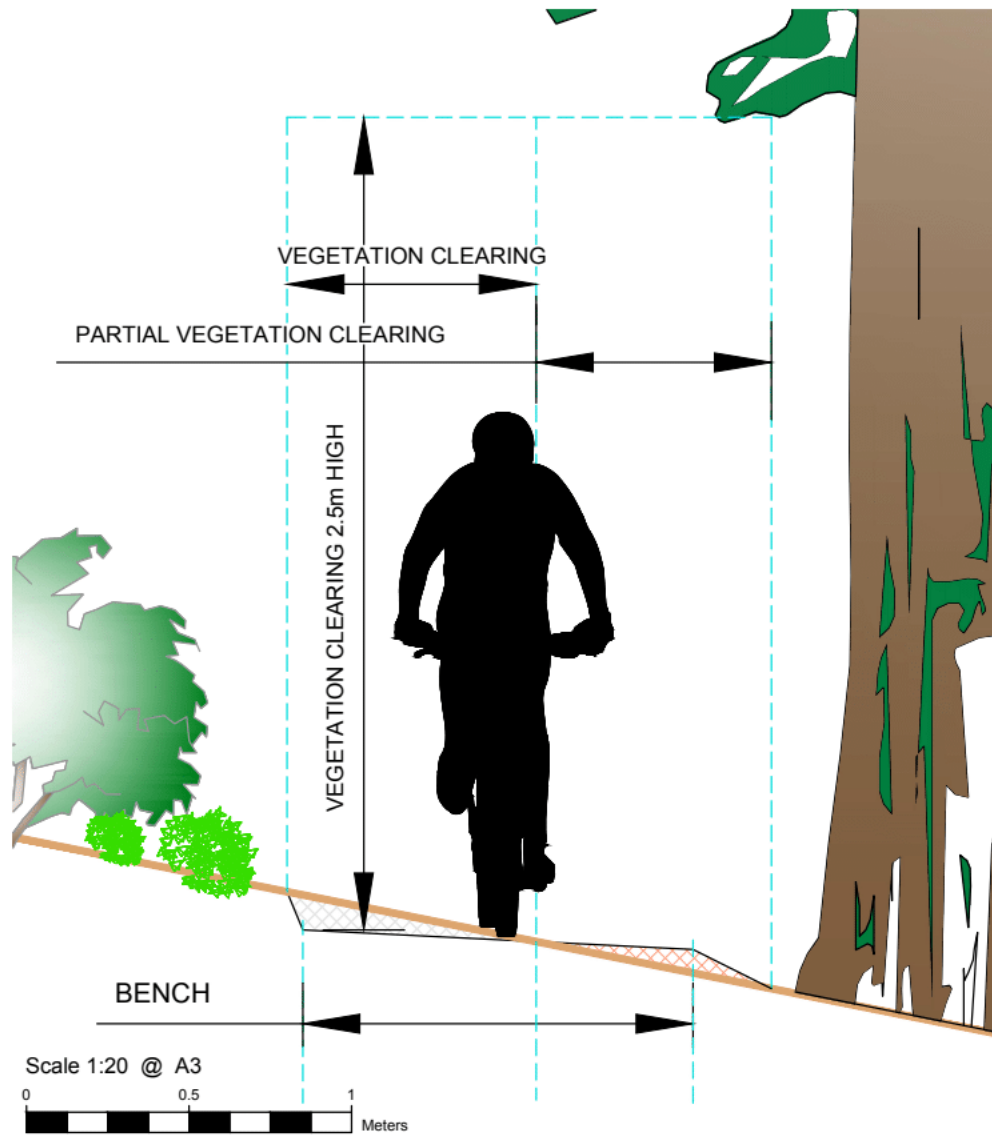
Drawing Title:	

FOR INFORMATION		
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Drawing No.	WTSTD-001-WG2	Rev.
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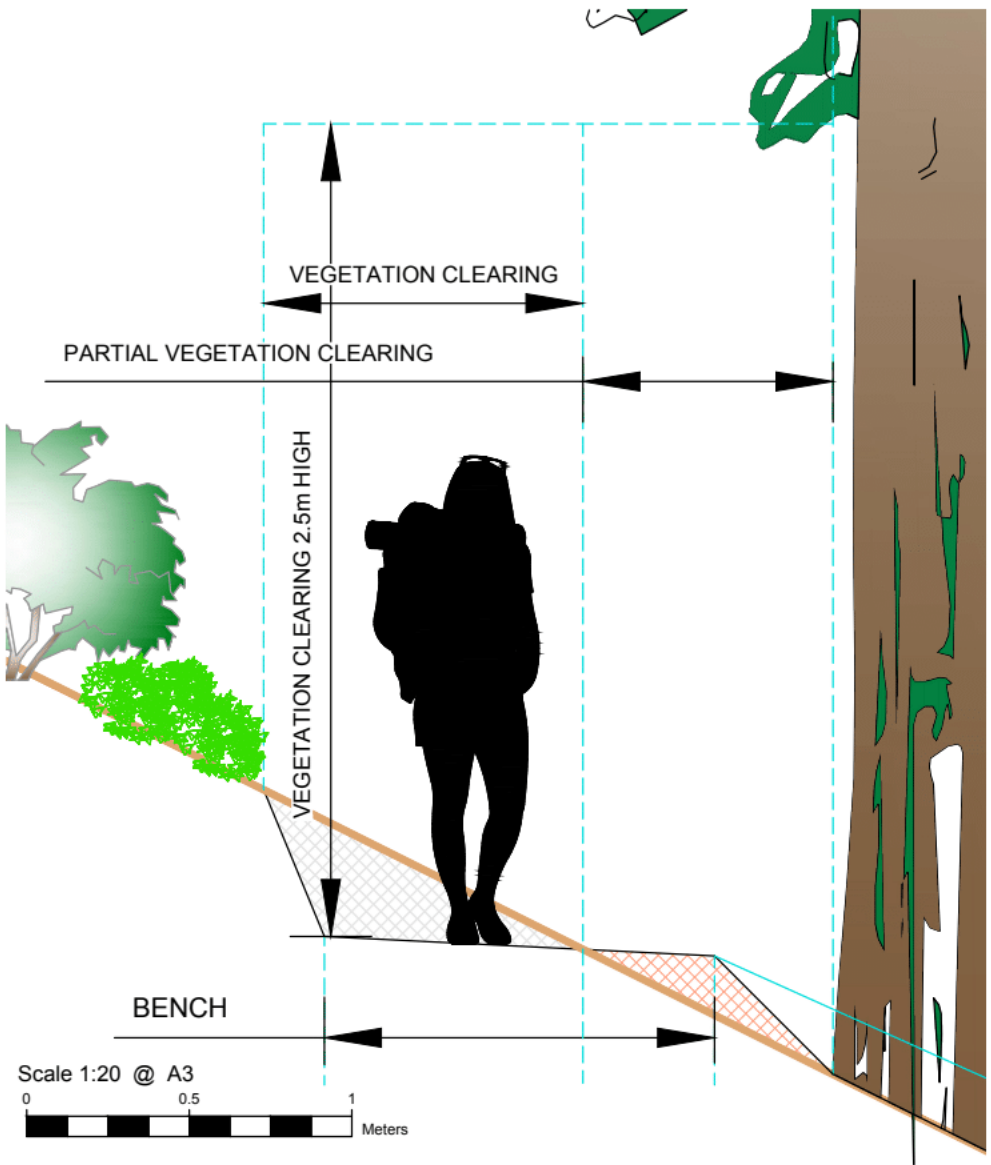
5.4.2 Vegetation Clearing

What is it?		Examples
Vegetation Clearing is the technique of clearing the intended pathway (i.e. the Trail Corridor) of vegetation ahead of the mini-excavator.		
When is it Used?		
Vegetation Clearing is used when creating new trails in vegetated locations. It generally occurs simultaneously with Trail Construction - Standard, but around 50-100m ahead of the excavator.		
Why is it Used?		
Vegetation Clearing is used to clear the pathway of vines, shrubs, bushes, ground covers and small trees, to allow clear access for the mini-excavator. It should also be cleared to sufficient height to allow for unimpeded access of trail users once complete.		
Notes		
Vegetation Clearing shouldn't proceed too far ahead of the excavator in case small realignments need to be made.		
Care will be taken to ensure no windrows or stockpiles of cut vegetation are created. Cut vegetation must be scattered into the surrounding environment, without smothering existing vegetation		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">No materials required.	<ul style="list-style-type: none">Mechanised tools including chainsaws, brushcutters and hedgetrimmers;Hand tools including loppers, snippers, hand saws, secateurs, shears etc.	
Estimated Length of Treatment	Drawing Reference	
82,150 metres	WTSTD-033-WG2 Vegetation Clearing	





TYPICAL SECTION - 5:1 (20%) CROSS SLOPE
FILL BATTER SLOPE - 2:1



TYPICAL SECTION - 2:1 (50%) CROSS SLOPE
FILL BATTER SLOPE - 1:1

NOTES:

GENERAL:

- Vegetation Clearing should be kept to a minimum.
- Vegetation clearing should not be undertaken outside the Areas depicted on this plan unless approved by the Project Principle.
- Vegetation clearing should be undertaken as defined in AS 4970 - 2009 (Incorporating Amendment No. 1).
- No windrows or stockpiles should be created during vegetation clearing.
- Cut vegetation must be scattered into the surrounding environment, without smothering existing vegetation.

CONSTRUCTION ZONES VERSUS TERRAIN SIDE SLOPE				
TERRAIN CROSS SLOPE	BENCH WIDTH	VEG. CLEARING WIDTH	PARTIAL VEG. CLEARING WIDTH	TOTAL IMPACT WIDTH
5:1 (20%)	1-1.5 m	0.77 m	0.72 m	1.49 m
2:1 (50%)	1-1.5 m	0.98 m	0.77 m	1.75 m

LEGEND:

- AREA OF CUT
- AREA OF FILL
- NATURAL GROUND SURFACE

Rev.	Date	Revision Details	Drn.	Ver.	App.
B	07/04/20	CHANGES TO LAYOUT & NOTES	JR	DS	
A	25/03/20	ISSUED FOR INFORMATION	JR	DS	

Client:	
Project:	WANGETTI TRAIL DETAILED DESIGN

Drawn	Signed	Date	Drawing Title:
JR		07/04/20	VEGETATION CLEARING STANDARD DRAWING
Designed	Signed	Date	
DS		07/04/20	
Verified	Signed	Date	
DS		07/04/20	
Approved	Signed	Date	

Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date



Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

FOR INFORMATION

Project No.	WT20-Wangetti-001
Scale	1:20
Sheet Size	A3
Drawing No.	WTSTD-033-WG2
Rev.	B

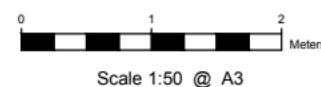
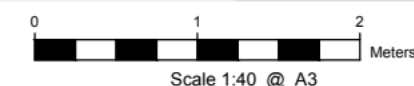
5.4.3 Grade Reversals

What is it?		Examples
<p>Grade Reversals are points at which trail gradient changes from up to down (or down to up) as the trail moves across a side slope.</p> <p>Grade Reversals push water off the trail at the low point of the grade reversal, preventing erosion. The undulations caused by the grade reversal give the trail a sense of playfulness.</p>		
When is it Used?		
<p>Grade Reversals should be used frequently, regardless of hand or machine construction, regardless of the intended user group and intended difficulty rating. They are a are critical (and often overlooked) element of sustainable trail design.</p> <p>The size (height/amplitude) of the grade reversal is generally increased on steeper and more difficult trails.</p>		
Why is it Used?		
<p>Grade Reversals are the key element of sustainable trails. More frequent grade reversals push water off the trail incrementally, preventing it to build up volume or velocity, ensuring the long-term sustainability of the trail. With regular Grade Reversals, surface water can only be trapped on the trail for a short distance, flowing downwards along the trail until it reaches the first Grade Reversal. Grade Reversals effectively divide the trail into short, individual watersheds, so the drainage characteristics of one section of trail won't affect any other section.</p> <p>Grade Reversals also make trails more enjoyable by giving them a sense of playfulness – a constantly rising and falling nature.</p>		
Notes		
<p>Grade Reversals are constructed during Trail Benching, integrated with the standard trail construction process.</p> <p>As a general rule, the steeper the trail gradient, the more frequent the grade reversals should be, but this needs to be assessed on-site, with consideration of soils, rainfall, upslope catchment area, trail user types and speeds and so on. As a guide, the following spacing is suggested:</p> <ul style="list-style-type: none">Trail gradient of <5% - grade reversals to be spaced at approximately 20 - 40m intervals;Trail gradient of 5-10% - grade reversals to be spaced at approximately 16 - 19m intervals;Trail gradient of 10-15% - grade reversals to be spaced at approximately 12 - 15m intervals;Trail gradient of 15-20% - grade reversals to be spaced at approximately 8 - 11m intervals.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">In situ soil.No imported materials.	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.	
Estimated Length of Treatment	Drawing Reference	
Not specified, but required across entire length of trail – 82,150 metres	WTSTD-046-WG2 Trail Grade Reversals Placement and Dimensions	





- Grade Reversals can be used on trails for walking, biking or dual use.
- Dimensions and setout of the swale may vary considerably from that depicted, depending on cross slopes, trail gradients and potential stormwater volumes.
- Water should exit the swale at the drainage outlet, ensuring rapid removal of flows from the trail.
- The drainage outlet should disperse water along the contour or across a broad discharge area to reduce velocities and allow for sediment dropout.
- Additional flows may occur from uphill of the grade reversal low point and should be considered in any sizing or erosion protection required.
- Erosion protection, generally using rock, may be required if the location constraints make it difficult to disperse flows.
- Grade reversals should not be confused with waterbars. A grade reversal is one of the most crucial parts in trail construction, both shedding water and also helping to shed speed.
- If a section of trail is on a low gradient with long arc to arcs then the grade reversal is longer and flatter.
- If a section of trail is on a steep gradient with shorter arc to arcs, then the grade reversal needs to be more aggressive, higher and deeper.
- Grade reversals need to be made sustainable and sized correctly to cope with factors like weather, time and riders wear.
- The recommended high point spacing table below provides guidance on these separations.
- Standard grade reversals should always be rollable by both novice and experienced riders.
- Experienced riders should be able to transfer across reverse grades if they are traveling at the necessary pace.
- Grade reversals should not be short, steep and kicky, as this can lead to abrasion, forced risk, injury and a substandard ride experience.
- The grade reversal shape should never force a less experienced rider into the air.
- Contours depicted are at 100mm intervals.



GENERAL
ARRANGEMENT
SCALE: 1:50

TRAIL GRADIENT (%)	HIGH POINT SPACING (m)
less than 5	20 - 40
5 - 10	16 - 19
10 - 15	12 - 15
15 - 20	8 - 11

FOR INFORMATION	
Project No. WT20-Wangetti-001	
Scale 1:50	Sheet Size A3
Drawing No. WTSTD-046-WG2	Rev. A

A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Dwn.	Ver.	Appo.

Drawn JR	Signed	Date 07/04/2
Designed DS	Signed	Date 07/04/2
Verified DS	Signed	Date 07/04/2
Approved	Signed	Date

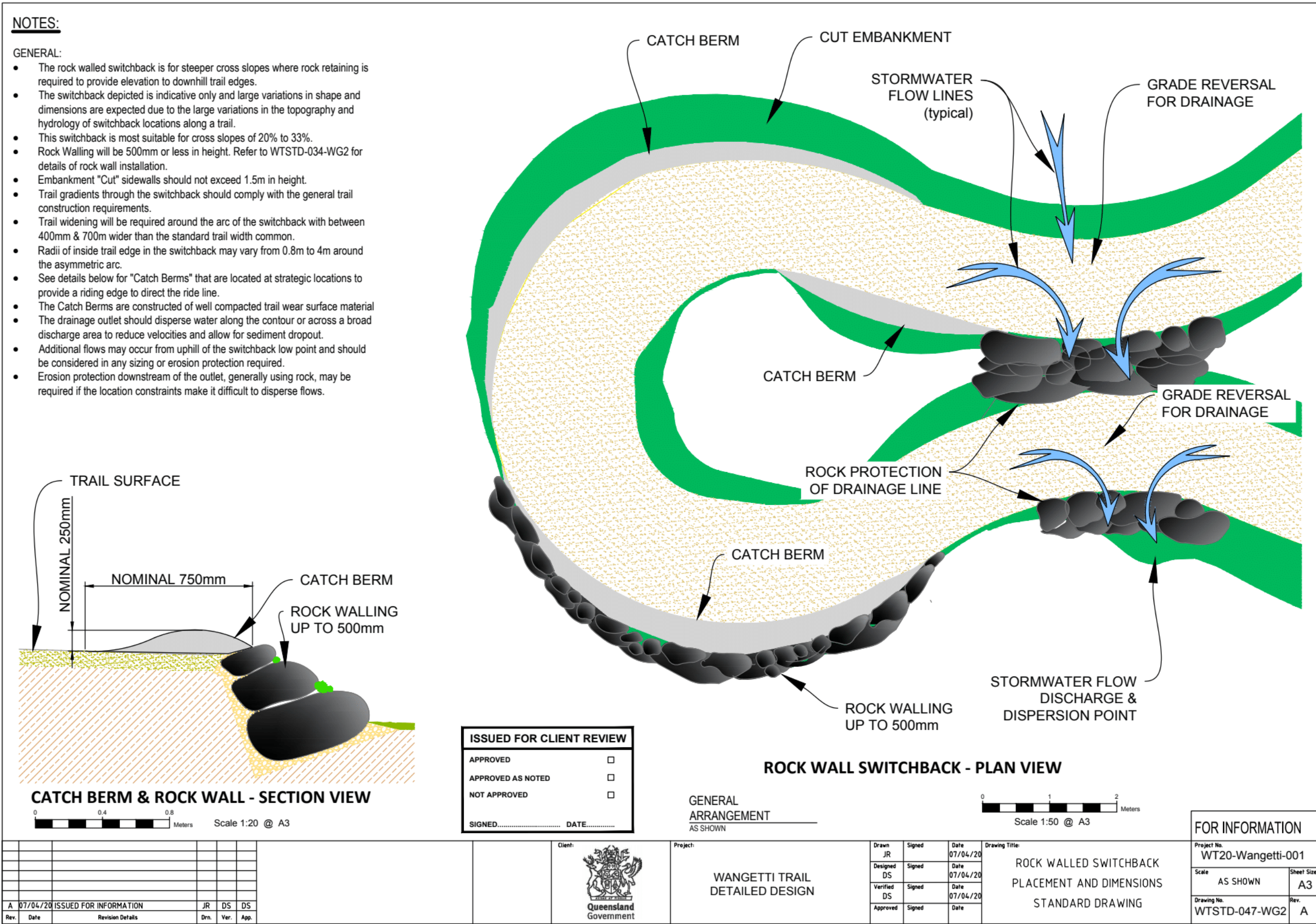
Drawing Title:

TRAIL GRADE REVERSALS
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

5.4.4 Switchbacks

What is it?		Examples
A Switchback is a 180° turn on a hillside, engineered for drainage. The upper approach is usually insloped and the lower approach is usually outsloped. The Switchback turn reverses the direction of a trail, and is located on a relatively level, constructed landing.		
When is it Used?		
Switchbacks are used to ascend/descend steep slopes while avoiding unsustainably steep trail gradients. Ideally, the use of Switchbacks should be minimised as much as possible, and ideally, they should be staggered across a hillside rather than being stacked directly on top of each other.		
Switchbacks are used when it is not possible for the trail to continue traversing across the hillside for some reason.		
Why is it Used?		
Switchbacks are used to provide a broad, flat platform on which a sharp turn can be placed. Grade Reversals should be incorporated into the trail at the entry and exit to the switchback corner, to prevent excess water flowing into the corner.		
Notes		
Switchbacks are constructed during Trail Benching, integrated with the standard trail construction process.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">In situ soil.In situ rocks for rock walls if required.	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.	
Estimated Length of Treatment	Drawing Reference	
N/A	WTSTD-047-WG2 Rock Walled Switchback Placement and Dimensions	



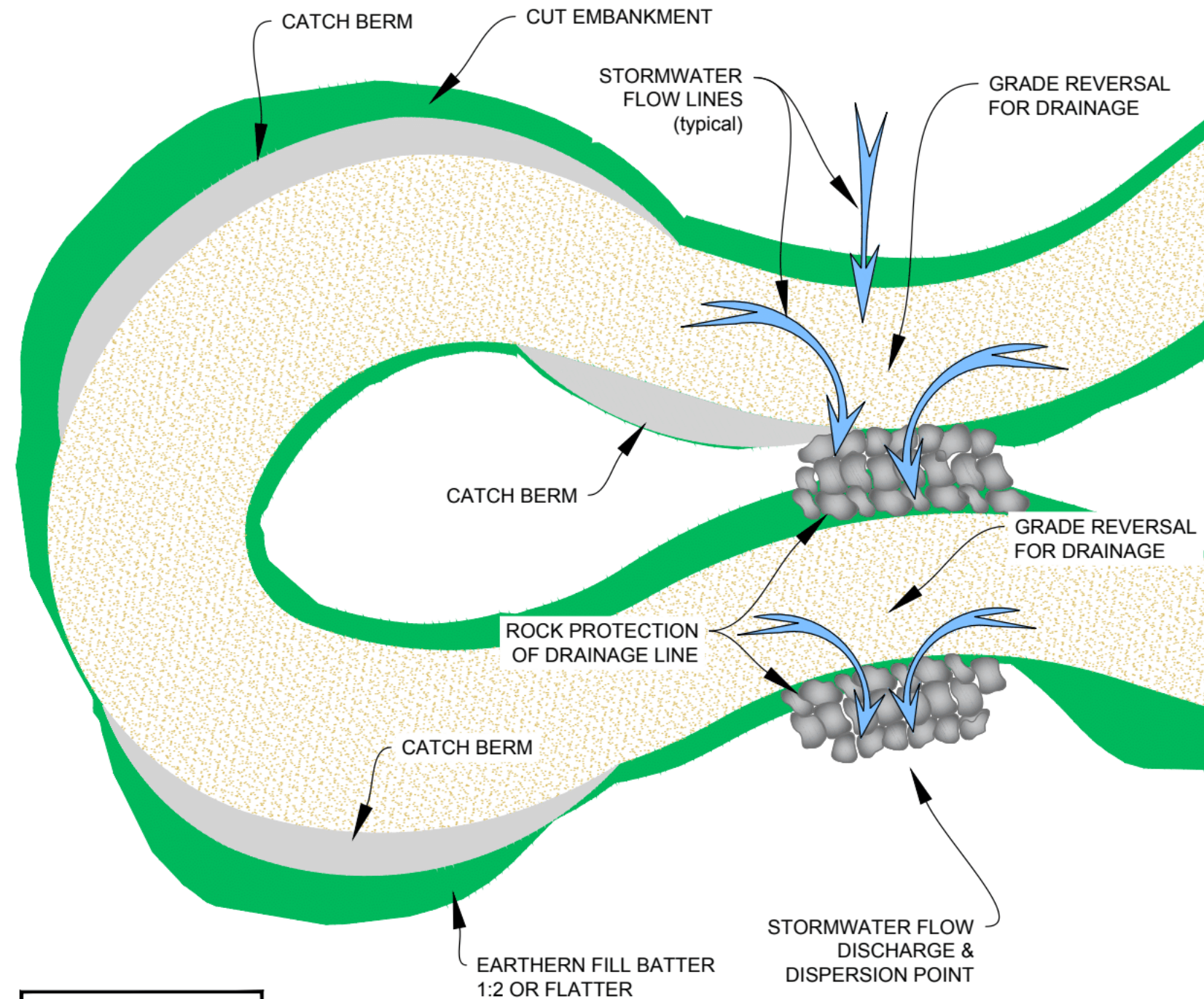


GENERAL:

GENERAL:

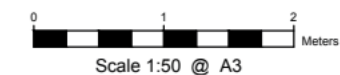
-
- TRAIL SURFACE
- NOMINAL 250mm
- NOMINAL 750mm
- CATCH BERM
- EARTHEN FILL BATTER
1:2 OR FLATTER
- CATCH BERM & FILL BATTER - SECTION VIEW**
- 0 0.4 0.8
Meters
- Scale 1:20 @ A3

CATCH BERM & FILL BATTER - SECTION VIEW



STANDARD SWITCHBACK - PLAN VIEW

GENERAL
ARRANGEMENT
AS SHOWN



ISSUED FOR CLIENT REVIEW	
APPROVED	<input type="checkbox"/>
APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED..... DATE.....	

FOR INFORMATION

Project No. WT20-Wangetti-001	
Scale AS SHOWN	Sheet Size A3
Drawing No. WTSTD-048-WG2	Rev. A

A	07/04/20	ISSUED FOR INFORMATION			JR	DS	DS
Rev.	Date	Revision Details			Dwn.	Ver.	App.

Client:



Queensland
Government



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn JR	Signed	Date 07/04/2
Designed DS	Signed	Date 07/04/2
Verified DS	Signed	Date 07/04/2
Approved	Signed	Date

0	Drawing Title:	STANDARD SWITCHBACK
0		PLACEMENT AND DIMENSIONS
0		STANDARD DRAWING
0		

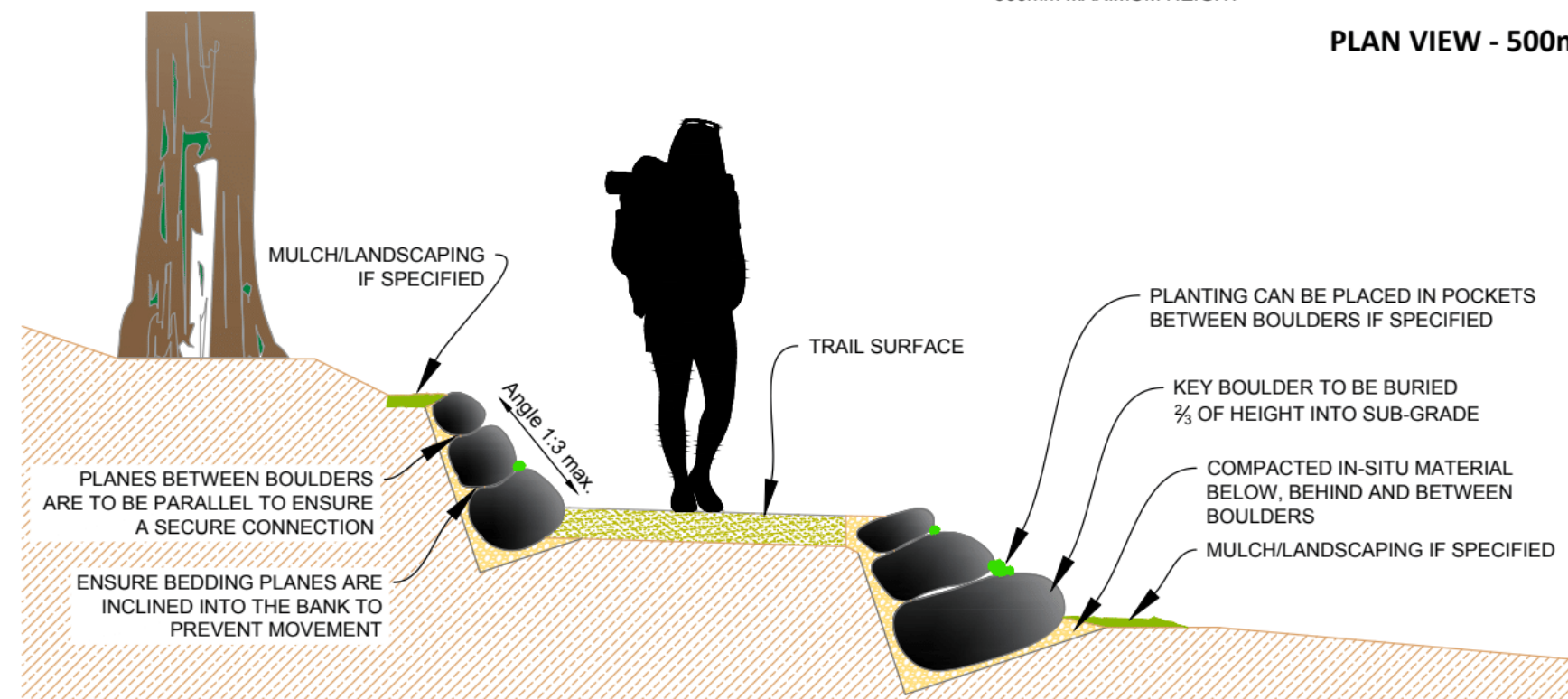
5.4.5 Rock Walling (Up To 500mm)

What is it?		Examples	
Rock Walling (up to 500mm) are smaller structures designed to restrain soil to a slope that it would not naturally keep to (typically a steep, near-vertical or vertical slope).			
When is it Used?			
Why is it Used?			
On steep side slopes, cutting the trail to the desired width of 1500mm may create overly high, unsustainable and unstable batters, either the upslope or downslope batter. The use of Rock Walling provides a strong and durable structure that will prevent either batter from slumping.			
Notes			
Materials	Machinery / Equipment		
<ul style="list-style-type: none">Rock (can be in situ or imported, subject to land manager requirements).	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.;Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.;Ropes, pulleys, winches, chains, straps and rock slings to assist in manipulating rocks into place.		
Estimated Length of Treatment	Drawing Reference		
1,501 metres (of entire 82.15km length of trail)	WTSTD-034-WG2 Rock Walling – Up To 500mm Placement and Dimensions		

GENERAL:

-
- MULCH/LANDSCAPING
IF SPECIFIED
- DOWNSIDE BOULDER WALL
500mm MAXIMUM HEIGHT
- UPSIDE BOULDER WALL
500mm MAXIMUM HEIGHT
- TRAIL SURFACE
- The diagram illustrates a cross-section of a trail. A central trail surface, represented by a stippled pattern, is flanked by two boulder walls. The top boulder wall is labeled 'DOWNSIDE BOULDER WALL 500mm MAXIMUM HEIGHT'. The bottom boulder wall is labeled 'UPSIDE BOULDER WALL 500mm MAXIMUM HEIGHT'. Above the top boulder wall, an area is labeled 'MULCH/LANDSCAPING IF SPECIFIED'. A silhouette of a person is shown on the trail surface, using a tool to work on the boulder wall. Arrows point from the text labels to the corresponding features in the diagram.

Scale 1:25 @ A3



GENERAL
ARRANGEMENT
SCALE 1:25



 TRAIL SURFACE
 SELECT FILL
 NATURAL GROUND

ISSUED FOR CLIENT REVIEW	
APPROVED	<input type="checkbox"/>
APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED.....	DATE.....

FOR INFORMATION

[illegible]

5.4.6 Retaining Walls (Up To 1000mm)

What is it?		Examples	
Retaining Walls are larger structures designed to restrain soil to a slope that it would not naturally keep to (typically a steep, near-vertical or vertical slope).			
When is it Used?			
Retaining Walls are used to retain soils of height up to 1000mm. They may be used to retain the upslope batter or the downslope batter.			
Why is it Used?			
On steep side slopes, cutting the trail to the desired width of 1500mm may create overly high, unsustainable and unstable batters, either the upslope or downslope batter. The use of a Retaining Wall provides a strong and durable structure that will prevent either batter from slumping.			
Notes			
Materials	Machinery / Equipment		
<ul style="list-style-type: none">• Rock (can be in situ or imported, subject to land manager requirements);• Concrete;• Mortar;• Geofabric;• Drainage materials as per drawing.	<ul style="list-style-type: none">• Rubber tracked mini-excavator;• Concrete mixer;• Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.• Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.		
Estimated Length of Treatment	Drawing Reference		
901 metres (of entire 82.15km length of trail)	WTSTD-004-WG2 Rock Retaining Wall Up To 1000mm Placement and Dimensions		

NOTES:

- The wall dimensions shown assume a minimum allowable bearing capacity of 100 KPa is available on site.
- Mortar to be 1 part cement to 3 parts sand (by volume). Face joints to be 25mm nominal width.
- Rocks to be selected spalls set in cement mortar beds in horizontal layers. Unless specified otherwise open faced stonepitching to be used where the concrete is recessed 50mm behind the stone facing. If closed face stonepitching is specified, concrete to be flush with stone facing. Select spalls to avoid sharp edges.
- The standard building regulation 1993 requires that a building application be lodged for earth retaining structures >1000mm high. A geotechnical assessment by a suitably qualified engineer is required for all walls founded in poor materials eg. bearing capacity <100 KPa.
- Install weepholes in addition to the longitudinal drain for maintenance and overflow purposes. Weepholes to be 100mm dia upvc at 1000mm max centres, positioned at approx 100mm constant height above ultimate ground level and connected to the longitudinal drain using standard manufacturers fittings.
- Longitudinal drain shall be 300mm * 50mm megaflo or 100mm dia corrugated perforated polyethylene pipe, encased with geofabric (BIDIM A29 or equivalent). The invert of the longitudinal drain and the weephole inlet shall be aligned to allow direct discharge via the weephole.
- All connection, including the joining of lengths of megaflo or corrugated perforated polyethylene pipe, shall be made using standard manufacturers fittings.
- Filter drainage layer for full height and length of wall to be Cordrain or equivalent with Geofabric (BIDIM A29 or equivalent) adhered to both sides. Alternately, a 300mm thick, free draining filter sand/gravel layer separated from insitu material by a type 2 geofabric layer.
- Backfill shall be freedraining, non plastic predominantly granular material with minimum friction angles of 38° and 27° where founding materials are sand or other materials respectively. Do not place backfill behind the wall until at least 10 days after wall construction.
- The 50mm blinding layer can be replaced with a 200 micron IR2 polyethylene sheet when the bottom off the footing excavation is in stable sound material.
- Drawings are not to scale.
- Dimensions in millimetres unless otherwise notated.

ISSUED FOR CLIENT REVIEW

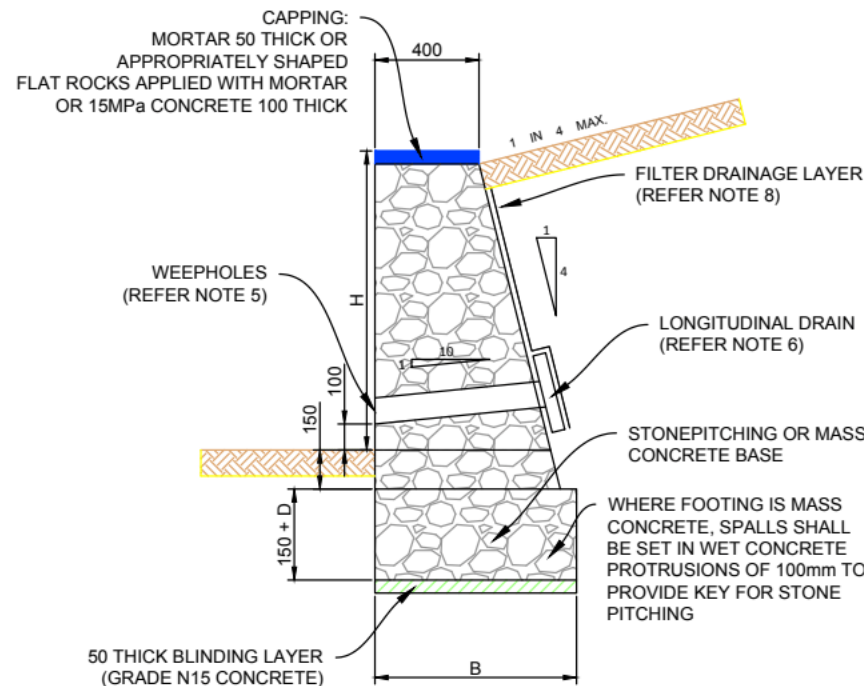
APPROVED

APPROVED AS NOTED

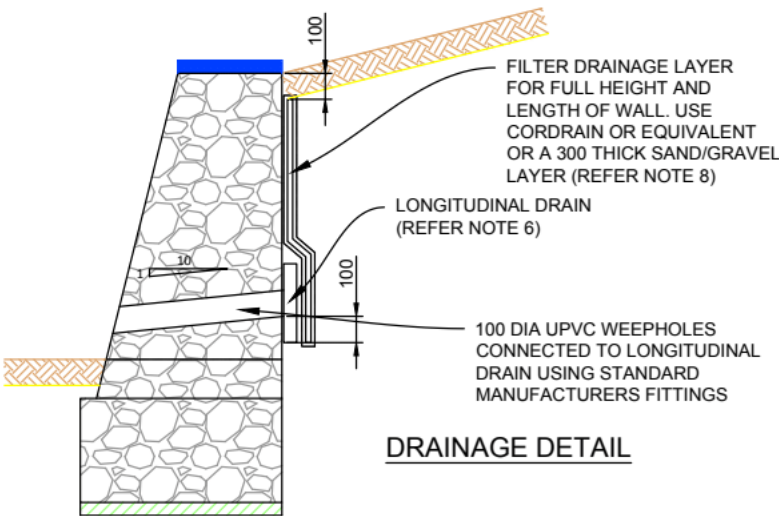
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SIGNED.....

DATE.....

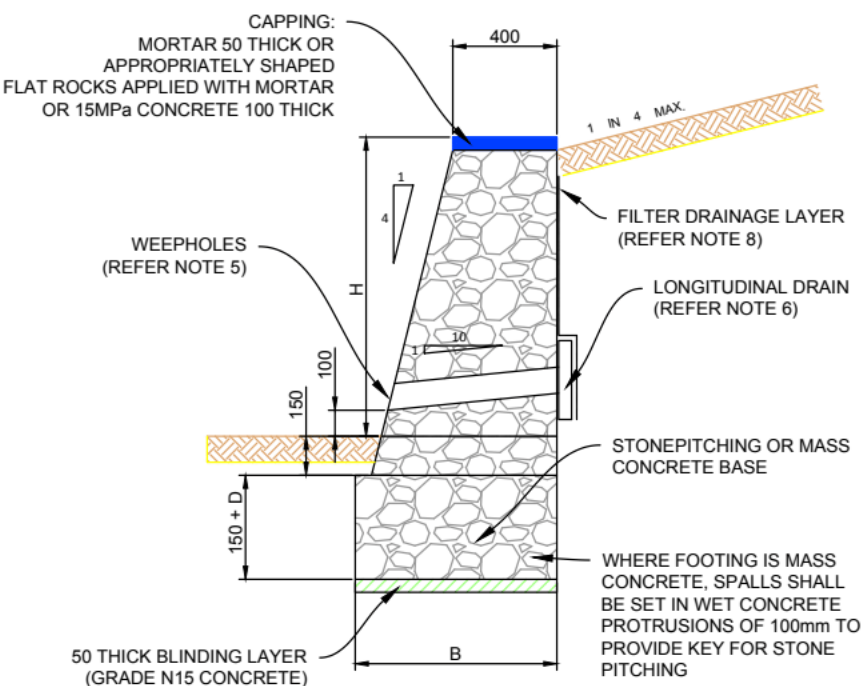


STONEPITCHED RETAINING WALL
VERTICAL FACE
UNSTABLE INSITU MATERIAL RETAINED



DRAINAGE DETAIL

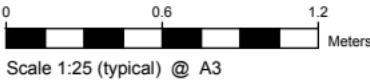
GENERAL
ARRANGEMENT
SCALE 1:25



STONEPITCHED RETAINING WALL
4 IN 1 FACE SLOPE
UNSTABLE INSITU MATERIAL RETAINED

WALL DIMENSIONS

SLOPING BACKFILL - 1 IN 4 (MAX) OR LEVEL WITH 5 kPa SURCHARGE		
H	B	D
0 - 400	600	0
401 - 750	660	0
751 - 1000	775	200



FOR INFORMATION

Project No.	WT20-Wangetti-001
Scale	1:25
Sheet Size	A3
Drawing No.	WTSTD-004-WG2
Rev.	A

Rev.	Date	Revision Details	Drn.	Ver.	App.
A	24/03/20	ISSUED FOR INFORMATION	JR	MB	DS






Project:
**WANGETTI TRAIL
DETAILED DESIGN**

Drawn	Signed	Date
JR		24/03/20
Designed	Signed	Date
DS		24/03/20
Verified	Signed	Date
DS		24/03/20
Approved	Signed	Date

Drawing Title:
**ROCK RETAINING WALL UP TO 1000mm
PLACEMENT AND DIMENSIONS
STANDARD DRAWING**

5.4.7 Ballast Surfacing

What is it?		Examples	
Ballast Surfacing is a two-course surfacing treatment, used to raise and/or harden the surface of the trail.			
When is it used?			
Ballast Surfacing is used in high traffic areas, sunken or low-lying areas, wet or boggy areas, or areas requiring the passage of vehicles. Due to the high bulk material requirements, it is usually only used in areas where vehicle access is available nearby to import materials. For the Wangetti Trail, this treatment is proposed to treat sections of existing, eroded, sunken four-wheel drive tracks in the flat terrain immediately south of Wangetti. In this area, the trail comes very close to the Captain Cook Highway to skirt around a military firing range. This proximity to the highway provides good access for trucks.			
Why is it used?			
Ballast Surfacing can be used for a variety of purposes - to harden the surface in high traffic areas, to provide a more uniform or level surface, to improve traction or for aesthetic purposes.		 	
Notes			
At the outset of the construction process, works should be undertaken to identify suitable surfacing materials that are locally available and that can be certified to weed/pathogen free status for land manager approval.			
Materials	Machinery / Equipment		
<ul style="list-style-type: none">Ballast rock for base course (as per drawing)Fine crushed rock for wearing course (as per drawing);Geofabric (as per drawing).	<ul style="list-style-type: none">Rubber tracked mini-excavator;Skid-steer excavator (i.e. Bobcat) for spreading;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.;Small dumper or mechanized wheelbarrow (i.e. power carriers) for moving the material along the trail from the stockpile location;Roller or vibrating plate compactor.		
Estimated Length of Treatment	Drawing Reference		
4,595 metres (of entire 82.15km length of trail)	WTSTD-045-WG2 Ballast Surfacing Placement and Dimensions		

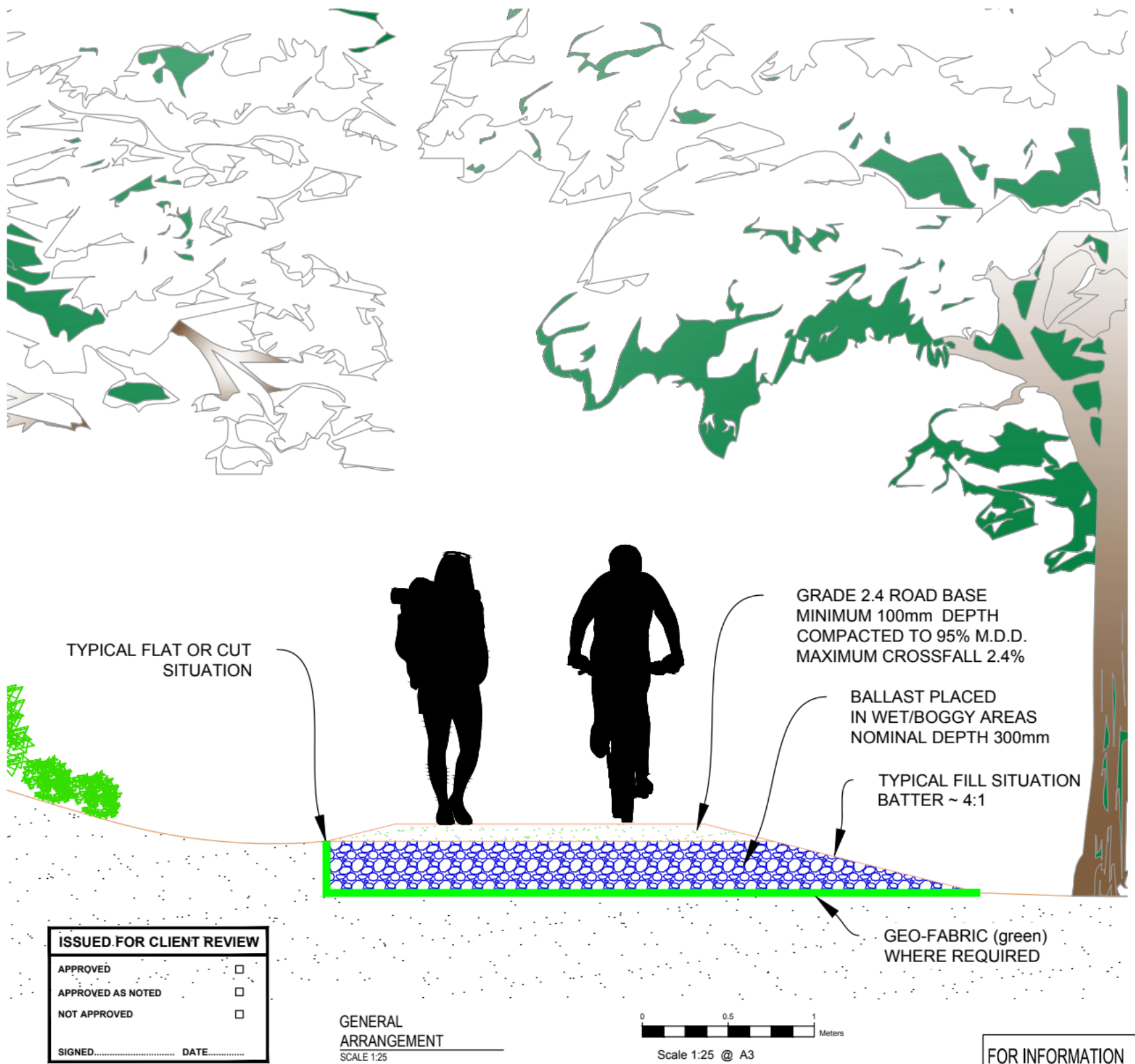
NOTES:

GENERAL:

- Dual direction (two way) trail.
- Dual use trail for walking and biking.
- The trail will provide access along a slightly modified, natural environment alignment, with little provision of interpretive signage and few facilities.
- Ballast surfacing is to be used in wet & boggy locations to provide a solid platform for the trail wearing course layer.
- Ballast is to be placed in such a way that it does not severely impede local stormwater flows.
- Locations where the placement of Ballast might impede the natural connectivity of fauna corridors should be identified and remediation infrastructure such as pipes or sections of boulder crossing implemented in a way that will mitigate the blockage.
- Dimensions in millimetres unless otherwise notated.

BALLAST PLACEMENT:

- Ballast shall be clean, durable crushed rock with a size distribution of 13mm to 63mm. The majority of particles shall be greater than 37.5mm in size.
- The Ballast rock shall be hard, non - flaky material with a Bulk Density greater than 1200 Kg/m³ and a Particle Density of greater than 2500 Kg/m³.
- The nominal depth of 300mm depicted may vary considerably, depending on the depth of unsuitable sub-grade material at each location.
- Trail width may increase from the general width in the sections with Ballast Surfacing. This is to allow additional shoulder width for trail users through these unsuitable locations.
- The width of the Ballast may extend up to 3m in particularly boggy areas to provide a stable platform for trail construction.
- Geofabric underlay of a suitable class may be required under the Ballast to minimise the intrusion of unsuitable material up into the Ballast embankment.
- Ballast should be compacted using wheel or track rolling, until the particles are firmly meshed and void spaces are minimised.
- In extreme locations and where low velocity water flows are possible, Geo-Fabric of a suitable class may also be required on top of the Ballast and under the Trail wearing course layer. In these locations the wearing course layer thickness may need to be increased to 150mm or 200mm.



A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Dwn.	Ver.	App.



Client:

Project:

WANGETTI TRAIL
DETAILED DESIGN

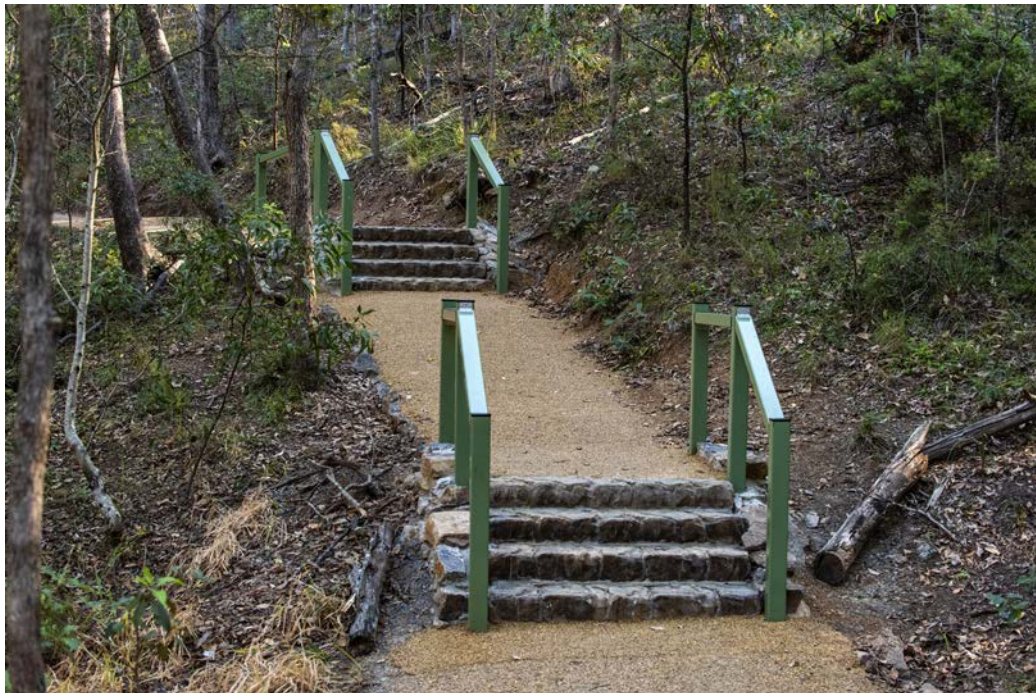

Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

Drawing Title:

BALLAST SURFACING
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

5.4.8 Pre-Cast Concrete Steps

What is it?		Examples
Pre-Cast Concrete Steps are used to climb up/down steep sections of trail on hikers only sections.		
When is it Used?		
Pre-Cast Concrete Steps allow the trail to climb up/down steep slopes, while ensuring good traction and stability for hikers. They are not suitable generally for dual-use or mountain biking trails.		
Why is it Used?		
On steep slopes hikers may struggle to maintain traction, especially with a heavy pack, creating risks to safety and possible damage to the trail surface. The use of Pre-Cast Concrete Steps provides a safer and more sustainable outcome, while also hardening the surface and ensuring its long-term sustainability.		
Notes		
The Pre-Cast Concrete Steps detailed here result in a gradient of 28° along a flight of these steps (approx. 31% gradient).		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">• Pre-cast concrete steps (available in different sizes);• Concrete for foundation of base step;• Road base for foundation of mid-flight steps;• Mortar;• Large rocks as corrals;• Anchors to sides of flight of steps.	<ul style="list-style-type: none">• Rubber tracked mini-excavator;• Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.;• Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.;• Concrete mixer;• Vibrating plate compactor.	
Estimated Length of Treatment	Drawing Reference	
1,000 steps	WTSTD-003-WG2 Precast Concrete Steps Placement and Dimensions WTSTD-043-WG2 Rock Pavement Treatment Trail Construction WTSTD-030-WG2 Precast Concrete Steps Trail Grading Guidelines	



NOTES:**STEP TREADS:**

- Step treads are to be supplied by the Paving Group Pty Ltd trading as Stone Directions or equivalent treads as approved by the client or project principle.
- Step treads are precast from a 4:1 white Portland cement mix using screened crushed granite, high grade quartz/sandstone washed sand and fibre reinforcing.
- Steps meet around 55MPa material strength.
- Step treads are available in 4 widths: 1500mm, 1200mm, 900mm & 600mm.
- Other dimensions are as depicted on this plan and include a 50mm overlap between treads.
- In accordance with AS 2156.2 - 2001 Table 4, a Class 3 Walking Track can include up to 36 steps in a row before a landing is required.
- Landings will be a minimum of 900mm in length.
- The specifications of the precast concrete steps depicted in this drawing result in an overall slope/gradient of 28°.
- In some locations, ground conditions may not be conducive to this preset slope. Three options can be considered in these circumstances:
 - Using hand tools, excavate the insitu ground to form the required slope.
 - Import and compact suitable road base to form the ideal slope.
 - Use landings (of varying lengths) to suit the existing slope of the work area.

HANDLING:

- Step treads should be handled using techniques appropriate to the item weight. See the adjacent table for approx. tread weights.
- Treads should be handled in a manner that minimizes the risk of cracking or fracture as treads must be undamaged or weakened before track use.

SITE FOUNDATION MATERIALS:

- The foundation materials on which the stairway is to be constructed must be carefully assessed for foundation rigidity.
- If foundation material conditions are not obvious or the site includes dangerous fall conditions a geotechnical analysis of the foundation materials should be undertaken.
- The foundation materials need to be assessed as to whether they are "Unstable or Sandy" or "Stable".
- Placement methodologies vary depending on this classification.

PLACEMENT:**UNSTABLE or SANDY FOUNDATION MATERIALS:**

- The first step must be laid on a concrete slab footing of minimum 75mm depth.
- Concrete is to be minimum 15 MPa which allows the use of post mix or rapid set premix concrete.
- This slab footing must be a minimum of the length and breadth of the precast tread unit.
- The tread unit should be laid level apart from a slight fall to the

front on the footing using 10 to 15mm of 4:1 mortar mix.

- Additional tread units should be laid with a 50mm overlap over the previous tread and with either another slab footing the size of the tread or at a minimum a strip footing along the sides and back of the tread.
- The strip footing should be a minimum of 100mm wide by 75 mm deep.
- The additional tread should again be laid on a 10 to 15mm mortar bed and levelled to provide a slight fall to the front of around 10mm.
- More additional treads can be added using a similar methodology.
- All slab and strip footings should be laid in an excavation or bounded with suitable rocks or local material to ensure concrete overflow does not impede backfill against the finished stairway using soils or rock protection.

STABLE FOUNDATION MATERIALS:

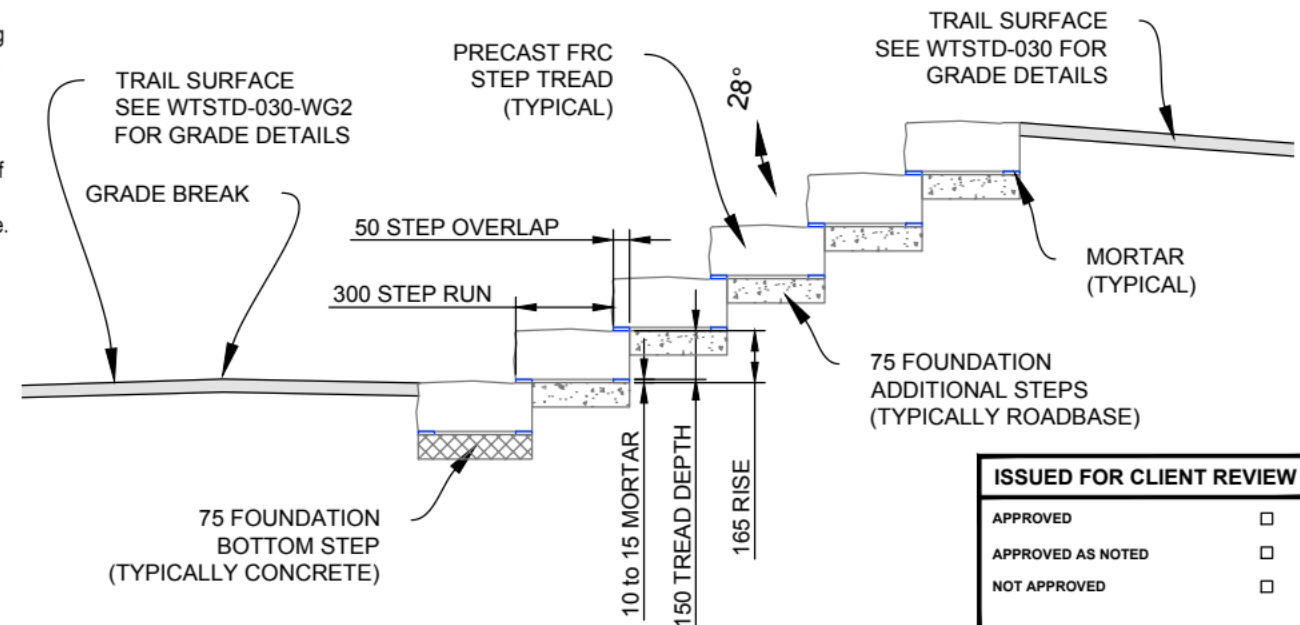
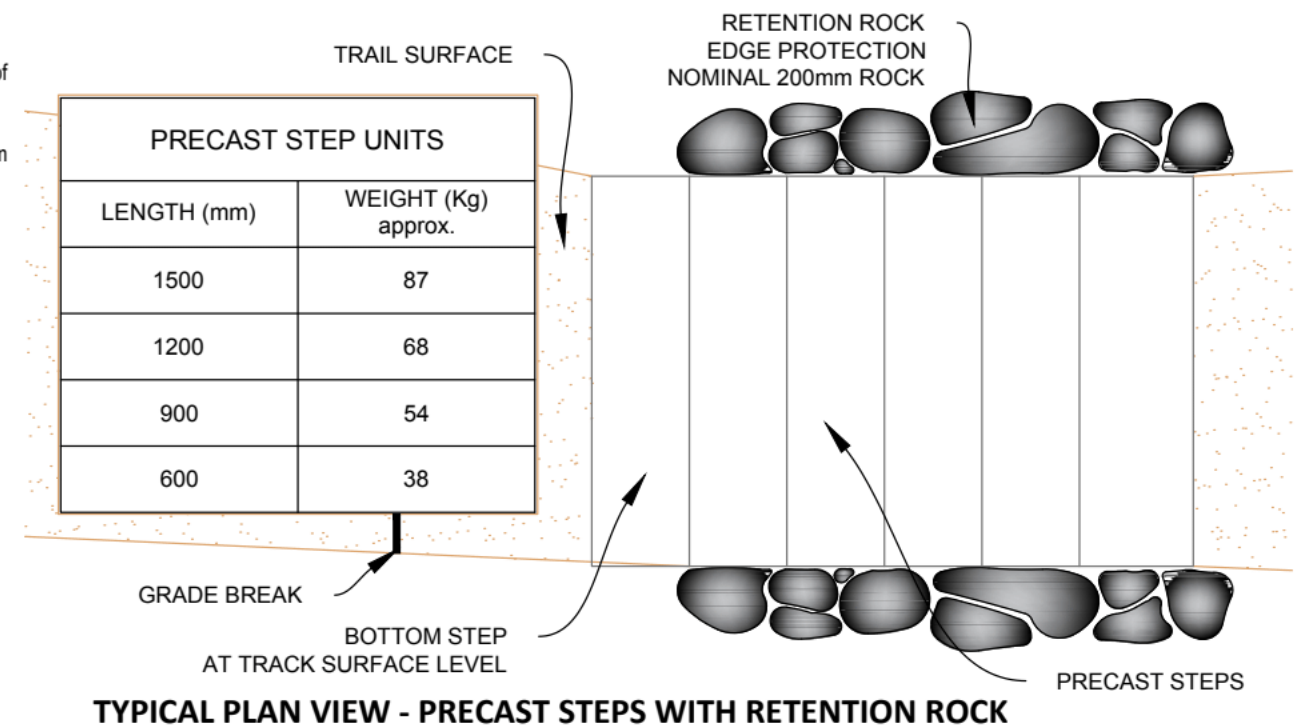
- Treads may be laid directly onto hard stable surfaces (eg shale or granite type materials) plumbed and leveled using a 4:1 mortar mix.
- Treads may be laid directly onto a well compacted 75mm layer of good quality road base again using a 4:1 mortar mix.
- The road base must be contained within an excavation or by appropriate retention rocks to facilitate compaction.
- Where this containment is not possible a concrete slab footing must be used particularly on the bottom tread.
- The contained road base or concrete footing must be at least the full size of the tread.
- Additional treads can be laid on well compacted road base using 10-15mm 4:1 mortar mix with a 50mm overlap over the previous tread.

GENERAL PLACEMENT

- The mortar mix should be continuous around the bottom edge of the tread unit with some mortar will overflow up and into the hollow part of the tread unit to assist in holding the tread in place.
- The mortar mix must be placed on solid material with all flaky or loose material removed to ensure good bonding.
- The treads are designed to have a 300mm run and a 165mm rise. The mortar depth is critical in achieving this run/rise ratio.
- Additional side support to ensure the treads remain in place can be provided through backfill against the sides using soils or retention rock.
- Retention rock should be used in areas where water flows are likely to occur. Retention rock can be bound in place using a 4:1 mortar mix.
- Step treads are supplied with 3 pattern styles. Ensure styles are mixed and matched to avoid any obvious symmetry and maximize a "natural look".
- Dimensions in millimetres unless otherwise notated.

TRAIL ALIGNMENT

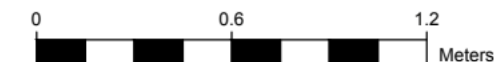
- See WTSTD-030-WG2 for details on trail grading requirements above, below & at landings between stair sections.



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TYPICAL SECTION PRECAST STEPS - 5 STEP EXAMPLE

GENERAL
ARRANGEMENT
SCALE 1:20



Scale 1:20 @ A3

FOR INFORMATION

Project No.	WT20-Wangetti-001
Scale	1:20
Sheet Size	A3
Drawing No.	WTSTD-003-WG2
Rev.	E

Rev.	Date	Revision Details	Drn.	Ver.	App.
E	07/04/20	TRAIL GRADE & BOTTOM STEP ALTERED	JR	DS	DS
D	14/08/19	ADDITIONAL NOTES ADDED	JR	DS	DS
C	07/08/19	RETENTION ROCK PLAN VIEW ADDED	JR	DS	DS
B	17/12/18	ADDITIONAL NOTES ADDED	JR	DS	DS
A	22/11/18	ISSUED FOR INFORMATION	JR	DS	DS

Client:



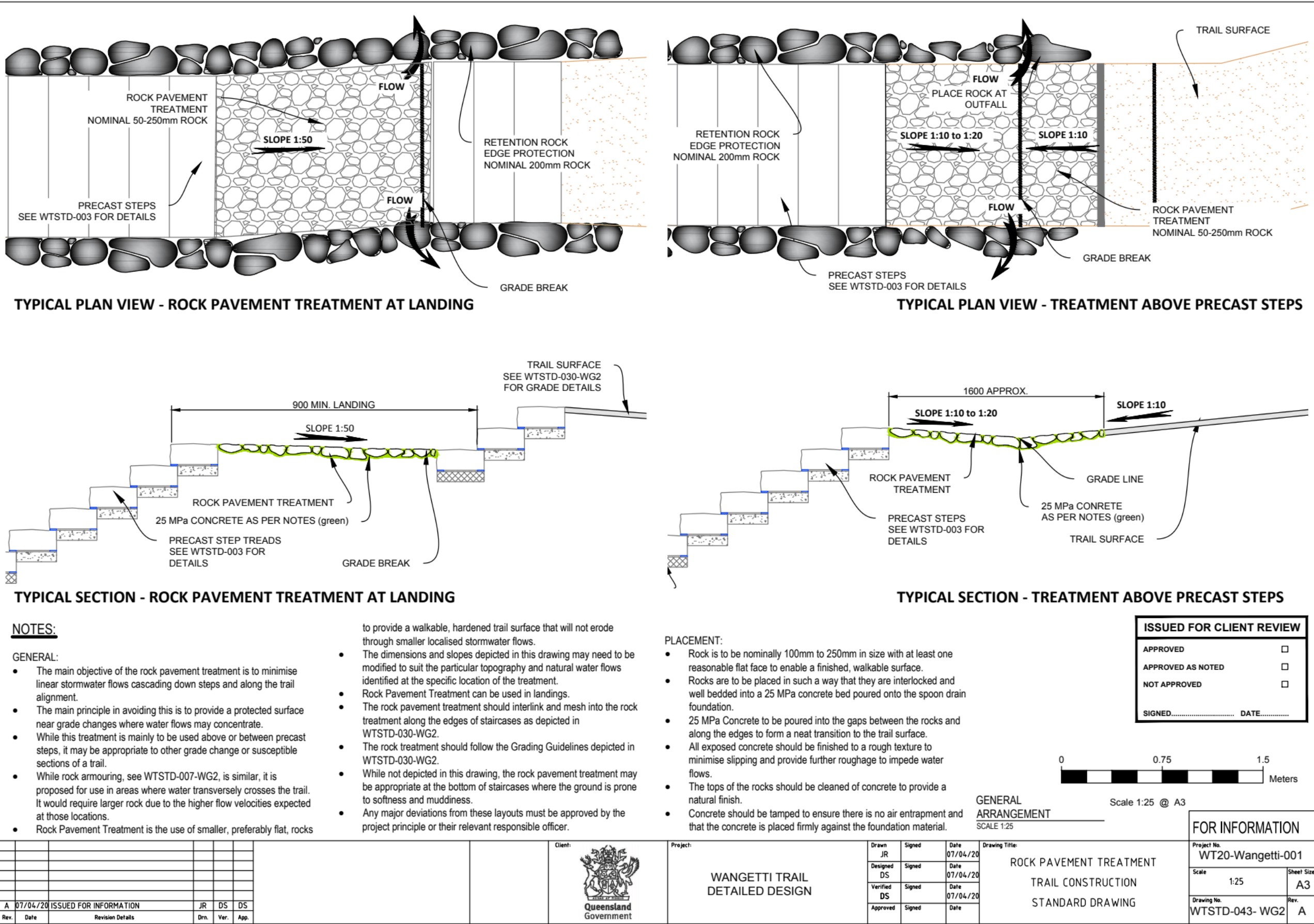
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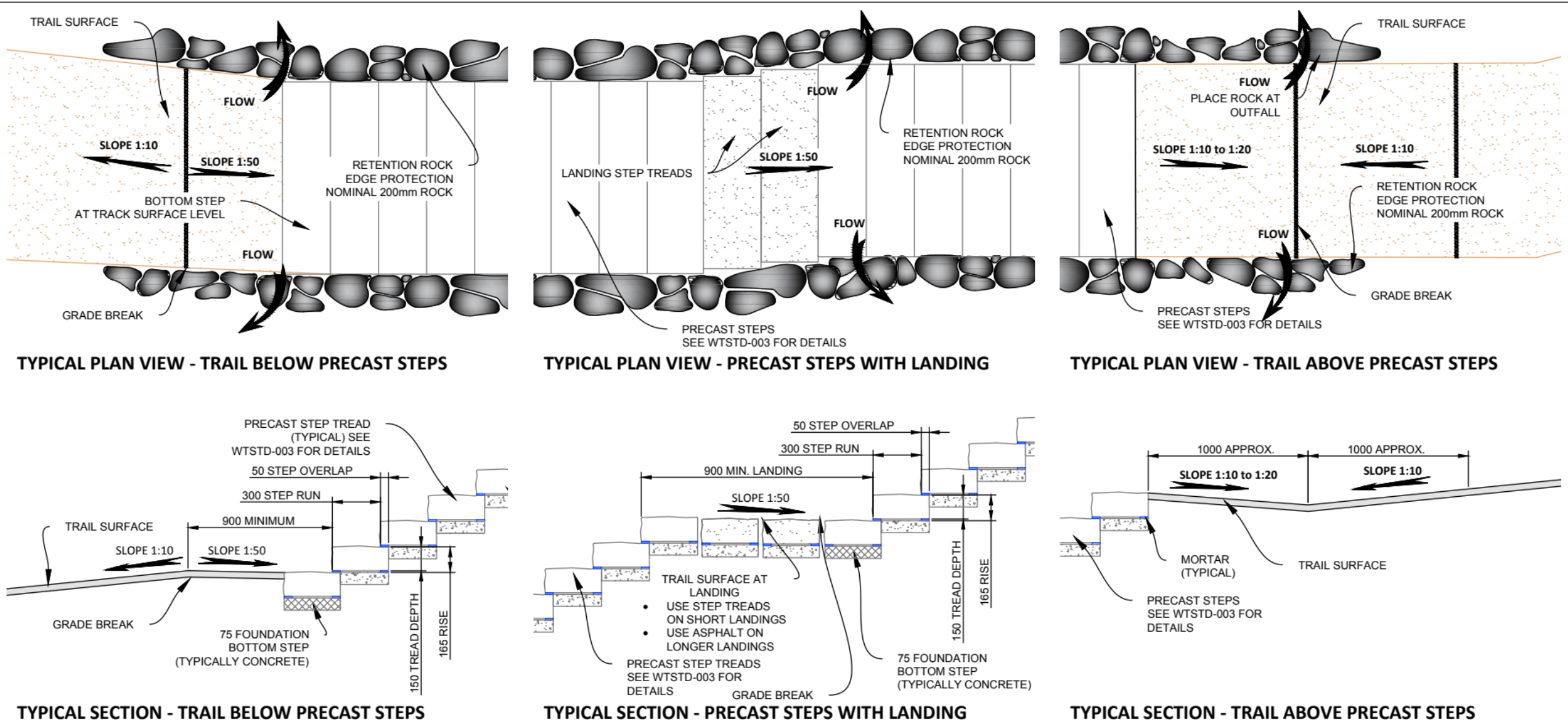
WANGETTI TRAIL
DETAILED DESIGN

Drawn	JR	Signed	DS	Date	07/04/20
Designed	DS	Signed	DS	Date	07/04/20
Verified	DS	Signed	DS	Date	07/04/20
Approved	DS	Signed	DS	Date	

Drawing Title:

PRECAST CONCRETE STEPS
PLACEMENT AND DIMENSIONS
STANDARD DRAWING





NOTES:

- GENERAL:
- The main objective of the grading guidelines depicted is to provide solutions to minimise linear stormwater flows cascading down the steps and along the trail alignment.
 - The main principle in avoiding this is to shed small amounts away from the trail alignment before they can concentrate into large volume flows.
 - By shedding water above, between and below stairs, the flows down the stairways will be minimised.
 - Details of placement of the precast step units depicted can be found in WTSTD-003-WG2.
 - The dimensions and slopes depicted in this drawing may need to

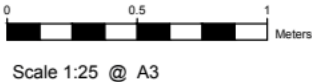
- be modified to suit the particular topography and natural water flows identified at the specific location of the structure.
- On landings less than 1400mm long, step treads or concrete infill may be used instead of asphalt.
- Any major deviations from these layouts must be approved by the project principle or their relevant responsible officer.

EROSION PROTECTION

- The locations where water flows are shedded from the trail alignment need to be protected by rock and constructed in such a way as to disperse the discharging stormwater in a way that will not cause scouring in the receiving environment.
- Careful consideration needs to be given to assessing the type of material at the discharge location for its likelihood of scouring.
- Additional consideration must also be given to ensure the flow of

- water is not causing scouring, erosion or flooding further down the flowpath from the trail outfall point.
- Where the material in the discharge path has a high potential to scour, additional measures such as rock chutes, reinforcement or dispersion channels may be required.
- The need for additional protection may be identified and requested by the project principle or their relevant responsible officer.
- Any additional protection measures must be approved by the project principle or their relevant responsible officer.

GENERAL
ARRANGEMENT
SCALE 1:25



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FOR INFORMATION	
Project No.	WT20-Wangetti-001
Scale	1:25
Sheet Size	A3
Drawing No.	WTSTD-030-WG2
Rev.	A

Rev.	Date	Revision Details	Drn.	Ver.	App.
A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS




Client: **WANGETTI TRAIL
DETAILED DESIGN**

Drawn	Signed	Date
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Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

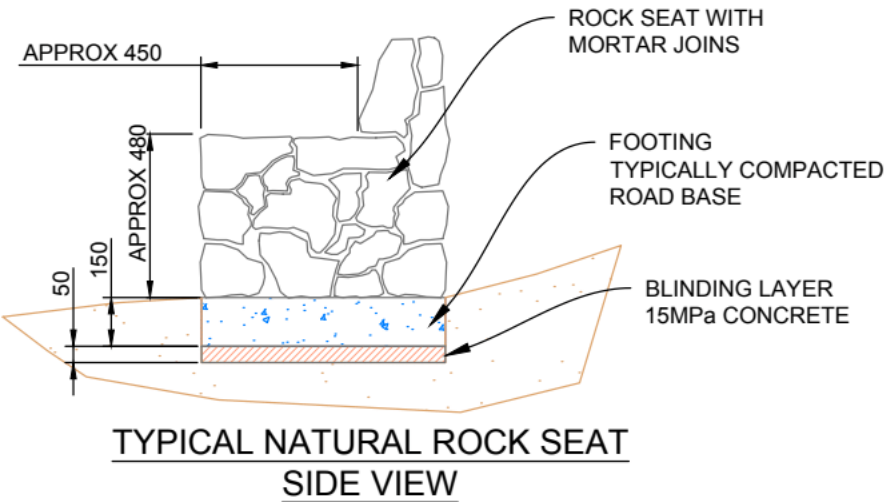
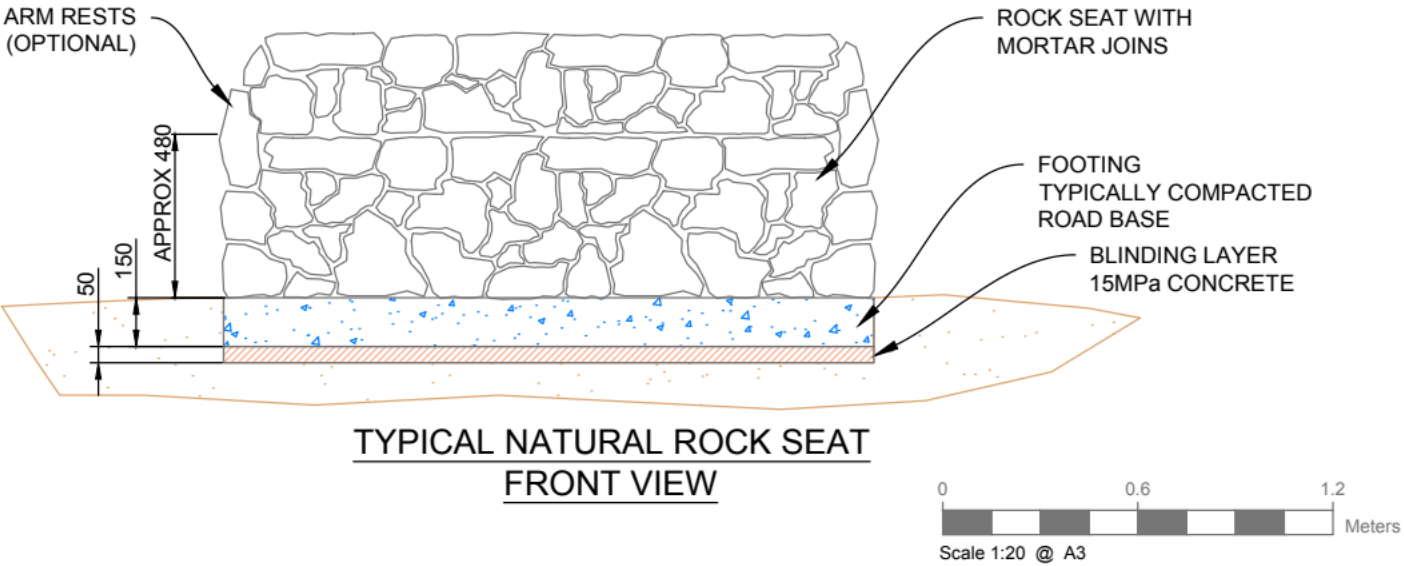
Drawing Title:
**PRECAST CONCRETE STEPS
TRAIL GRADING GUIDELINES
STANDARD DRAWING**

5.4.9 Natural Rock Seats

What is it?		Examples	
Natural Rock Seats are used at rest locations to provide seating.			
When is it Used?			
Natural Rock Seats are used when there is a good opportunity to provide a formalised rest spot – generally a location that has good views/ambience, or where it may be deemed necessary to create a rest (i.e. part way up a long climb). Generally, this treatment is best suited to locations with lots of loose, suitable sized rock available, as importing rock for this treatment would be onerous and costly.			
Why is it Used?			
Stone is the most durable material for constructing trail furniture.			
Notes			
Materials	Machinery / Equipment		
<ul style="list-style-type: none">• Rock (can be in situ or imported, subject to land manager requirements);• Concrete;• Mortar;• Geofabric;• Drainage materials as per drawing.	<ul style="list-style-type: none">• Rubber tracked mini-excavator;• Concrete mixer;• Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.;• Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.		
Estimated Length of Treatment	Drawing Reference		
20 stone seats	WTSTD-005-WG2 Natural Rock Seat Placement and Dimensions		

NOTES:

- The seat design depicted is a single seat layout that represents a whole range of possible configurations.
- Seats may in a line, curved, built into a retaining wall and can be anywhere from 1 to many metres in length.
- Seats may have a back rest as depicted or may be constructed as a bench with no backrest at all. When associated with a retaining wall, the wall can become the backrest.
- Rock used for seat construction must be of an appropriate shape, texture and colour to match the native rock and must provide a natural appearance relative to its location .
- Mortar to be 1 part cement to 3 parts sand (by volume). Face joints to be 25mm nominal width.
- Rocks to be selected spalls set in cement mortar beds in horizontal layers. Unless specified otherwise open faced stone pitching to be used where the concrete is recessed 50mm behind the stone facing. If closed face stonepitching is specified, concrete to be flush with stone facing. Select spalls to avoid sharp edges.
- Where the seat is associated with a retaining wall it must not impede the drainage system constructed behind and through the wall.
- Weepholes from the retaining wall must continue through the seat through 100mm dia upvc at 1000mm max centres, positioned at a slope of 1 in 10.
- All connection, including the joining of lengths of megaflo or corrugated perforated polyethylene pipe, shall be made using standard manufacturers fittings.
- In stable foundation materials the 150mm seat footing can be constructed using well compacted road base. The outer edges must be scraped back to a clean hard surface so that the bottom layer of mortar will adhere to the surface.
- In unstable or high clay foundations the footing must be constructed using 15MPa concrete and the bottom row of rocks are to be embedded around 100mm into the concrete.
- The core of the seat can be filled with well compacted good quality granular material with minimal clay content.
- The 50mm blinding layer can be replaced with a 200 micron IR2 polyethylene sheet when the bottom off the footing excavation is in stable sound material.
- Dimensions in millimetres unless otherwise notated.



GENERAL
ARRANGEMENT
SCALE 1:20



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A	24/03/20	ISSUED FOR INFORMATION	JR		
Rev.	Date	Revision Details	Dwn.	Ver.	App.



Client:	Project:
	WANGETTI TRAIL DETAILED DESIGN




Drawn	Signed	Date
JR		24/03/20
Designed	Signed	Date
DS		24/03/20
Verified	Signed	Date
DS		24/03/20
Approved	Signed	Date

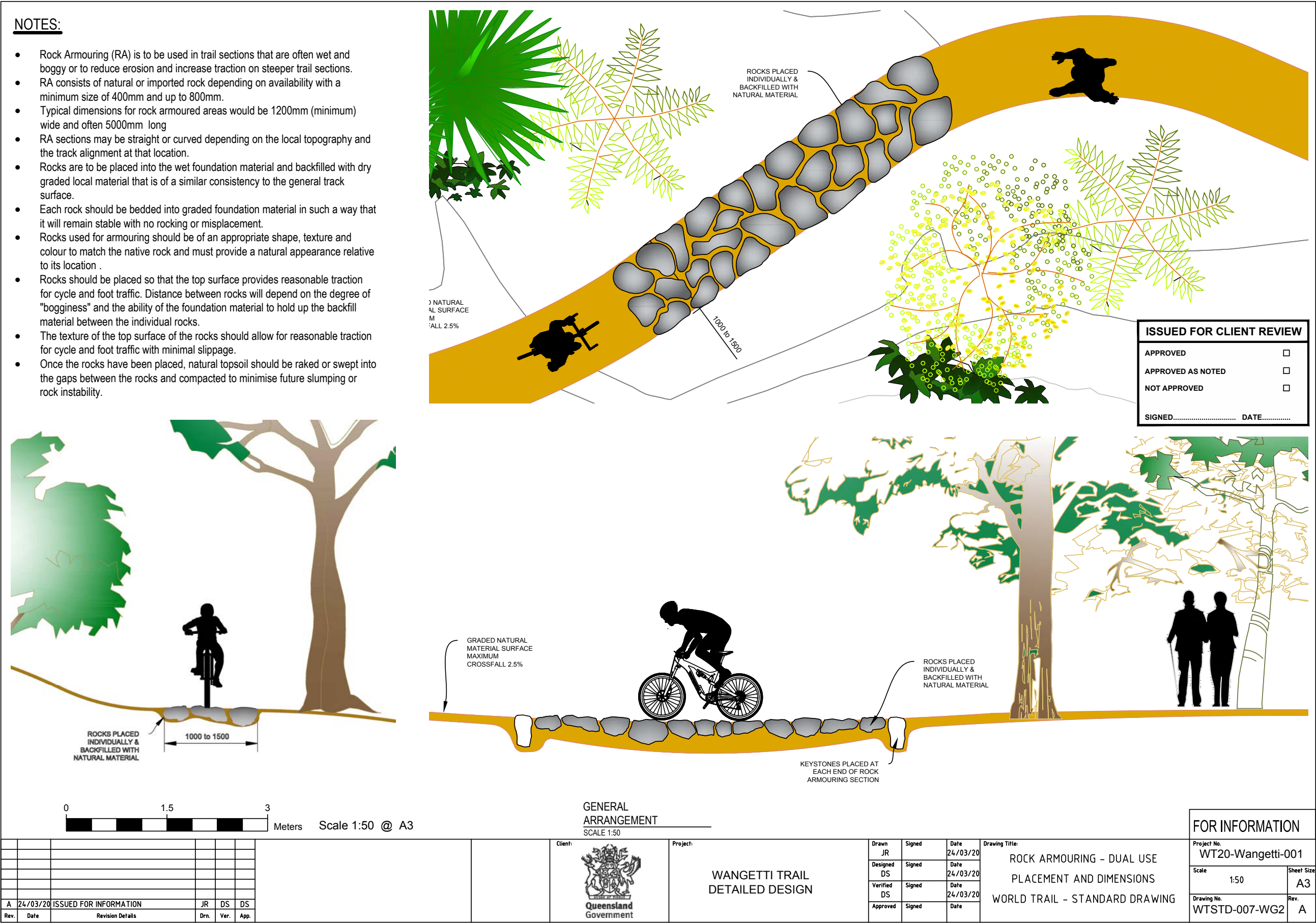
Drawing Title:
NATURAL ROCK SEAT PLACEMENT AND DIMENSIONS STANDARD DRAWING

FOR INFORMATION	
Project No.	WT20-Wangetti-001
Scale	1:20
Sheet Size	A3
Drawing No.	WTSTD-005-WG2
Rev.	A


5.4.10 Rock Armouring

What is it?		Examples
Rock Armouring is a technique used to harden the trail surface, using rocks of 400-800mm in size, embedded into the ground to create a hard, rock paved surface.		
When is it Used?		
Rock Armouring is used in the following situations: 1. Sections of track that are often wet and boggy, where no alternate route is available – for example, where the trail crosses a drainage line; 2. On steep gradients, to reduce the potential for erosion and to provide traction for users; 3. In high traffic areas to prevent erosion or compaction.		
Why is it Used?		
Rock Armouring is used to prevent soil erosion and compaction, to provide traction for users, or to harden the trail surface in boggy areas. It is often used to cross small seasonal watercourses or drainage gullies. Rock Armouring is sometimes the only way to ensure the sustainability of a trail.		
Notes		
Rock Armouring will resist erosion and last for many years, if constructed correctly.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">Rock (can be in situ or imported, subject to land manager requirements).	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.;Ropes, pulleys, winches, chains, straps and rock slings to assist in manipulating rocks into place.	
Estimated Length of Treatment	Drawing Reference	
2,315 metres (of entire 82.15km length of trail)	WTSTD-007-WG2 Rock Armouring – Dual Use Placement and Dimensions	

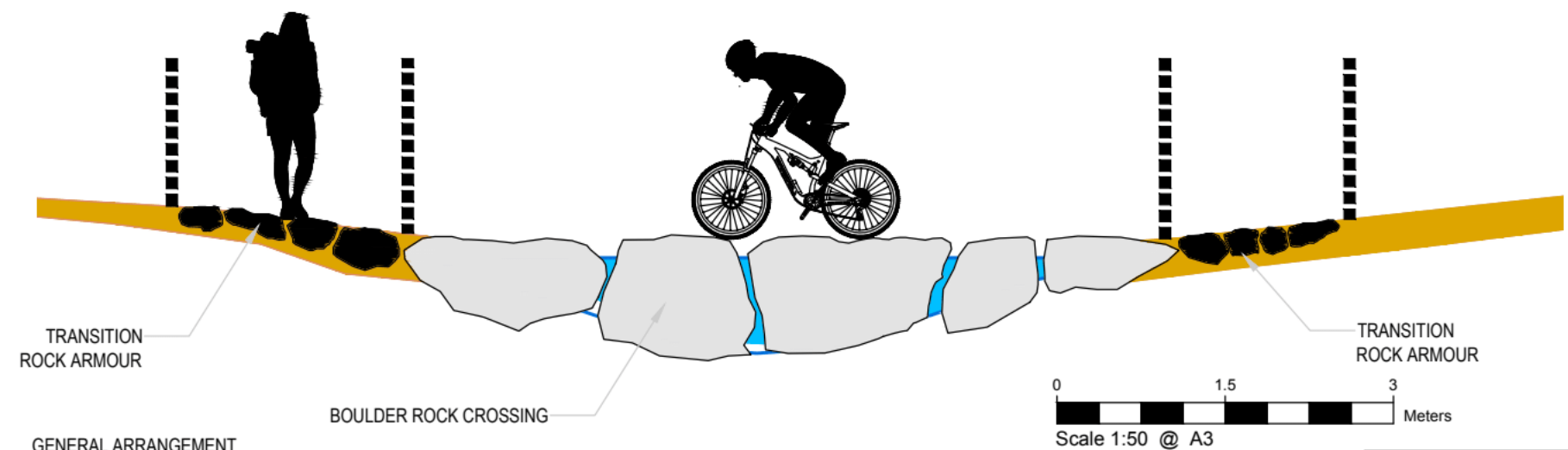
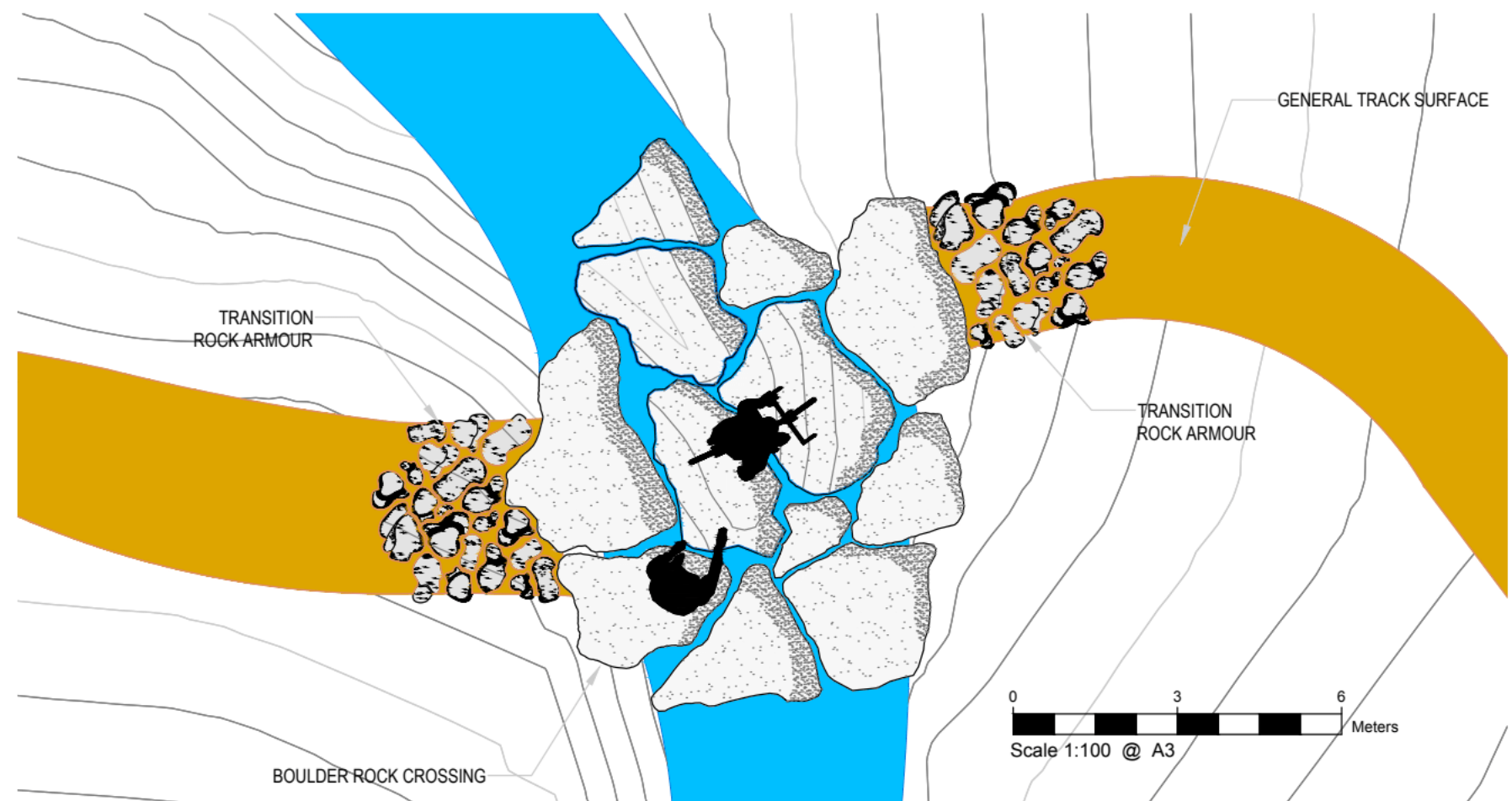




5.4.11 Boulder Water Crossings

What is it?		Examples
Boulder Water Crossings are structures made of rocks or boulders, used to allow passage of riders and hikers across a small watercourse, while minimising sedimentation.		
When is it Used?		
Boulder Water Crossings are used when the trail crosses a small permanent watercourse and there is suitable large rock or boulders available locally to construct a Boulder Water Crossing. Boulder Water Crossings should only be considered in watercourses with slow water velocities and a depth of less than 1m during high flows.		
Why is it Used?		
Boulder Water Crossings are used to facilitate safe crossing of small watercourses, keeping riders and hikers largely above the water. It is preferable to the construction of bridges or structures that require the importation of man-made materials. They are long lasting, relatively inexpensive, impervious to bushfire and maintain a natural appearance relative to their location and setting.		
Notes		
Boulder Water Crossings do not interfere with the movement of water, sediment or aquatic life when they are properly constructed.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">In situ rock / boulders, large enough to resist movement in high flow.No imported materials.	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.;Ropes, pulleys, winches, chains, straps and rock slings to assist in manipulating rocks into place.	
Estimated Length of Treatment	Drawing Reference	
1,166 metres (of entire 82.15km length of trail)	WTSTD-006-WG2 Boulder Rock Crossing Placement and Dimension	

- The stone crossing design depicted is a single crossing layout that represents a whole range of possible alternate configurations.
- Crossings may be straight or curved depending on the local topography and the track alignment at that location.
- Crossings consist of rock transitions using rock armouring at each end and a large boulder crossing within the creek invert and between the transitions.
- See drawing WTSTD-007-WG2 for details on placement and design of rock armouring.
- Boulders in the creek invert should be large enough to resist being moved during high flow events. Minimum size around 1.5m.
- While gaps should be provided between the rocks to allow for water passage during normal flows, they should be narrow enough to allow for both hiking & bicycle passage.
- Boulders used for crossing construction must be of an appropriate shape, texture and colour to match the native rock and must provide a natural appearance relative to its location .
- Boulders should be placed so that the top surface provides a reasonable surface for foot placement and bicycle ride lines and the distances between stones should allow for reasonable bicycle passage and step lengths by an average person..
- The texture of the top surface of the boulders should allow for reasonable bicycle traction and hiker footage with minimal slippage.
- The transition connection of the track to the first boulders in the crossing should be well graded to allow safe access to the start of the crossing. This will provide an opportunity for riders and walkers to stop and assess the alignment required to navigate the crossing prior to proceeding.
- Smaller rocks can be used at the transitions to facilitate an even platform.



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GENERAL ARRANGEMENT
PLAN & PROFILE VIEW
SCALE varies

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Rev.	Date	Revision Details			Dwn.	Ver.	Appo.

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	Project:
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WANGETTI TRAIL
DETAILED DESIGN

Drawn JR	Signed	Date 24/03/20
Designed DS	Signed	Date 24/03/20
Verified DS	Signed	Date 24/03/20
Approved	Signed	Date

Drawing Title:



BOULDER ROCK CROSSING
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

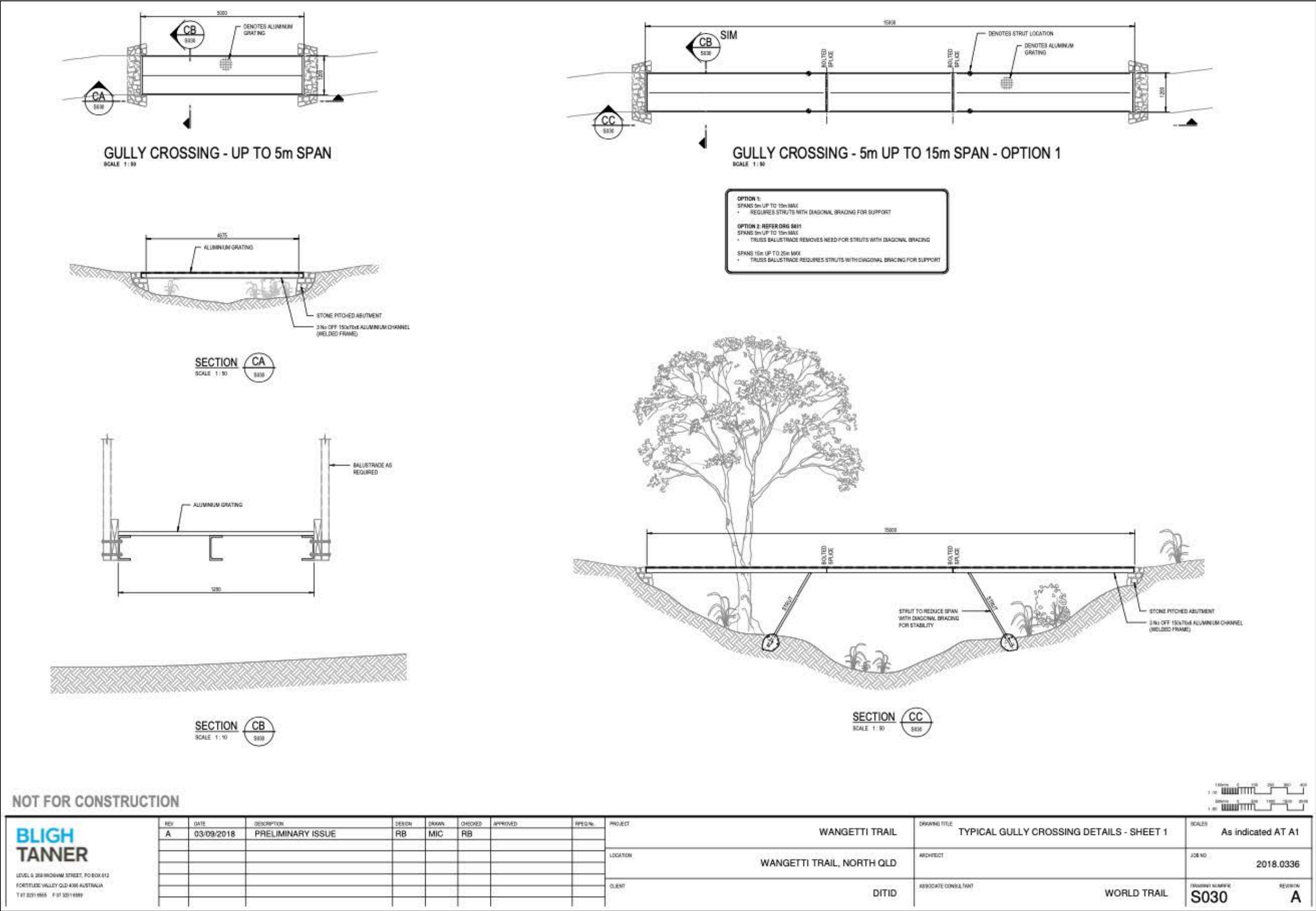
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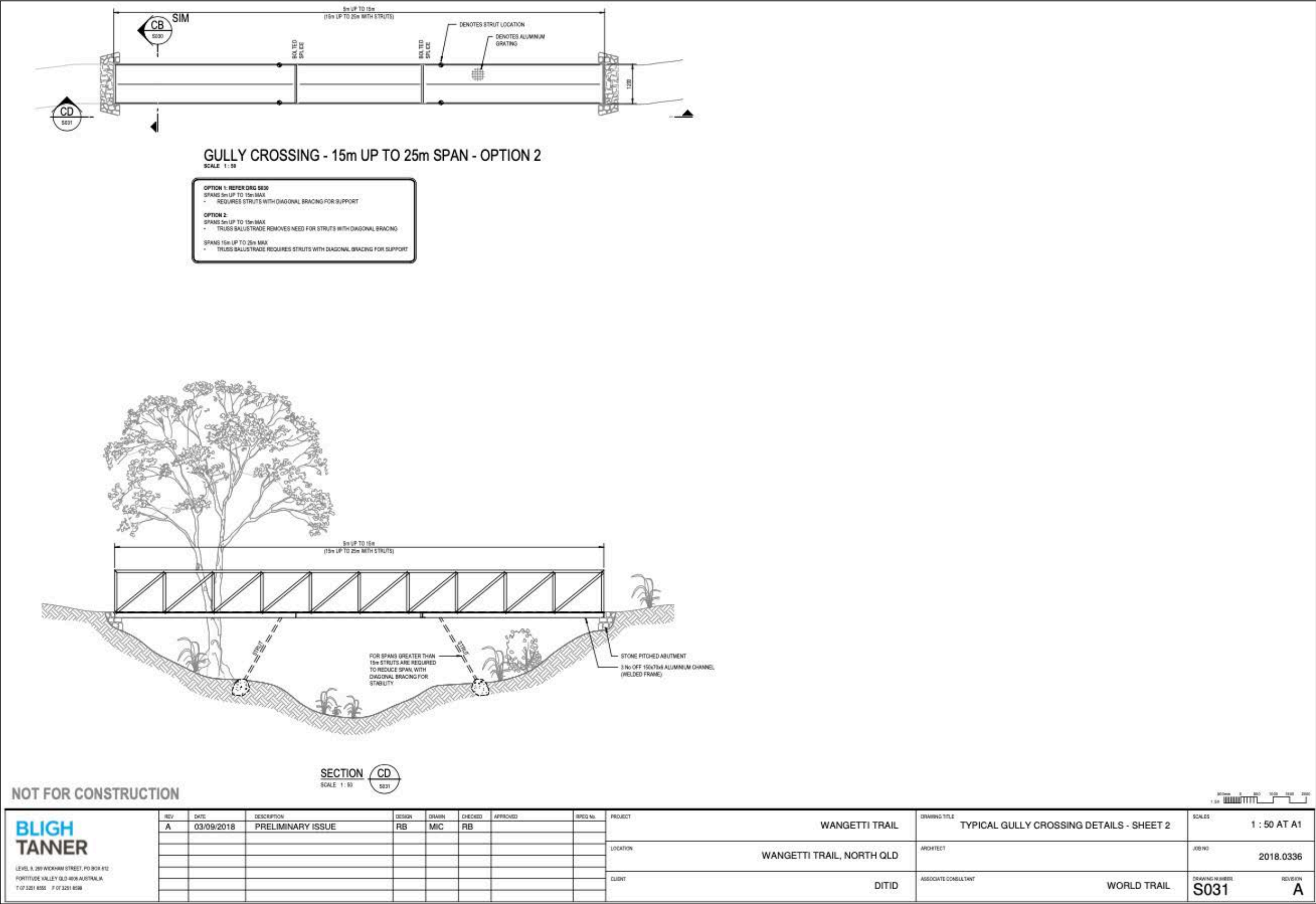
Project No. WT20-Wangetti-001	
Scale varies	Sheet Size A3
Drawing No. WTSTD-006-WG2	Rev. A

5.4.12 Minor Waterway Crossings

What is it?		Examples
Minor Waterway Crossings are small bridges, spanning from 5m to 25m.		
When is it Used?		
<p>Minor Water Crossings are used when the trail crosses a small permanent watercourse and suitable large rock or boulders are not available locally to construct a Rock Water Crossing.</p> <p>Where required to cross multiple braids of the same waterway, separate Minor Water Crossings can be joined end to end (provided that span lengths are maintained as shown) to create a longer, boardwalk type structure or separated by earthen or rock landings.</p>		
Why is it Used?		
<p>Minor Water Crossings are used to facilitate safe crossing of small watercourses, keeping riders and hikers above the water, protecting water quality and minimising the potential for sedimentation of the waterway. It will also be used to span waterways that support the opal cling goby (<i>Stiphodon semoni</i>) habitat.</p>		
Notes		
<p>Typically, Minor Waterway Crossings should be less than 1m above the ground (measured from the top of the decking surface down to the ground) to avoid the requirement for handrails. Handrails can be a crush hazard to mountain bike riders' fingers. Sometimes the need for a handrail can be avoided by slightly adjusting the location of a bridge and thus reducing the height of the drop off.</p> <p>Minor Waterway Crossings should be designed and placed so as to be as short, straight and level as possible. The trail entry and exit should ideally be straight and in-line with the bridge. The trail design should naturally slow riders on their approach to the bridge, ensuring that they don't enter at high speeds. Rock Armouring for 2-5m at the entry and exit of the bridge is generally recommended – it helps manage any abrasion that may result from heavy braking and can also help to shed mud/dirt off tyres before crossing the bridge.</p> <p>A variety of different decking materials can be used. The most commonly used materials are timber, Fibre Reinforced Plastic (FRP) mesh or steel mesh. The use of mesh decking allows light and water to penetrate through the bridge, thus minimising the impact on the vegetation below.</p>		
Materials		Machinery / Equipment
<ul style="list-style-type: none">• Subject to final design, but likely to include:<ul style="list-style-type: none">◦ Decking materials – timber, steel mesh, FRP etc.;◦ Framing materials – timber, steel, FRP etc.;◦ Concrete for footings;◦ Fixings.		<ul style="list-style-type: none">• Rubber tracked mini-excavator;• Concrete mixer;• Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.;• Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.;• Carpentry and general construction equipment.
Estimated Length of Treatment		Drawing Reference
468 metres (of entire 82.15km length of trail)		S030 – A S031 – A





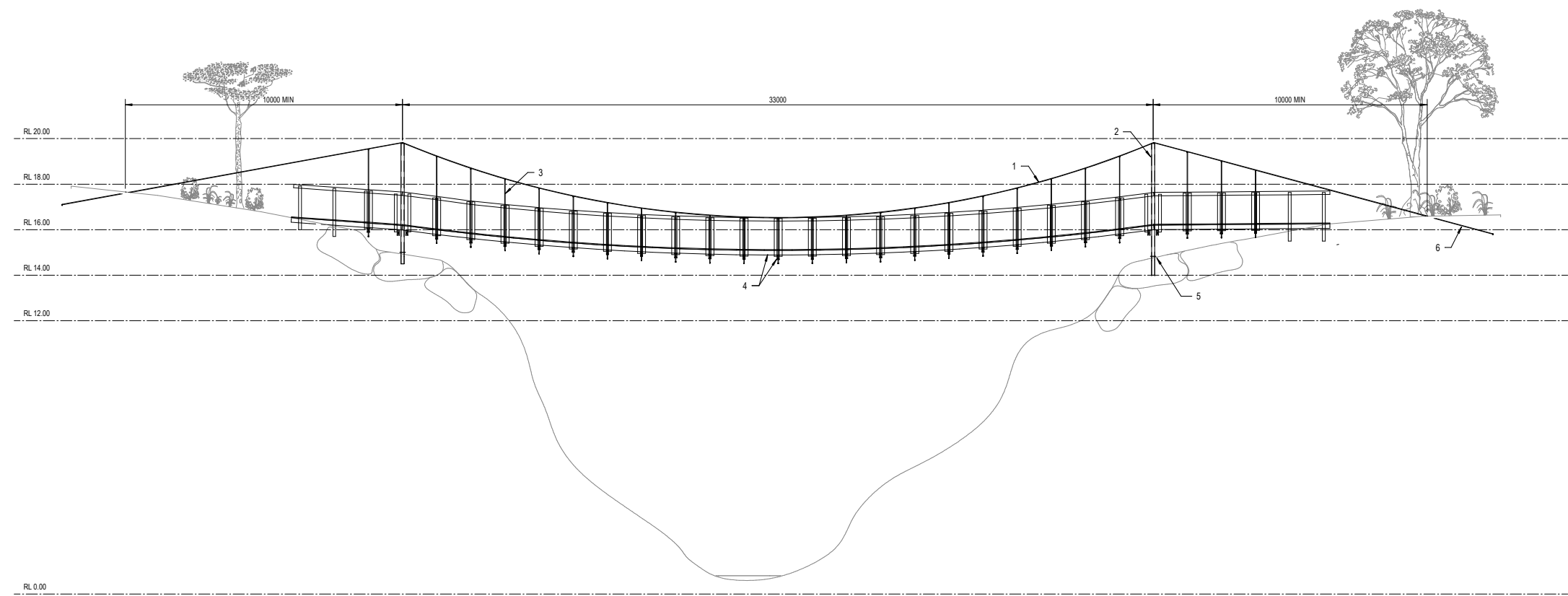




5.4.13 Major Waterway Crossing

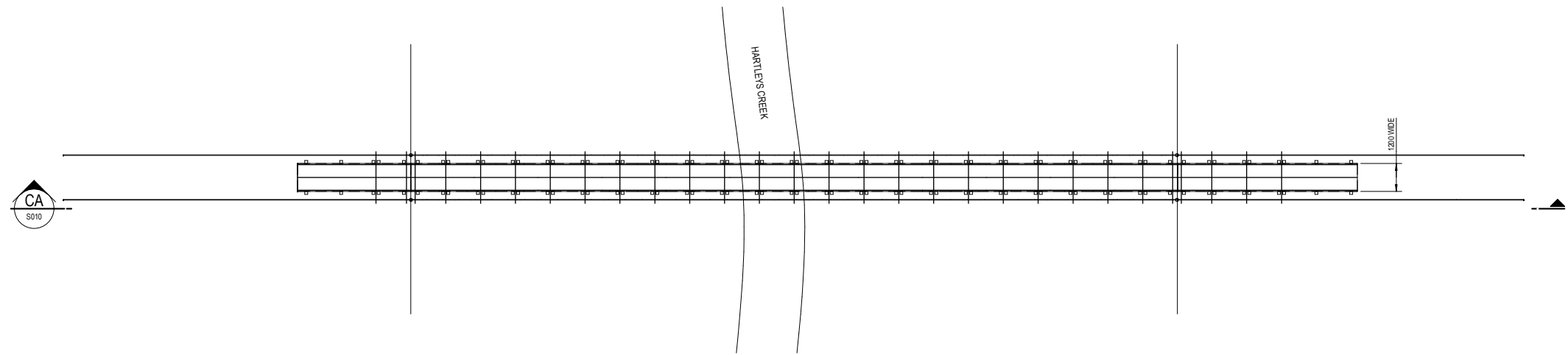
What is it?		Examples
The Major Waterway Crossing is a cable suspension bridge proposed to be used to cross over Hartley's Creek near Wangetti township.		
When is it Used?		
It is proposed to be used on only one occasion – Hartley's Creek near Wangetti. It allows the trail to cross the waterway safely and sustainably, providing excellent views down in to the scenic and deeply incised granite gorge.		
Why is it Used?		
It is used to provide a safe and sustainable crossing of a major waterway and to elevate trail and bridge infrastructure above possible flood height levels.		
Notes		
The current QPWS access track starting at Hartley's Creek (adjacent to the Captain Cook Highway) would be used to transport equipment and materials required for the proposed suspension bridge. The type of construction equipment that can be used to build the bridge will be limited to the size of machinery and equipment that can be transported along this access track. Materials such as steel and concrete may be transported via helicopter to the bridge location where appropriate.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">• Subject to final design, but likely to include:<ul style="list-style-type: none">◦ Decking materials – timber, steel mesh, FRP etc.;◦ Framing materials – timber, steel, FRP etc.;◦ Concrete for footings;◦ Fixings.	<ul style="list-style-type: none">• Rubber Tracked Excavator• Crane• Bobcat• Carpentry and general construction equipment.• Winches• Helicopter	
Estimated Length of Treatment	Drawing Reference	
35 metres (of entire 82.15km length of trail)	S010 A	





- LEGEND:
- 1. 22mm DIAMETER GALVANISED STRAND CABLES.
 - 2. 139 CHS STEEL PORTAL FRAMES
 - 3. 12mm REID BAR HANGERS
 - 4. HARDWOOD TIMBER DECKING FRAME
 - 5. STEEL PORTAL BOLTED TO STABILISED ROCK FOUNDATION.
 - 6. STEEL ANCHOR BARS EPOXY GROUTED INTO THE ROCK BASE.

SECTION CA
SCALE 1:100
S010



BRIDGE PLAN
SCALE 1:100



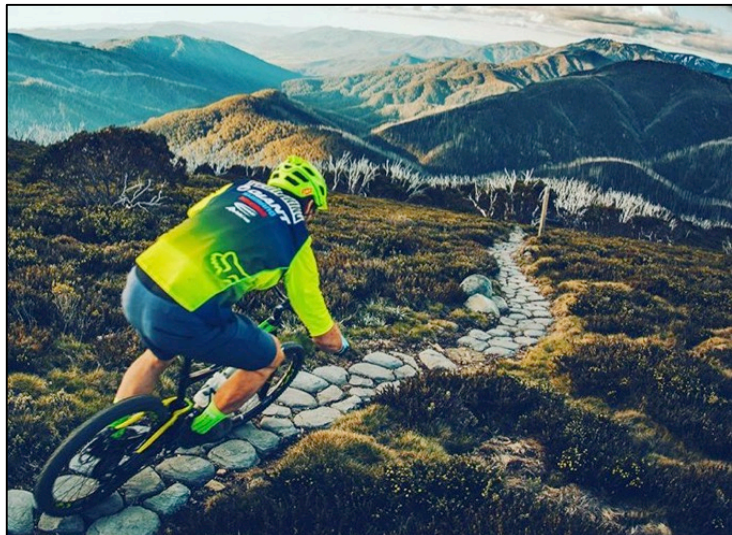
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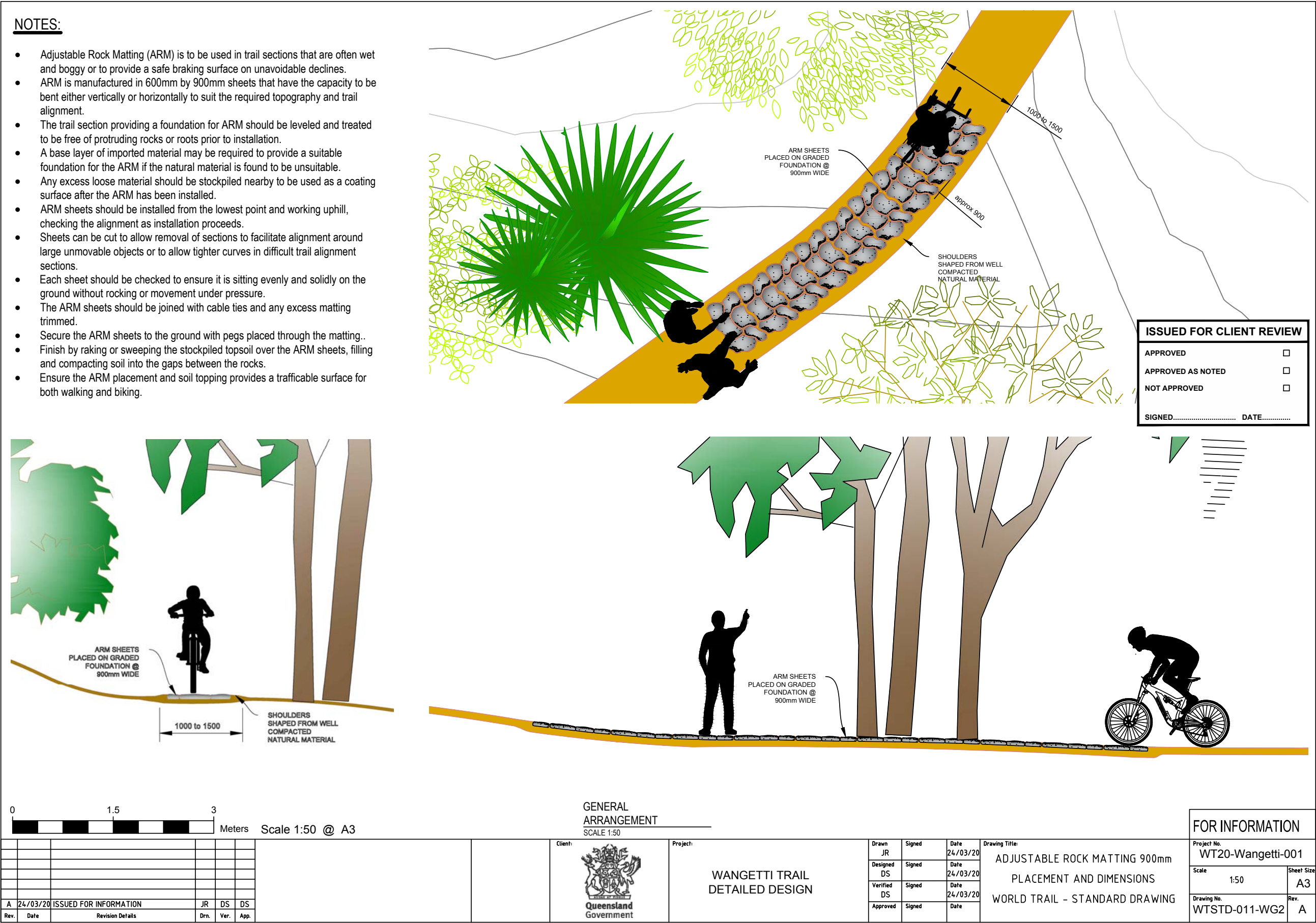
BLIGH TANNER <small>LEVEL 9, 269 WICKHAM STREET, PO BOX 612 FORTITUDE VALLEY QLD 4006 AUSTRALIA T 07 3251 8555 F 07 3251 8599</small>	REV	DATE	DESCRIPTION	DESIGN	DRAWN	CHECKED	APPROVED	RPEQ No.	PROJECT	DRAWING TITLE	SCALES
	A	03/09/2018	PRELIMINARY ISSUE	RB	MIC	RB			WANGETTI TRAIL	HARTLEY'S CREEK CROSSING	1 : 100 AT A1
									LOCATION	ARCHITECT	JOB NO
									WANGETTI TRAIL, NORTH QLD		2018.0336
									CLIENT	ASSOCIATE CONSULTANT	DRAWING NUMBER REVISION
									DITID	WORLD TRAIL	S010 A

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5.5 CONSTRUCTION TREATMENTS – NOT SPECIFIED

5.5.1 Adjustable Rock Matting

What is it?		Examples
Adjustable Rock Matting (ARM) is a proprietary product that approximates the look and feel of natural Rock Armouring.		
When is it Used?		
It is used when Rock Armouring is required, but suitable natural stone is not easily/readily available. It should not be placed in permanent waterways.		
Why is it Used?		
It provides a cost-effective means of hardening the trail surface when normal Rock Armouring is not possible or cost effective.		
Notes		
ARM is made from pre-cast concrete and held together using 4mm nylon mesh.		
ARM comes in sheets of differing sizes, including 600mm and 1000mm widths, can be transported easily into most locations and approximates normal rock armouring in its installation, aesthetics and durability.		
It is approximately 150mm high and is embedded into the ground to provide a continuous level tread surface with the adjacent tread of the trail.		
Modules can be easily cut out to allow the sheets to curve around or mould into landscape features like large boulders.		
Materials	Machinery / Equipment	  
<ul style="list-style-type: none">Adjustable Rock Matting sheets.	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.	
Estimated Length of Treatment	Drawing Reference	
Not specified.	WTSTD-011-WG2 Adjustable Rock Matting 900mm Placement and Dimensions	

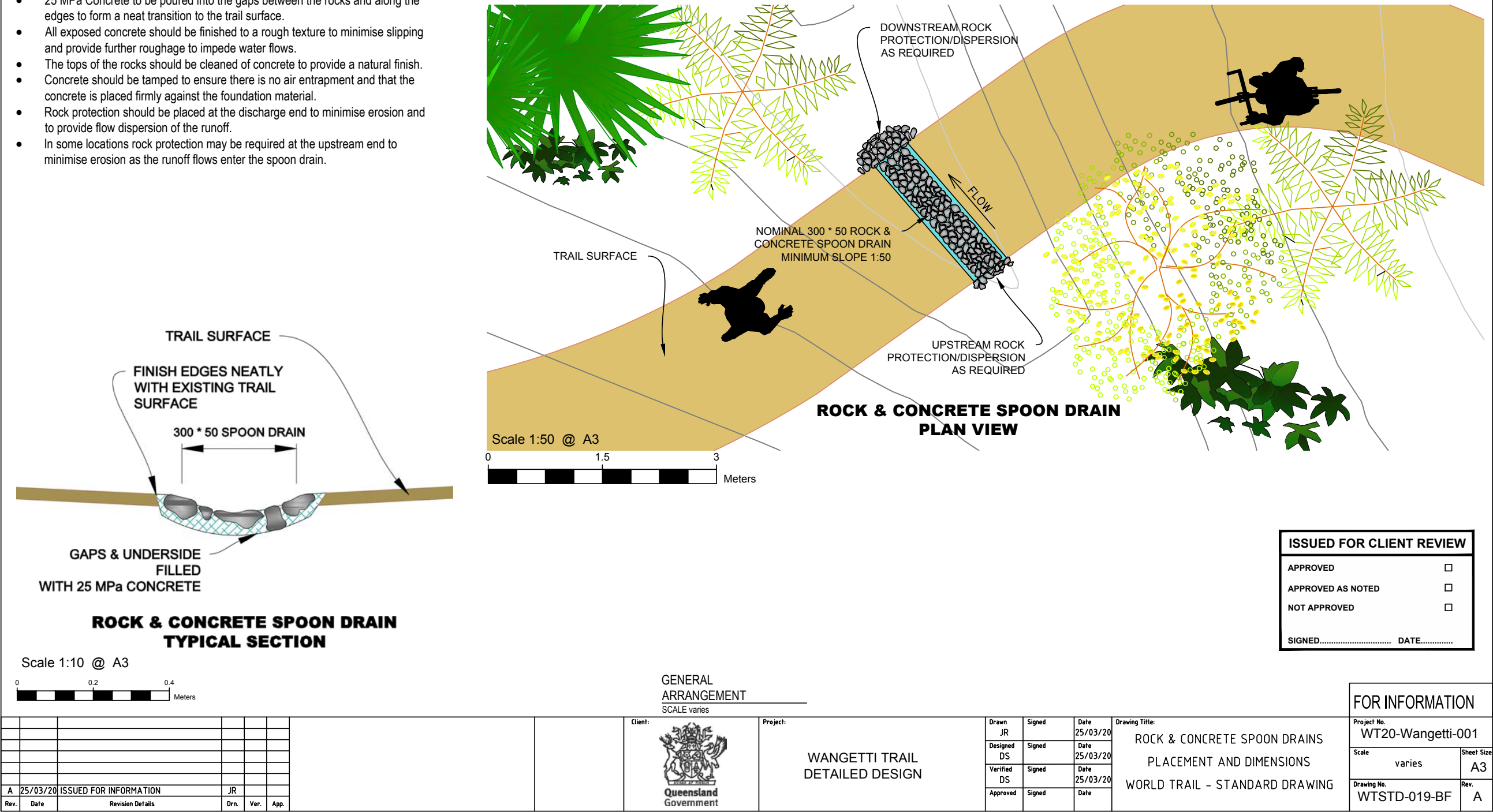


5.5.2 Rock and Concrete Spoon Drain

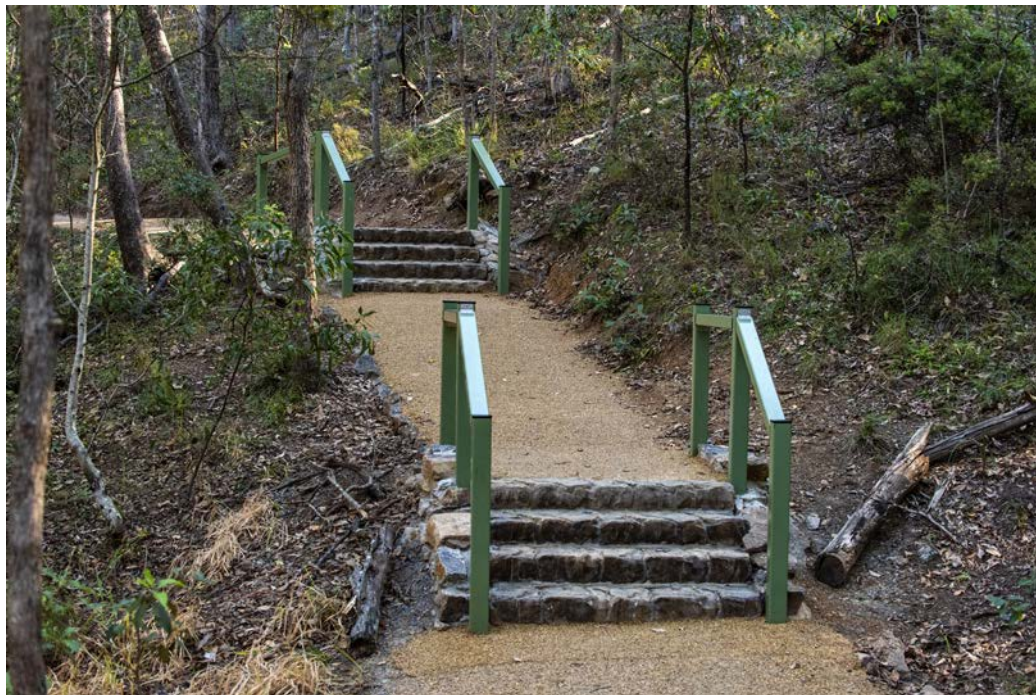

What is it?		<div>Examples</div> 
Rock and Concrete Spoon Drains are hardened sections of the trail, using concrete and rock, to manage water crossing the trail.		
When is it Used?		
Rock and Concrete Spoon Drains are used to convey surface runoff across the trail at a concentrated location. It could be used to manage the intersection of a small seasonal waterway and the trail, as per the description for Rock Armouring.		
Why is it Used?		
Rock and Concrete Spoon Drains can be used to cross small seasonal watercourses or drainage gullies, or to convey water from intercept drains across the trail.		
Notes		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">• Rock (can be in situ or imported, subject to land manager requirements);• Concrete;• Mortar;• Geofabric;• Drainage materials as per drawing.	<ul style="list-style-type: none">• Rubber tracked mini-excavator;• Concrete mixer;• Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.• Rock work hand tools such as crow bars, rock bars, rock hammers, wedges etc.	
Estimated Length of Treatment	Drawing Reference	
Not specified	WTSTD-019-BF Rock & Concrete Spoon Drains Placement and Dimensions	

NOTES:

- Spoon Drains are to be used to convey surface runoff across the trail at a concentrated location without using below ground conduits while minimizing erosion.
- The spoon drain profile and alignment should be constructed in such a way that disturbances to trail walkability are minimized.
- Dimensions and layout depicted are nominal only and may vary to suit site topography and expected runoff surface flows.
- All dimensions are in millimeters unless advised otherwise.
- Rocks are to be placed in such a way that they are interlocked and well bedded into a 25 MPa concrete bed poured onto the spoon drain foundation.
- 25 MPa Concrete to be poured into the gaps between the rocks and along the edges to form a neat transition to the trail surface.
- All exposed concrete should be finished to a rough texture to minimise slipping and provide further roughage to impede water flows.
- The tops of the rocks should be cleaned of concrete to provide a natural finish.
- Concrete should be tamped to ensure there is no air entrapment and that the concrete is placed firmly against the foundation material.
- Rock protection should be placed at the discharge end to minimise erosion and to provide flow dispersion of the runoff.
- In some locations rock protection may be required at the upstream end to minimise erosion as the runoff flows enter the spoon drain.



5.5.3 Handrails

What is it?		Examples
Handrails are structures made with imported materials such as timber, steel and concrete, used to provide support for hikers on steep inclines (e.g. a flight of steps) or on areas with steep drop-offs beside the trail. This treatment is not proposed for use as a handrail on a Minor Water Crossing or Major Water Crossing.		
When is it Used?		
It is used to provide support to hikers on steep inclines (e.g. a flight of steps) or on areas with steep drop-offs beside the trail. It can be installed on a single side or both sides of the trail.		
It is not generally used on mountain biking trails, as the handrails are located at a similar height to the rider's handlebars and can pose a hazard.		
Why is it Used?		
To provide support for hikers on steep inclines, to provide a barrier where there is a steep drop-off beside the trail, or to help define the trail and keep people from going off-track.		
Notes		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">Handrails and posts are constructed from a fibreglass/resin composite;Concrete for posts;Fixings as per drawing.	<ul style="list-style-type: none">Rubber tracked mini-excavator;Concrete mixer;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.Carpentry and general construction equipment.	
Estimated Length of Treatment	Drawing Reference	
Not specified	<p>WTSTD-013-WG2 Trail Handrail – Multi Section Placement and Dimensions</p> <p>WTSTD-014-WG2 Trail Handrail – Single Section Placement and Dimensions</p> <p>WTSTD-015-WG2 Handrail – Post & Rail Installation Placement and Dimensions</p>	

Drawing Title:

TRAIL HANDRAIL - MULTI SECTION
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

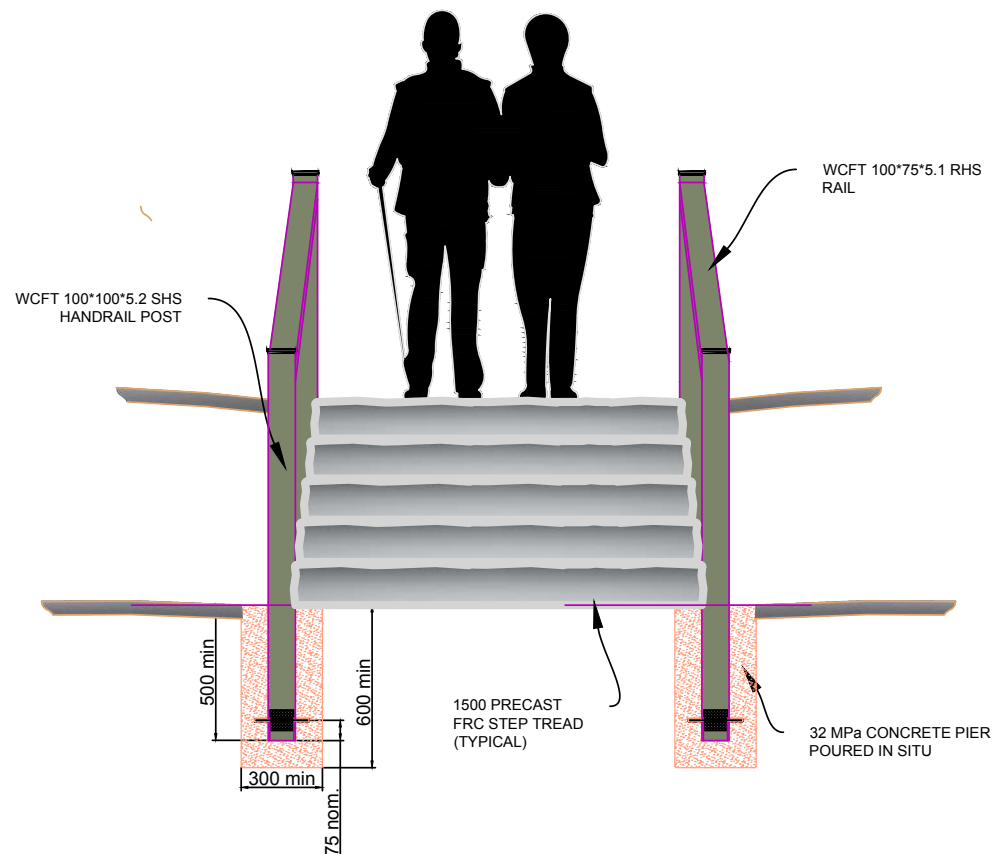
NOTES:

GENERAL:

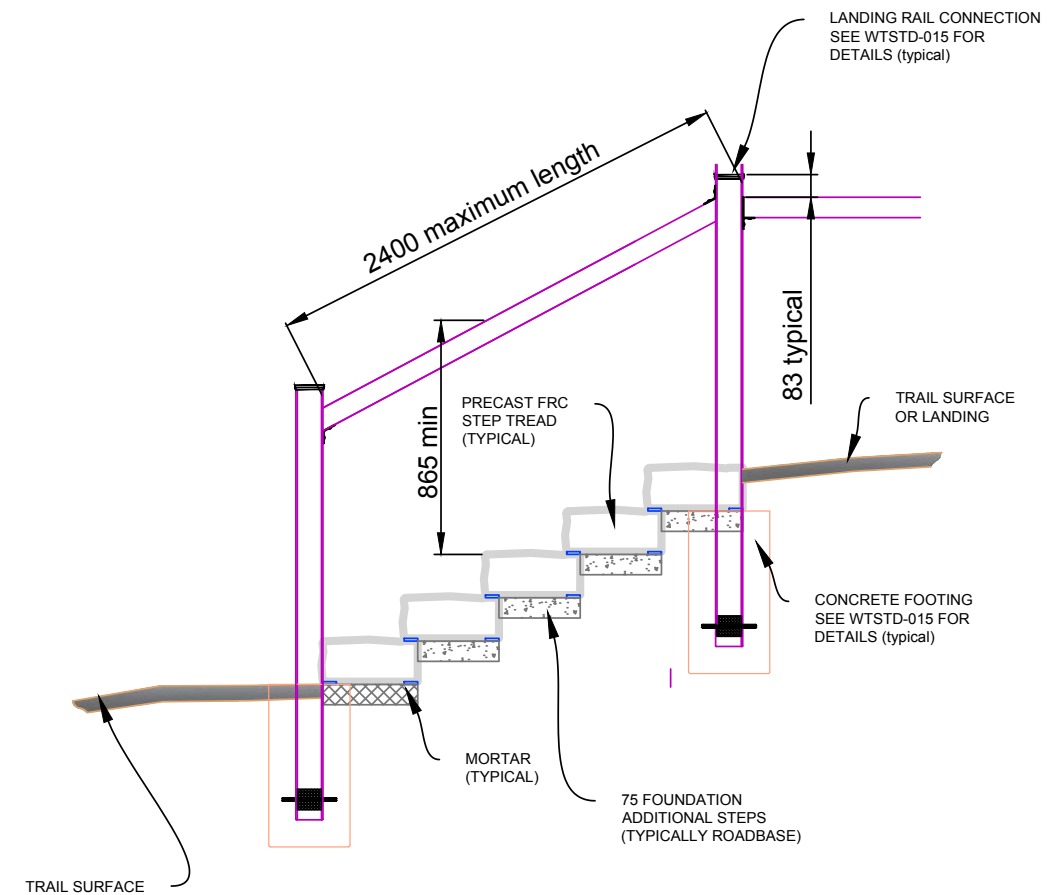
- The handrail layout depicted in this standard drawing is a typical layout for handrail sections with rails longer than 2400mm.
- Layouts in specific trail locations may vary considerably from that depicted however the design and construction requirements will still apply.
- The handrails depicted are to be placed in combination with the stair treads depicted in Standard drawing WTSTD-003-WG2 or along landings above, below or between these stair tread sections.
- The stairway example depicted in this standard drawing uses 1500mm wide precast treads. The design would also be appropriate for treads of other widths.
- This standard drawing must be used in conjunction with WTSTD-015-WG2 that defines the post placement and rail connection details.
- This standard drawing is suitable for stairs consisting of between 2 & 6 treads. See Standard drawing WTSTD-013-WG2 for stairs consisting of 7 or more treads.
- Where the stair alignment has a corner at the top or the bottom of the stairway, double posts may be necessary to either protect entry/exit to the stairway or to connect neatly to horizontal railings.

HANDRAILS & POSTS:

- Handrails, posts and fixtures are supplied by Wagners CFT Manufacturing Pty Ltd, Toowoomba or equivalent as approved by the client or principle.
- Handrails and posts are constructed from a fibreglass/resin composite.
- All components must be installed as defined in this standard drawing and as described in Wagners Installation Guide, Rev. B - Sept 2010 or other installation documentation relevant to the supplier.



TYPICAL MULTI SECTION HANDRAILS - FRONT VIEW 5 STEP EXAMPLE



TYPICAL MULTI SECTION HANDRAILS - PROFILE 5 STEP EXAMPLE

NOTES CONTINUED:

HANDRAILS & POSTS:

Care should be taken to ensure posts do not touch or bind with the stair treads and they are aligned so that the rail is straight rather than being aligned to the edge of the stair treads.

CONCRETE FOOTINGS:

- Excavations for concrete footings must be cleaned out prior to pouring concrete so that they do not contain any loose material, tree roots or rocks or ponding water.
- Posts and concrete mix must be placed into the footing in such a way that the integrity of the excavation is maintained.
- Concrete should be tamped with a suitable rod after placement to ensure there is no air entrapment within the footing.
- Where footings are located adjacent to precast step treads, the post and concrete top surface should be placed and finished such that it does not impede the correct placement of the step tread.
- Standard Drawing - WTSTD-003-WG2 depicts the dimensions and installation requirements of the step treads.

GENERAL
ARRANGEMENT
SCALE 1:25



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn JR	Signed	Date 25/03/2
Designed DS	Signed	Date 25/03/2
Verified DS	Signed	Date 25/03/2
Approved	Signed	Date

0 0.5 1 Meters
Scale 1:25 @ A3

0	Drawing Title:
0	TRAIL HANDRAIL - SINGLE SECTION
0	PLACEMENT AND DIMENSIONS
0	STANDARD DRAWING

FOR INFORMATION	
Project No. WT20-Wangetti-001	
Scale 1:25	Sheet Size A3
Drawing No. WTSTD-014-WG2	Rev. C

C	25/03/20	ADDITIONAL NOTES ADDED	JR			
B	07/08/19	ISSUED FOR INFORMATION	JR			
A	15/06/19	ISSUED FOR INFORMATION	JR			
Rev:	Date	Revision Details	Dwn	Ver	App	

NOTES:

GENERAL:

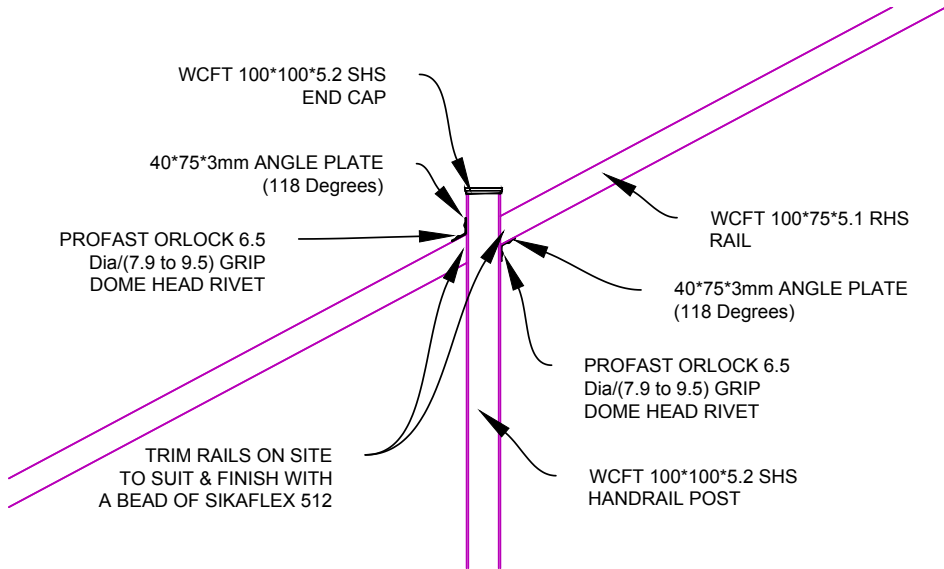
- The handrail layout depicted in this standard drawing is a typical layout for handrails built in conjunction with the precast step treads depicted in World Trail Standard Drawing - WTSTD-003-WG2.
- The post installation and handrail connections depicted in this plan are to be used in combination with World Trail Standard drawings WTSTD-013-WG2 or WTSTD-014-WG2.
- Other handrail layouts may require different angles, footing dimensions of connection fixtures than those defined in this drawing.
- Where the stair alignment has a corner at the top or the bottom of the stairway, double posts may be necessary to either protect entry/exit to the stairway or to connect neatly to horizontal railings.
- All materials and fixtures should be checked on site for damage or incorrect dimensions prior to assembly of the handrail.
- Specific components depicted on this plan may be replaced by equivalent products if the replacement is approved by the client or principle.
- All dimensions depicted on this plan are in millimeters unless otherwise noted.

HANDRAILS & POSTS:

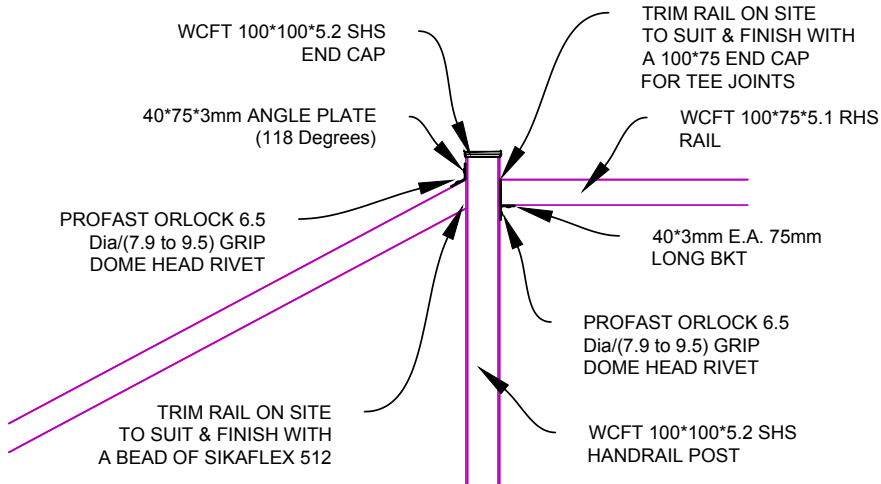
- Handrails, posts and fixtures are as supplied by Wagners CFT Manufacturing Pty Ltd, Toowoomba or equivalent product as approved by council.
- Handrails and posts are constructed from a fibreglass/resin composite.
- All components must be installed as defined in this standard drawing and as described in Wagners Installation Guide, Rev. B - Sept 2010 or equivalent installation guides applicable to selected equivalent products.
- Other dimensions are as depicted on this plan and include a 50mm overlap between treads.
- Angular rail to post joints may be finished with a modified 100*100 end cap for tee joints instead of a bead of silicon. This will require some cutting on site to provide neat fitment of the modified end cap.
- The top of rail must be kept at least 900mm above the walkable surface at all locations.
- Post end caps are to be installed as described in the Wagners Installation Guide which involves cutting a groove in the post using a specialist tool and using heat during placement or installed as defined in the installation guide of an approved equivalent product.

CONCRETE FOOTINGS:

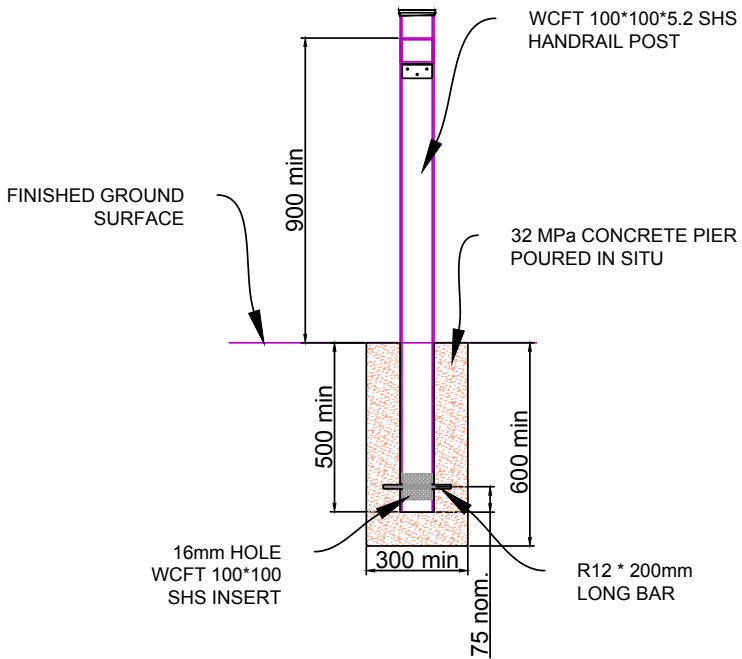
- Excavations for concrete footings must be cleaned out prior to pouring concrete so that they do not contain any loose material, tree roots or rocks or ponding water.
- Posts and concrete mix must be placed into the footing in such a way that the integrity of the excavation is maintained.
- Concrete should be tamped with a suitable rod after placement to ensure there is no air entrapment within the footing.
- Where footings are located adjacent to precast step treads, the post and concrete top surface should be placed and finished such that it does not impede the correct placement of the step tread.
- World Trail Standard Drawing - WTSTD-003-WG2 depicts the dimensions and installation requirements of the step treads.



TYPICAL RAKED HANDRAIL POST CONNECTION



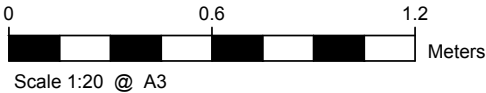
TYPICAL LANDING HANDRAIL POST CONNECTION



TYPICAL HANDRAIL POST INSTALLATION

ISSUED FOR CLIENT REVIEW	
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APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED..... DATE.....	

GENERAL
ARRANGEMENT
SCALE 1:20



B	25/03/20	ALTERATIONS MADE TO NOTES	JR		
A	07/08/19	ISSUED FOR INFORMATION	JR		
Rev.	Date	Revision Details	Drn.	Ver.	App.



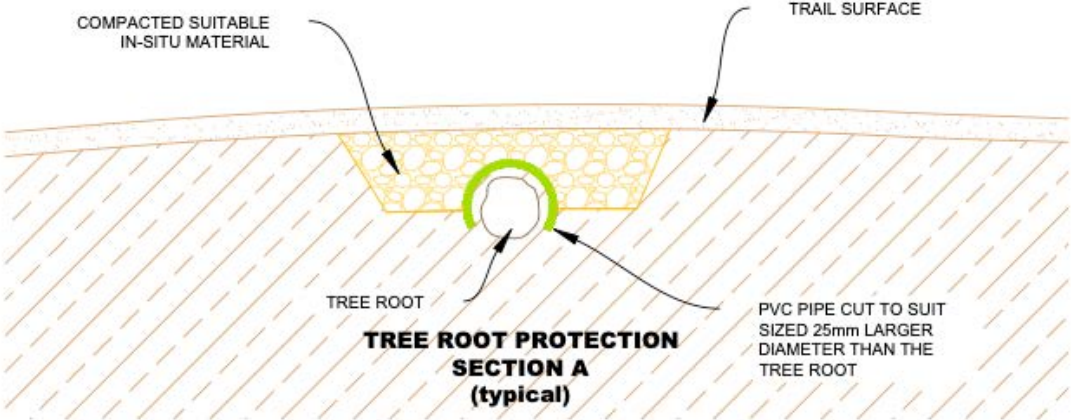
Client:	Project:
	WANGETTI TRAIL DETAILED DESIGN

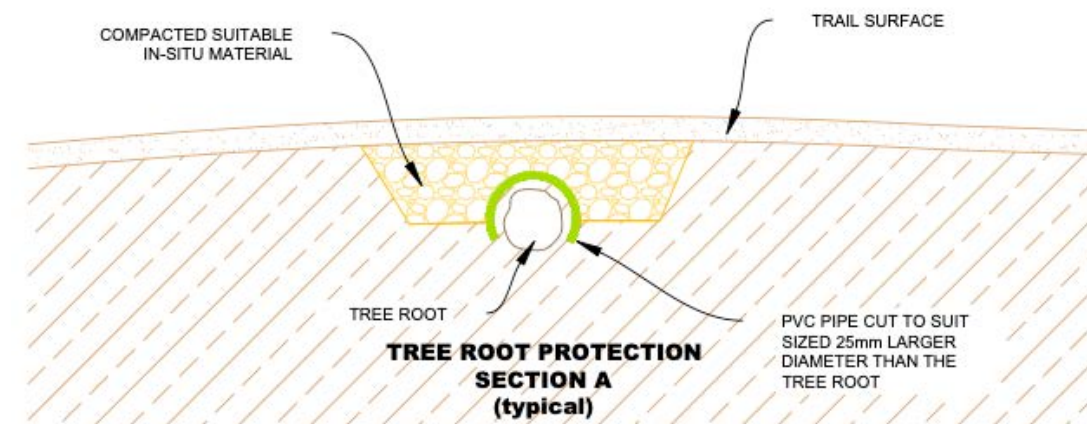
Drawn	Signed	Date
JR		25/03/20
Designed	Signed	Date
DS		25/03/20
Verified	Signed	Date
DS		25/03/20
Approved	Signed	Date

Drawing Title:
HANDRAIL - POST & RAIL INSTALLATION PLACEMENT AND DIMENSIONS WORLD TRAIL - STANDARD DRAWING

FOR INFORMATION	
Project No.	WT20-Wangetti-001
Scale	1:20
Sheet Size	A3
Drawing No.	WTSTD-015-WG2
Rev.	B

5.5.4 Tree Root Protection




What is it?		<div>Examples</div> 
Tree Root Protection is used to protect significant tree roots that lie close to the ground surface from the impacts of trail construction.		
When is it Used?		
Tree Root Protection is to be used in locations where the trail alignment cannot be redirected to avoid significant tree roots just beneath the surface.		
Large, significant tree roots shouldn't be cut, as this could have detrimental impacts on the health of the tree. Furthermore, where significant tree roots are located within the top 100-200mm of soil, the construction of the trail over the top of the root can lead to compaction of the soil, which may impact on the health of the tree.		
Why is it Used?		
Tree Root Protection is used to prevent compaction of the soil around significant tree roots. The placement of the protective sleeve around the top of the root prevents the soil close to the root from becoming compacted.		
Notes		
Considerable efforts have been made during ground-truthing to ensure suitable offsets away from vegetation communities or species of high environmental significance. However, given the highly treed nature of areas of the study site, it is impossible to avoid constructing trails within the root zone of trees.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">PVC pipe with internal diameter large enough to provide a 25mm clearance from the tree root	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.	
Estimated Length of Treatment	Drawing Reference	
Not specified.	WTSTD-031-WG2 Trail – Tree Root Protection Placement and Dimensions	

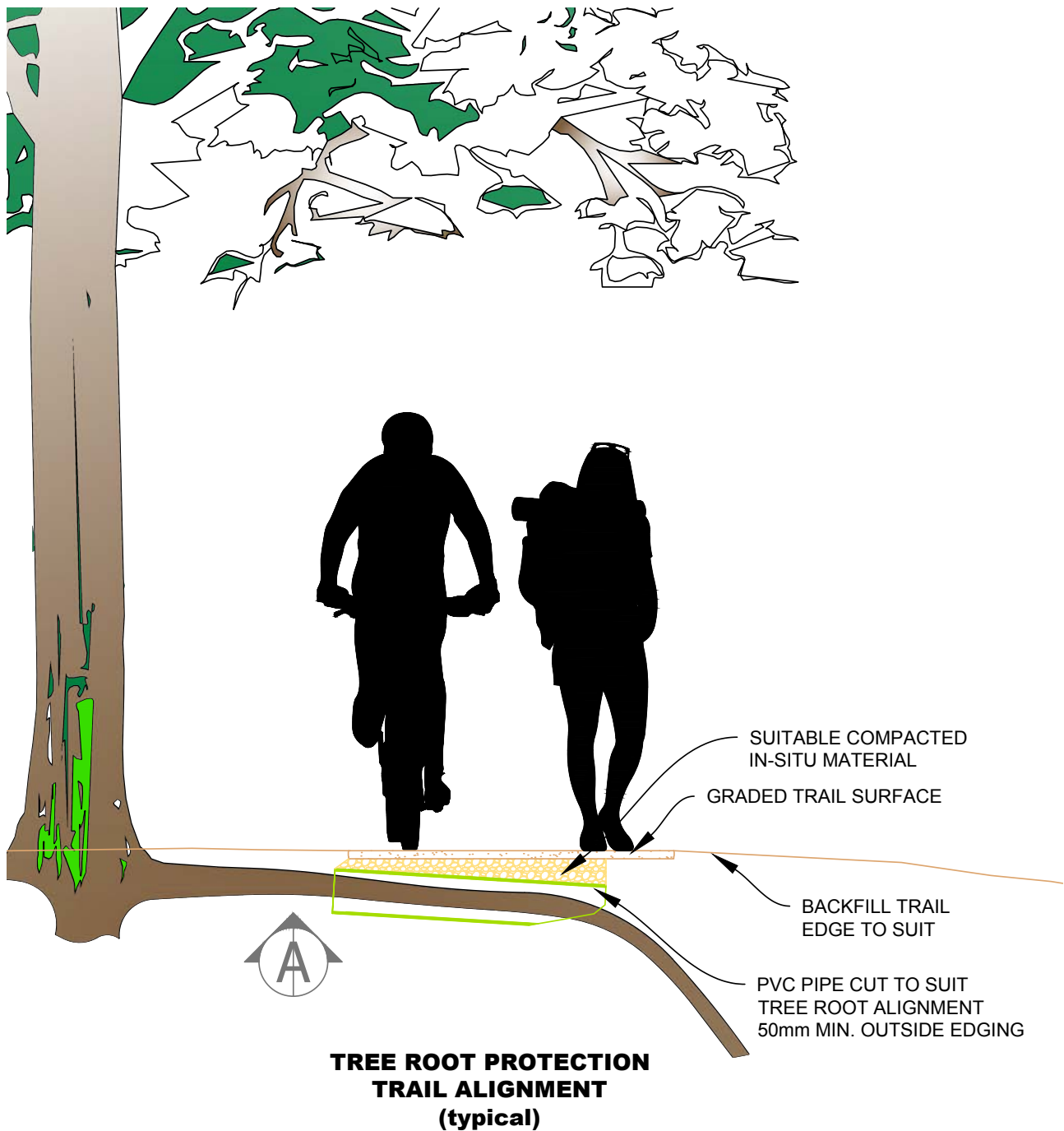
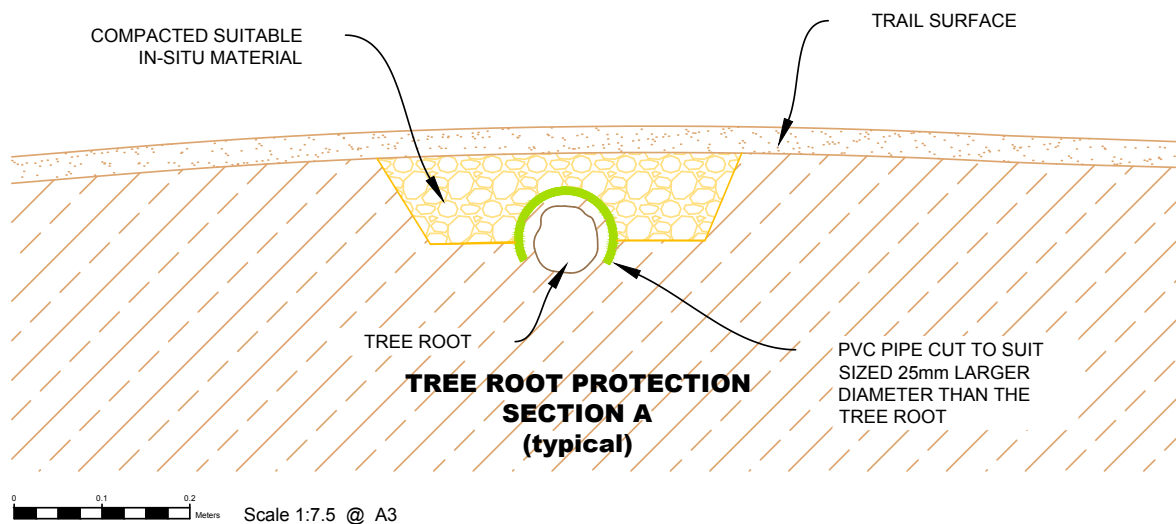


NOTES:

- GENERAL:
- Tree Root Protection is to be used in locations where the trail alignment cannot be redirected to avoid tree roots.
 - The tree root is to be encased in a "cut to suit" section of PVC pipe that has an internal diameter that provides a 25mm minimum clearance from the tree root.
 - The PVC pipe is to extend at least 50mm outside the edge or the trail ride line.
 - The PVC pipe must extend to a location where there can be a minimum of 30mm cover of in-situ material over the top of the pipe and where there can be no contact between trail ride line and the tree root.
 - The in-situ material used around the PVC pipe must be free of stones or vegetative matter and must be suitably graded material to provide a hard compacted surround to the pipe.
 - The in-situ material must be well compacted at the sides of the PVC sleeve to ensure there are no voids that could cause the PVC sleeve to move and wear against the tree root.
 - While this standard drawing provides information on the normal methodology for dealing with unavoidable tree roots, variations may be required for specific plant species or unusual root systems.
 - Dimensions in millimetres unless otherwise notated.

LEGEND:

- GRADED TRAIL SURFACE
- IN-SITU MATERIAL
- NATURAL GROUND

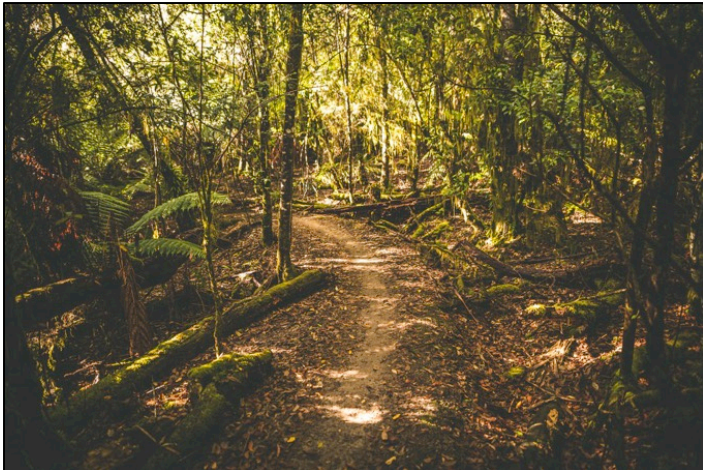



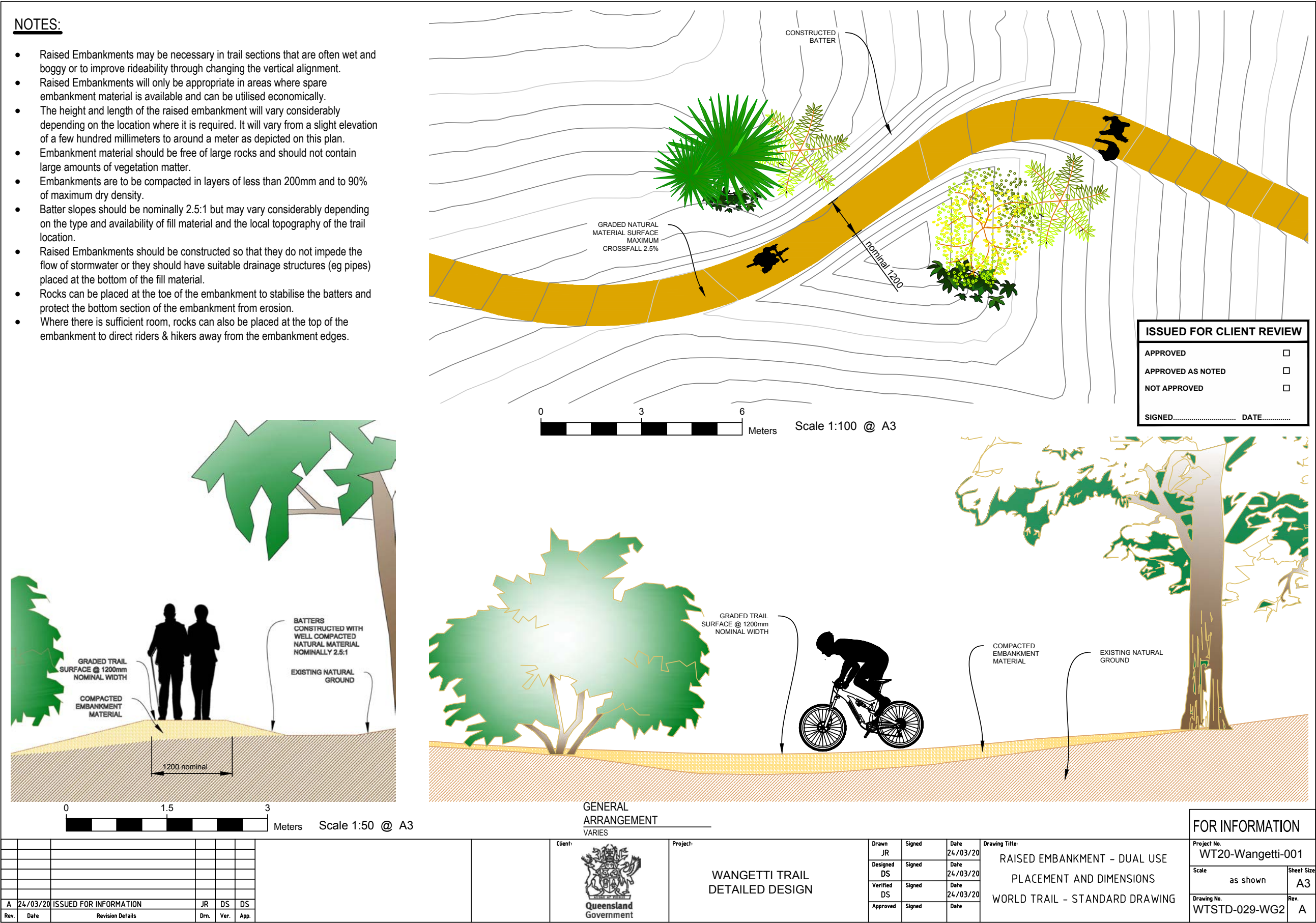
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ARRANGEMENT
SCALE AS SHOWN

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APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED..... DATE.....	

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5.5.5 Raised Embankment

What is it?		<div>Examples</div> <div> </div>
Raised Embankments use extra 'fill' material to build the trail tread up higher. The fill material is usually sourced from another area where there is an excess of material and moved along the trail to where it is required.		
When is it Used?		
<p>Raised Embankments may be necessary in trail sections that are often wet and boggy, or to improve rideability through changing the vertical alignment.</p> <p>Raised Embankments are generally used where the ground surface is not suitable for typical cut and fill benching techniques. Examples include:</p> <ol style="list-style-type: none">1. Areas with soft, boggy ground;2. Areas that are very flat with no/little cross-slope to effect drainage;3. Where additional fill/soil is used to 'ramp' up to a change in level – for example, where a trail is routed up and over a large rock slab.		
Why is it Used?		
It is used to ensure a smooth and consistent surface to the trail, using locally available surplus soil. Care needs to be taken to ensure that the Raised Embankment doesn't become a dam for surface flows.		
Notes		
Raised Embankments should be constructed so that they do not impede the flow of stormwater.		
Rocks can be placed at the toe of the embankment to stabilise the batters and protect the bottom section of the embankment from erosion.		
Borrow pits are not to be used to source material for Raised Embankments.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">• In situ soil.	<ul style="list-style-type: none">• Rubber tracked mini-excavator;• Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.	
Estimated Length of Treatment	Drawing Reference	
Not specified	WTSTD-029-WG2 Raised Embankment – Dual Use Placement and Dimensions	



5.5.6 Sediment Control

What is it?		Examples
Sediment Control is a construction treatment used to prevent the movement of sediment from the constructed trail into the surrounding environment.		
When is it Used?		
It is generally used in the following situations: 1. Below the outlet point of a grade reversal; 2. Below the lower edge of the trail on the approach (approx. 5-10m) to and exit from any permanent waterways.		
Why is it Used?		
Sediment Control is used to catch any sediment carried by water off the constructed trail, into the surrounding environment, thus preventing sediment from accumulating in waterways or smothering vegetation. Sediment movement from trails that are constructed according to sustainable trail guidelines is minimal, and is usually greatest immediately at/after construction, decreasing with time as the trail settles and becomes stabilised.		
Notes		
Fibre Rolls and Silt Fencing both provide adequate sediment control and can be used interchangeably, or as directed by the Land Manager. Sediment Controls should remain in place while the trail until the end of the Trail Curing Period, when the trail is deemed ready to be opened to the public.		
Materials	Machinery / Equipment	
<ul style="list-style-type: none">As per drawings.	<ul style="list-style-type: none">Rubber tracked mini-excavator;Trail building hand tools including rakes, mattocks, rake hoes, leaf rakes, shovels etc.Carpentry and general construction equipment.	
Estimated Length of Treatment	Drawing Reference	
Not specified	WTSTD-040-WG2 Sediment Control – Fibre Rolls Placement and Dimensions WTSTD-041-WG2 Sediment Control – Silt Fence Placement and Dimensions WTSTD-042-WG-2 Sediment Control – Silt Fence Notes Placement and Dimensions	

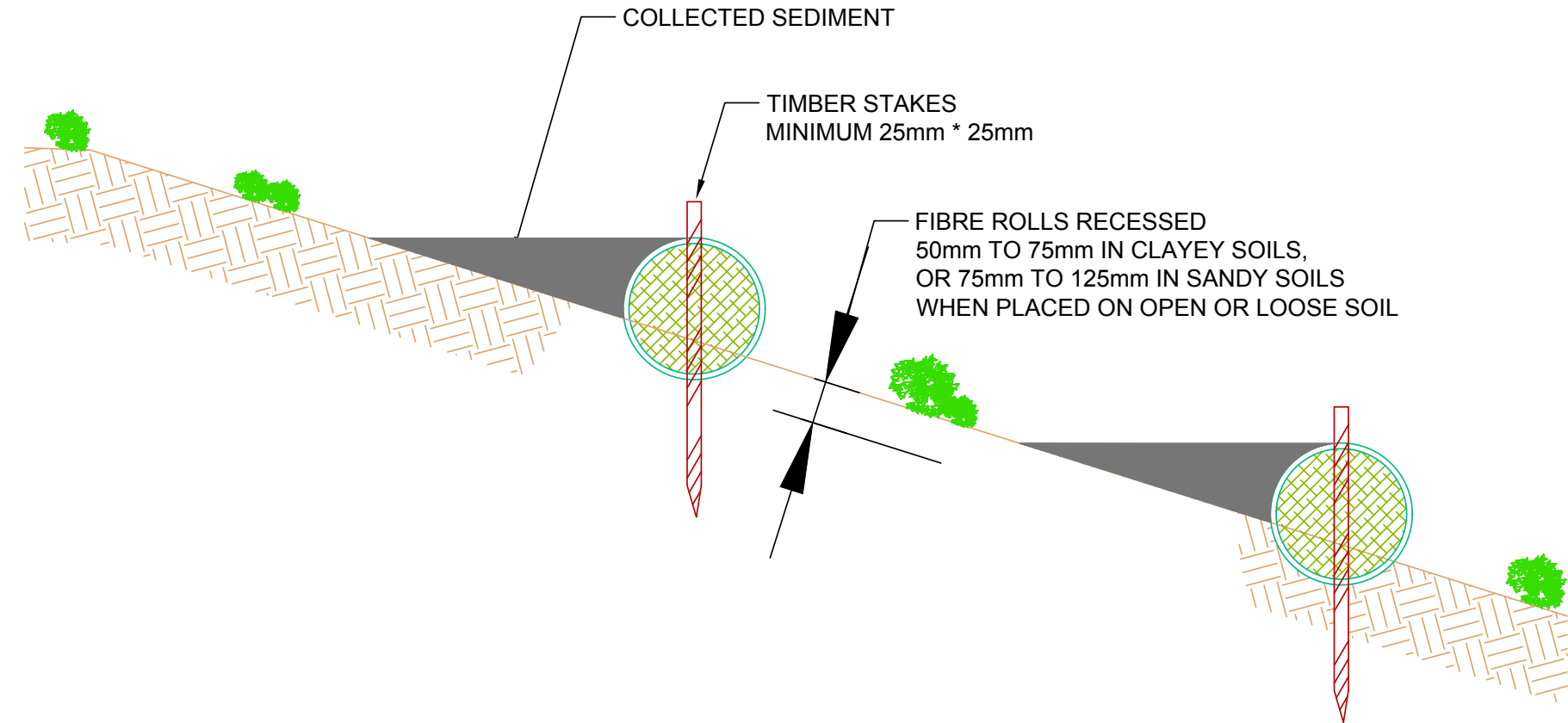


NOTES:

- INSTALLATION:
- Fibre Rolls are typically 200mm to 250mm Jute, Coir or Straw roll tied with synthetic biodegradable mesh.
 - Fibre Rolls are to be installed as described in any project specific, approved plans. Any queries or alterations need to be provided by or approved by the clients engineer or on site representative.
 - The rolls must be placed along the contour when placed across bare or newly seeded slopes.
 - Ensure the outermost ends of a line of Fibre Rolls are turned up the slope to ensure ponding and minimise bypassing.
 - When placed across the invert of minor drains ensure the rolls are spaced such that the crest of a downstream roll is level with or above the invert at the immediately upstream roll.
 - When placed across the invert of minor drains ensure that each roll extends far enough up the banks on each side such that the crest of the roll in the center is lower than the ground height at the ends of the roll.
 - Ensure the anchoring stakes are driven through the end of each roll and at a minimum spacing along the roll of the lesser of 1.2m spacings or 6 times the roll diameter.
 - Stakes must be driven at a minimum spacing of 300mm when the rolls are being used to form a check dam.
 - Adjoining rolls must be overlapped at least 450mm.

- MAINTENANCE:
- All Fibre Rolls must be inspected at a minimum of once per week, always prior to a forecast rainfall event and at daily intervals during extended periods of rainfall.
 - Any damaged or displaced Fibre Rolls must be replaced, relocated or repaired to ensure compliance with installation requirements.
 - Collected sediment should be removed and disposed of in a suitable manner that will not cause erosion or detriment to water quality.

- REMOVAL:
- Fibre Rolls are to be removed from site once they are no longer needed to provide their drainage or sediment control function.
 - All excessive sediment must be removed from behind the rolls and disposed of as above, if it is likely to be washed away.
 - Any biodegradable components of the Fibre Rolls may be suitable to remain on site as mulch.
 - All materials that are not readily biodegradable must be removed from the site.



SECTION VIEW - TYPICAL INSTALLATION OF FIBRE ROLLS

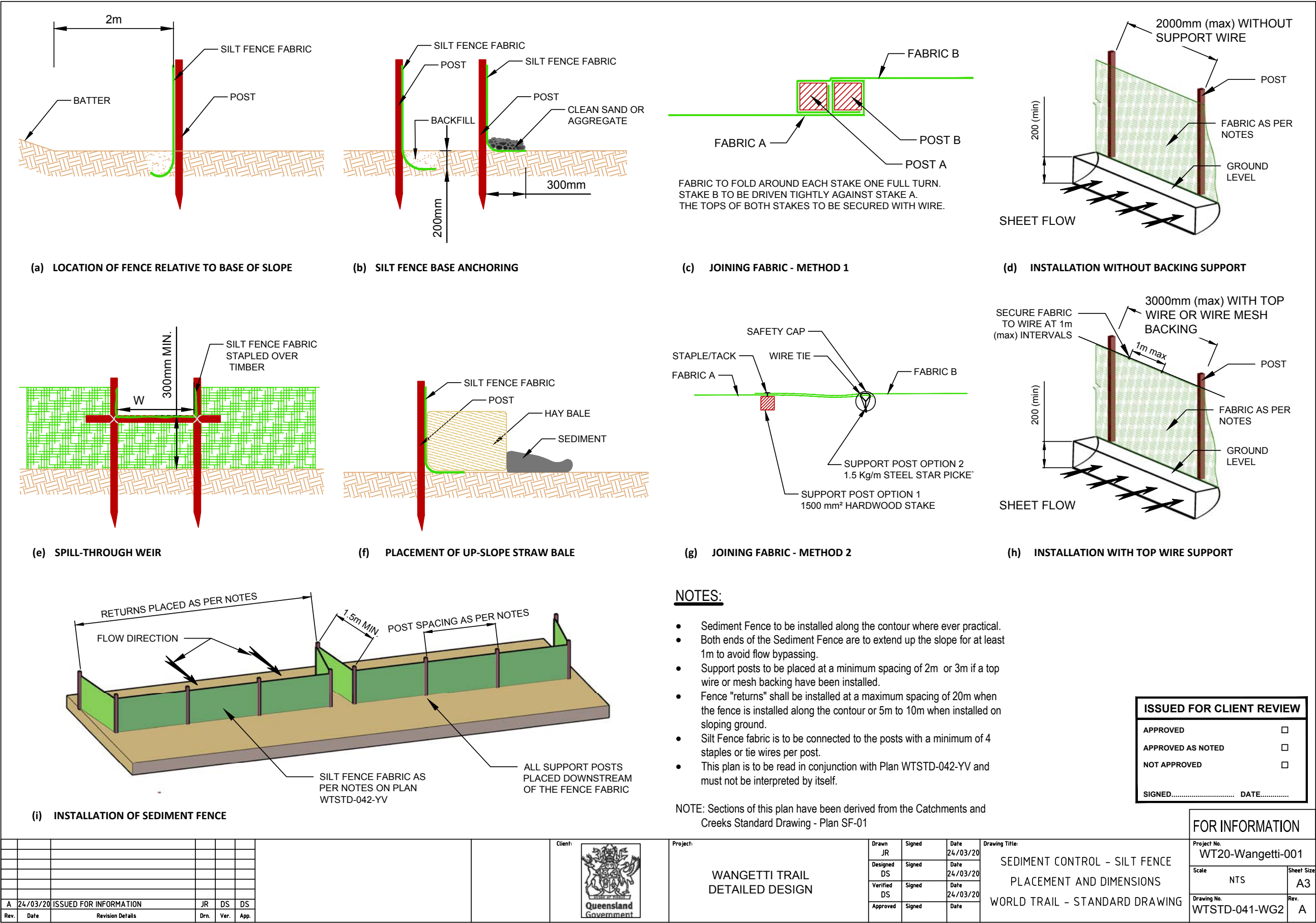
0 0.2 0.4 Meters
Scale 1:10 @ A3

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NOTE: Sections of this plan have been derived from the Catchments and Creeks Standard Drawing - Plan FR-01

GENERAL
ARRANGEMENT
SCALE 1:25

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NOTES:

MATERIALS:

FABRIC:

- Polypropylene. Polyamide, Nylon, Polyester or Polyethylene woven or non-woven fabric at least 700mm in width and 140 gsm.
- All fabrics to contain ultraviolet inhibitors and stabilisers to provide a minimum of 5 months of usable construction life (Ultraviolet Stability exceeding 70%)

FABRIC REINFORCEMENT:

- Wire or steel mesh minimum 14-gauge with a maximum mesh spacing of 200mm.

SUPPORT POSTS/STAKES:

- Hardwood Posts minimum 1500mm²,
- or Softwood Posts minimum 2500mm²,
- or Steel Star Pickets, minimum 1.5 Kg/m, suitable for attaching fabric.

INSTALLATION:

- Silt Fences are to be installed as described in any project specific, approved plans. Silt Fence Fabric should comply with any specifications provided. Any queries or alterations need to be provided by or approved by the clients engineer or on site representative.
- To the maximum degree practical, and where the plans allow, ensure the fence is located:
 - (a) totally within the property boundaries
 - (b) along a line of constant elevation wherever practical
 - (c) at least 2m from the toe of any filling operations that may result in shifting soil/fill damaging the fence.
- Install returns within the fence at maximum 20m intervals if the fence is installed along the contour, or 5m to 10m maximum spacing (depending on slope) if the fence is installed at an angle to the contour. the 'returns' shall consist of either:
 - (a) v-shaped section extending at least 1.5m up the slope; or
 - (b) sandbag or rock/aggregate check dam a minimum 1/3 and maximum 1/2 fence height, and extending at least 1,5m up the slope.
- Ensure the extreme ends of the fence are turned up the slope at least 1.5m, or as necessary, to minimise water bypassing around the fence.
- Ensure the sediment fence is installed in a manner that avoids the concentration of flow along the fence, and the undesirable discharge of water around the ends of the fence.
- If the sediment fence is to be installed along the edge of existing trees, ensure care is taken to protect the trees and their root systems during installation of the fence. do not attach the fabric to the trees.
- Unless directed by the site supervisor or the approved plans, excavate a 200mm wide by 200mm deep trench along the proposed fence line, placing the excavated material on the up-slope side of the trench.

- Along the lower side of the trench, appropriately secure the stakes into the ground spaced no greater than 3m if supported by a top support wire or weir mesh backing, otherwise no greater than 2m.
- If specified, securely attach the support wire or mesh to the up-slope side of the stakes with the mesh extending at least 200mm into the excavated trench. ensure the mesh and fabric is attached to the up-slope side of the stakes even when directing a fence around a corner or sharp change of direction.
- Wherever possible, construct the sediment fence from a continuous roll of fabric. to join fabric either:
 - (a) attach each end to two overlapping stakes with the fabric folding around the associated stake one turn, and with the two stakes tied together with wire; or
 - (b) overlap the fabric to the next adjacent support post.
- Securely attach the fabric to the support posts using 25 x 12.5mm staples, or tie wire at maximum 150mm spacing.
- Securely attach the fabric to the support wire/mesh (if any) at a maximum spacing of 1m.
- Ensure the completed sediment fence is at least 450mm, but not more than 700mm high. if a spill-through weir is installed, ensure the crest of the weir is at least 300mm above ground level.
- Backfill the trench and tamp the fill to firmly anchor the bottom of the fabric and mesh to prevent water from flowing under the fence.

ADDITIONAL REQUIREMENTS FOR THE INSTALLATION OF A SPILL-THROUGH WEIR:

- Locate the spill-through weir such that the weir crest will be lower than the ground level at each end of the fence.
- Ensure the crest of the spill-through weir is at least 300mm above the ground elevation.
- Securely tie a horizontal cross member (weir) to the support posts/ stakes each side of the weir. Cut the fabric down the side of each post and fold the fabric over the cross member and appropriately secure the fabric.
- Install a suitable splash pad and/or chute immediately down-slope of the spill-through weir to control soil erosion and appropriately discharge the concentrated flow passing over the weir.

MAINTENANCE:

- Inspect the sediment fence at least weekly and after any significant rain. Make necessary repairs immediately.
- Repair any torn sections with a continuous piece of fabric from post to post.
- When making repairs, always restore the system to its original configuration unless an amended layout is required or specified.
- If the fence is sagging between stakes, install additional support posts.

- Remove accumulated sediment if the sediment deposit exceeds a depth of 1/3 the height of the fence.
- Dispose of sediment in a suitable manner that will not cause an erosion or pollution hazard.
- Replace the fabric if the service life of the existing fabric exceeds 6-months.

REMOVAL:

- When disturbed areas up-slope of the sediment fence are sufficiently stabilised to restrain erosion, the fence must be removed.
- Remove materials and collected sediment and dispose of in a suitable manner that will not cause an erosion or pollution hazard.
- Rehabilitate/revegetate the disturbed ground as necessary to minimise the erosion hazard.

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NOTE: Sections of this plan have been derived/copied from the Catchments and Creeks Standard Drawing - Plan SF-02

										FOR INFORMATION					
							Client:		Project:	Drawn JR	Signed	Date 24/03/20	Drawing Title: SEDIMENT CONTROL - SILT FENCE NOTES PLACEMENT AND DIMENSIONS WORLD TRAIL - STANDARD DRAWING	Project No. WT20-Wangetti-001	
										Designed DS	Signed	Date 24/03/20		Scale na	Sheet Size A3
										Verified DS	Signed	Date 24/03/20			
										Approved	Signed	Date			
A	24/03/20	ISSUED FOR INFORMATION				JR									Drawing No. WTSTD-042-WG2
Rev.	Date	Revision Details				Drn.	Ver.	App.							

6 MATERIALS

The previous section detailed the various different Construction Treatments, and listed the materials required for that treatment. This section provides some further guidance and comments around the sourcing and use of those materials.

The main materials proposed to construct the majority of the Wangetti Trail are naturally occurring in situ materials – mainly, soil and rock (including large rocks [boulders]), small rocks and rock slabs). Priority is always given to sourcing material from within the trail alignment and surrounding area, ensuring minimal disturbance to the environment.

Soil

The proposed finished surface or wearing course for the majority of the Wangetti Trail is the natural soil – that is, the in situ mineral earth soil already in place beneath the vegetation, leaf litter and organic topsoil. This is true for both standard and hand-built trail construction. Where extra soil is required, for example, to build up over a low depression or to fill in between roots or to rake into the cracks between rock armouring, it can usually be sourced from the balanced cut and fill process used to create the bench which becomes the finished trail. While overall the cut and fill process is balanced, locally, soil may be moved up or down the trail, to manage local excesses or deficiencies.

If sufficient soil is not available in situ, it may be necessary to import soil, with agreement from the land manager. This scenario is seen as unlikely and difficult to achieve, given the large volume of materials that would be required and the remote setting of the trail.

Where imported soil is required, preference must be given to local, approved suppliers. Imported material must be free of weeds and pathogens. All material brought onto site must be accompanied by a certificate indicating that it is free of *Phytophthora* and weed species, unless the source has been agreed to by the TDPD Project Manager.

The use of ‘borrow pits’ to source extra soil is not permitted.

Aggregate/Fine Crushed Rock

In some instances, trails can be surfaced with imported materials like fine crushed rock. This is generally done in high traffic areas (e.g. campsites) or areas requiring additional materials for structural or drainage purposes.

While the application of imported materials as a wearing course is not proposed to be widespread on the Wangetti Trail, it is specified in at least one Construction Treatment (Ballast Surfacing).

Preference must be given to local, approved suppliers and agreement from the land manager will be required. The imported material must be free of weeds and pathogens. All material brought onto site must be accompanied by a certificate indicating that it is free of *Phytophthora* and weed species, unless the source has been agreed to by the TDPD Project Manager.

Rock

Rock, including small rock and large rock (boulders), will be used for the construction of rock water crossings, rock armouring, retaining walls, rock walling and to corral and anchor steps.

Priority must always be given to rock sourced from within the track alignment or from the surrounding area in the first instance, rather than importing rock from outside.

All rock material used for these construction treatments must be of an appropriate shape, texture and colour to match the native rock and must provide a natural appearance relative to its location.

The intention is for all constructed rockwork to 'disappear' within the surrounding natural landscape. Where possible, constructed rockwork will tie back into existing site features.

Harvesting of rock will be undertaken in a manner which minimises disturbance to the surrounding natural environment and does not present an obvious visual intrusion or disturbance to the landscape. Harvesting of rock will be only in the quantities required to fully complete the works. Over-harvesting will not be permitted. Rock will be harvested in a sequential manner to the construction works, thereby minimising stockpiles of material. Where rock awaiting use is stored, it must pose minimal disturbance to the environment. The ideal scenario is that all rock used for construction purposes is surplus rock removed during the construction of the bench.

Where local in situ rock is not available, it may be necessary to import rock for construction of features. This scenario is seen as very unlikely, and would be difficult to achieve given the large volume of materials that would be required. Imported rock must be free of weeds and pathogens. All material will be brought onto site accompanied by a certificate indicating that it is free of *Phytophthora* and weed species, unless the source has been agreed to by the TDPD Project Manager.

Constructed slope stabilisation such as rock gabions are not specified along the Wangetti Trail. Rock walling/retaining walls are proposed.

When used in the construction of rock water crossings, boulders must be large enough to resist movement in high water flow. No imported materials are to be used in the construction of rock water crossings.

If insufficient suitable sized rock is available, large boulders may be split.

Concrete

Concrete will be used for the construction of retaining walls, pre-cast concrete steps and foundations for built structures such as bridges and boardwalks.

Where concrete is required, it must be of a style and colour that is sympathetic to the local environment.

Materials for Built Structures

Built structures require numerous imported materials (such as concrete, timber, steel, aluminium, FRP etc.). These imported materials must complement the look and style of the Wangetti Trail, must be durable and functional for their purpose and should ideally come from a local source.

7 PROCEDURES

7.1 CONSTRUCTION INDUCTION

At the commencement of construction, all staff members will be required to attend a Construction Induction.

Key items to be covered in the Construction Induction include (but are not limited to):

- Project Location, including staging areas, access roads, stockpile locations, emergency evacuation points etc.;
- Project Scope of Works, including desired outcome of the project, construction program, key milestones, completion etc.;
- Construction Specifications – i.e. this document;
- Project Management protocols around reporting, procedures to follow if there are issues with construction works or the design, variations, etc.;
- Construction Environmental Management Plan;
- Work Health and Safety Management Plan;
- Visitor risk management protocols to minimise the risk of visitors using the trail while it is under construction;
- Hygiene protocols to ensure any machinery or tools are free from contaminated soil, weeds or seeds;
- Cultural heritage protection protocols including Aboriginal heritage site stop-work instructions;
- Proposed materials.

Ideally, representatives from TDPD, WTMA, QPWS, Traditional Owners, Douglas Shire Council, Cairns Regional Council and Mareeba Shire Council will be present at the induction and may choose to include organisation-specific induction material. Individual land managers or regulatory agencies may choose to provide their own Construction Induction, in line with their own internal requirements.

At the completion of the Construction Induction, all staff members will be required to sign an attendance form indicating their presence and understanding of the information discussed.

Any new staff members arriving throughout the duration of the project will be required to undertake a shortened Construction Induction with the Contractor's Project Manager.

7.2 PRE-START TRAIL REVIEW

At the commencement of the construction of the Wangetti Trail, the entire trail should be broken into Construction Segments. These Construction Segments may correspond to the sections shown in Map 1 and Map 2 (on pages 4 and 5) or may be determined based on the preferred staging approach undertaken by the TDPD Project Manager, or land tenures, or some other variable. The purpose of creating Construction Segments is to break the project into smaller components, for ease of inspections, reporting, invoicing, practical completion and staged opening.

Before starting the construction of a Construction Segment, a Pre-Start Trail Review (PSTR) must be undertaken.

The purpose of the PSTR is to review and inspect the proposed alignment of the trail with the TDPD Project Manager, prior to construction starting, to confirm the exact alignment within the ground-truthed corridor¹, identify any specific environmental values to be protected and to discuss and agree on specific construction treatments.

The following personnel will be required to attend the PSTR:

- TDPD Project Manager;
- Contractor's Project Manager;
- Contractor's Trail Designer/Builder for that Construction Segment.

A representative of the respective land manager(s) (QPWS, WTMA, Douglas Shire Council, Cairns Regional Council and Mareeba Shire Council and the Traditional Owners) should be invited to attend the PSTR.

Other personnel may also be required – for example, if the trail is in close proximity to areas of high environmental values, qualified environmental specialists should be present to provide assistance in micro-siting the trail to avoid impacts to these values. In areas of high cultural heritage values, qualified archaeologists and/or Traditional Owners should be present.

Where the Construction Segment is very long, shorter agreed sub-segments may be used, or the PSTR may be staged over multiple days.

Prior to commencing the PSTR, known information about the Construction Segment should be gathered and assessed – length, proposed difficulty rating, likely construction treatments, known water-crossings and any environmental issues that have been identified. During the field component of the PSTR, any changes to the alignment, treatment or other issues that are identified must be documented accordingly along with maps, GPS coordinates, photos and sketches as required. This process could also be used to identify and document agreed likely variation items such as rock armouring.

¹ The ground-truthed corridor is defined as the flagged (where flagging tape is in place), GPS'd centre line, plus the agreed buffer of 20m to either side (i.e. a total corridor width of 40m). Where flagging tape is missing or sporadic, the GPS alignment can be used.

Where there is a known environmental issue (identified by WTMA or other reports) specific to the trail, the following protocol would apply:

- WTMA would be contacted prior to the field inspection for specific recommendations and invited to attend if required (for example, micro-siting to avoid threatened flora sites);
- During the field inspection, the scope of the environmental issue would be visually identified and then marked in the field as an exclusion zone (using different coloured flagging tape or bunting). The exact alignment of the trail to be constructed would be flagged in the field, ensuring an adequate buffer from the exclusion zone;
- Detailed documentation will be gathered, including photographs showing the pre-existing conditions on site before any works are undertaken. This allows for post-construction photos to be taken, which will enable before/after comparison.

On completion of the PSTR, the contractor will be required to record the outcomes. Specifically, they must document any proposed variations, any protection measures for areas of environmental or cultural heritage sensitivity, any changes to the alignment, or any other issues/decisions made during the PSTR. Documentation should include photos and specific GPS coordinates and should be signed by all attendees. A copy of the completed and signed PSTR report form must be provided to the TDPD Project Manager.

7.3 TEMPORARY CAMPSITES

Due to the remoteness of the trail, and the time taken to travel in and out to the work site, there may be occurrences when it is more cost and time effective for the trail builders to camp overnight. This would be at the discretion of the contractor, but may require some preparation ahead of time in order to obtain approvals.

If a contractor wishes to camp overnight, the following steps are to be taken to identify a temporary campsite location and obtain approval:

- Identify potential temporary campsite location. Look for locations with harder ground or sandier soils. Avoid low or poorly drained areas where soil or vegetation may be easily damaged. Consider whether mobile phone reception is available and/or necessary. Locations with nearby vehicle access and/or public amenities to be given priority;
- Notify/request approval from TDPD Project Manager and relevant land manager with following details:
 - Location of proposed temporary campsite;
 - Number of people/tents proposed to occupy temporary campsite;
 - Length of proposed duration of use of temporary campsite.

Once a temporary campsite is approved by the TDPD Project Manager and relevant land manager the following must be adhered to:

- Do not pitch tent underneath any loose, dead or overhanging tree limbs;
- Do not remove, or damage, any vegetation;
- No fires;
- Carry all rubbish out;
- Bury human waste at least 100m from streams and at least 15cm deep, or carry it out;
- Respect wildlife;
- No chainsaw use;
- Water:
 - Carry in enough water for the duration of the stay at the temporary campsite;
 - If unable to carry enough, collect water from streams and always boil for at least 5 minutes before drinking or use treatment tablets, a filter or UV treatment;
 - Wash at least 100m away from watercourses and scatter wash water.

On completion of use of temporary campsite, the following steps are to be taken:

- Take time to naturalise the site by covering scuffed areas with native materials (such as fallen leaves), brushing/raking out matted areas. This will help the site recover and also make it less obvious as a campsite;
- Compacted area is to be de-compacted to encourage regrowth;
- Scarification is to be perpendicular to the slope to reduce soil erosion. Logs, leaf litter and vegetation material are to be randomly spread over the site. On completion, the closed site must appear unusable to park visitors to discourage continued use.
- Carry out all rubbish;
- Any infrastructure/equipment brought in by the Contractor must be removed on completion;
- Advise TDPD Project Manager and relevant land manager the temporary campsite is no longer in use.

7.4 TRAIL COMPLETION PROCEDURE

Upon completion of a trail or Construction Segment, the following should occur:

- Remove all flagging tape that may still be visible;
- Removal any rubbish or construction debris;
- Remove all construction equipment and machinery;
- Leave in place any sediment control measures for a duration as agreed and determined by the TDPD Project Manager. As a minimum, sediment control measures should be retained until the Trail Curing Period has finished and the trail or Construction Segment is deemed ready to be opened to the public;
- Trim any tree branches that may protrude into the riding or walking corridor;
- Trim or remove any sharp tree stumps within the fall zone adjacent to the trail;
- Check that any imported surfacing materials or raised embankments have been compacted to a suitable level;
- Check that all rock work is stable and secure;
- Check that the trail is draining as intended – i.e. no puddling of water anywhere on the trail, all grade reversals have a clear outlet and are draining effectively with no blockages, that any outsloped sections of trail have the appropriate gradients and there are no blockages along the lower edge;
- If excavators and other plant/machinery are being relocated to another project or a different area, they are to be washed down at a commercial washdown facility or washdown facility at QPWS works depot.

Typically, at this stage, the contractor would arrange a walk-through inspection with the TDPD Project Manager, seeking Practical Completion for that trail or Construction Segment. Once Practical Completion has been achieved, the Trail Curing Period should commence.

Upon achieving practical completion, the trail or Construction Segment should remain closed for a period of 4-12 weeks (depending on weather, time of year and other variables) to allow for 'curing' of the trail surface. Signage and fencing should remain in place to restrict members of the public from accessing the trail during this time.

At the end of the Trail Curing Period, the trail will be ready for opening to the public. In the days just prior to opening the trail, a trail clean-up will be required. During the trail clean-up, the following activities are typically undertaken:

- Any large trees or branches that have fallen across the trail are removed;
- Leaves and other debris is removed – leaf blowers or grass rakes are ideal for this purpose;
- Removal of sediment control measures;
- Removal of any construction signage or fencing;
- Pruning of vegetation as required;
- Minor works to ensure the trail is draining as intended;
- Minor works to ensure no loose or uncompacted soil within the main trail tread.

Trail Completion Procedures may also have contractual implications. The procedure listed above relates to trail works, but DITD may put in place specific requirements around Practical Completion, a specified Defects Liability Period, the provision of 'As Constructed' drawings and the provision of specific reporting outputs against environmental or cultural heritage issues.

7.5 EMERGENCY PROCEDURES

Emergency procedures will vary depending on the nature of the incident.

The TDPD Project Manager will be verbally notified of any emergency incident within 2 hours of the Contractor's Project Manager becoming aware of the incident, and in writing within 24 hours. All notifications to the following authorities will be undertaken by TDPD:

- DITID;
- Department of Environment and Services / QPWS;
- State emergency services (Police / Fire / Ambulance / SES)
- Department of Transport and Main Roads (if necessary/proximal to Captain Cook Highway).

The Contractor will be required to provide an Emergency Response Plan and for this plan to be thoroughly communicated to all staff members in the Construction Induction. The Emergency Response Plan should identify evacuation routes, mustering points, communication protocols and provide key contact details for local authorities and services. It should be compatible with the internal emergency response protocols of the various land managers.

Environmental incidents and emergencies will be identified within individual environmental risk management plans. However, pro-active environmental risk management measures should be undertaken wherever possible, if events such as extreme rainfall or flooding are forecast.

When reporting environmental incidents to TDPD, the following information is to be provided:

- The name and contact details of the reporting person;
- The date and time the environmental incident occurred;
- The activity that was being undertaken when the incident occurred;
- How the incident occurred;
- Any containment measures put in place to reduce or contain environmental harm;
- An assessment of the amount of environmental harm that occurred;
- If any other stakeholders are aware of the incident.

7.6 HELICOPTER PROTOCOLS

Frequent helicopter usage will be critical for the timely and efficient construction of the Wangetti Trail. The main applications for helicopters include:

- Delivery of materials – while much of the Wangetti Trail will be constructed without imported materials, some of the Construction Treatments require imported materials. For example, minor water crossings and pre-cast concrete steps. Given the remote and difficult nature of the terrain, the only way of transporting materials for these Construction Treatments is by vehicle to the closest possible access road, then by hand/power carrier along the trail, or by helicopter;
- Air lifting mini-excavators across impassable terrain – from time to time, the trail crosses sections of terrain that are not safe for the passage of a mini-excavator. These areas include steep-sided rocky gullies where bridges have been specified (note – bridges will not be engineered to allow passage of a mini-excavator [approx. 1.7T]), or large expanses of steep side-sloping rock slabs. In some instances, it may be possible to track the mini-excavator back out along the finished track, transport it by road to another access point further along the trail and commence working backwards until reaching the other side of the impassable terrain. In other instances, the mini-excavator may be able to track around the impassable terrain, with minimal impact or risk. However, it is envisaged that there will be frequent impassable sections where there is no alternative other than to airlift the mini-excavator.

In order to maximise the efficient operation of helicopters and minimise costs, helicopter operations should be carefully controlled, and clustered into half or full day blocks. Ideally, helicopter operations would be scheduled to occur on a recurring fortnightly/monthly basis (as required), with operations organised in advance. Works requiring a helicopter would then be identified in advance and allocated to the next upcoming helicopter operations day. Deliveries of materials to staging areas could be scheduled to minimise time in storage and double handling. This also allows for clear flight plans to be prepared, identifying materials and drop locations, along with GPS coordinates.

A permit will be required to fly a helicopter below 1000m in the World Heritage Area. Low flying has the potential to compromise certain World Heritage values, such as the wilderness qualities of certain areas. For this reason, flying an aircraft for commercial purposes in the World Heritage Area less than 1000 feet above the ground level is prohibited. However, the Authority may issue a Permit under the Wet Tropics Management Plan in special circumstances, such as these.

The Contractor will need to work with the TDPD Project Manager to coordinate the use of helicopters and ensure all permits and approvals are obtained prior to operations commencing.

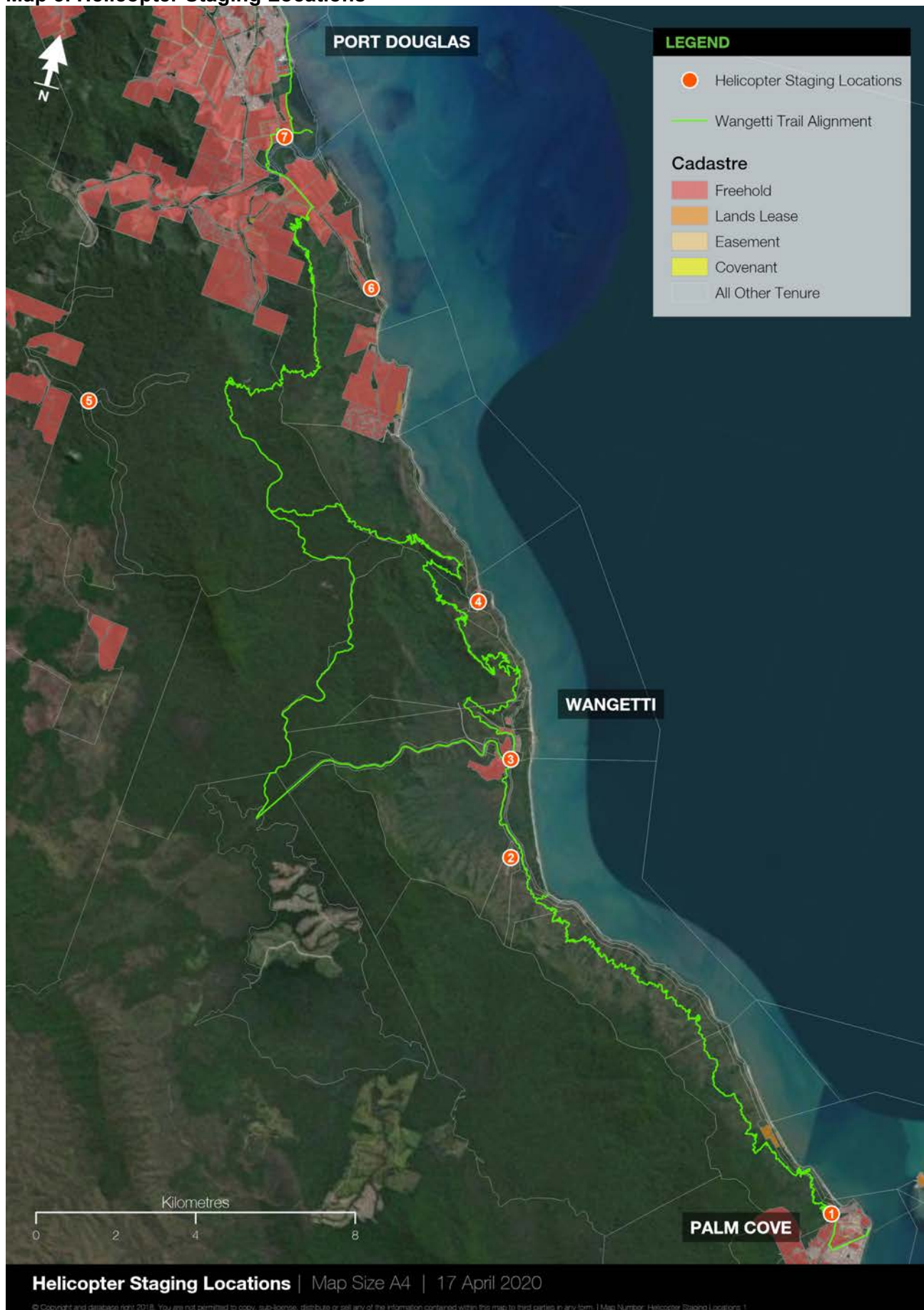
Nine separate Helicopter Staging Locations have been identified - see

Table 4. Helicopter Staging Area Locations below.

Map 3 on the following page shows their locations.

Table 4. Helicopter Staging Area Locations

Name	Location	GPS Coordinates	Comments
Location 1	SES Depot - Off Captain Cook Highway	Lat: -16.73889453, Long: 145.66242376	Provides safe access for truck deliveries and has adequate room for helicopter staging activities.
Location 2	Rifle Range – Off Captain Cook Highway	Lat: -16.68258754, Long: 145.57192468	Provides safe access for truck deliveries and has adequate room for helicopter staging activities. Permission would need to be gained from relevant Australian Defence Force department as this location is still an active range for parts of the year.
Location 3	Off Captain Cook Highway	Lat: -16.66210901, Long: 145.56612575	A cleared parcel of land adjacent to the Captain Cook Highway provides safe access for truck deliveries and has adequate room for helicopter staging activities.
Location 4	Off Captain Cook Highway	Lat: -16.63104893, Long: 145.54990777	Located close to Turtle Cove, this location can be used as a helicopter staging location. Access to this location would be limited to 4x4 utility vehicles.
Location 5	Twin Bridges Road	Lat: -16.61092623, Long: 145.45351588	Located on Twin Bridges road this location provides safe access for truck deliveries and has adequate room for helicopter staging activities. The road would need to be closed to the public if helicopter activities were undertaken at this location.
Location 6	Off Captain Cook Highway	Lat: -16.57169983, Long: 145.50838583	Located close to Yule Point, this location can be used as a helicopter staging location. Access to this location would be limited to 4x4 utility vehicles.
Location 7	Andreassen Road – Off Captain Cook Highway	Lat: -16.54516221, Long: 145.48039967	Located on the North side of the Mowbray River, this location provides safe access for truck deliveries and has adequate room for helicopter staging activities

Map 3. Helicopter Staging Locations

7.7 SITE ACCESS

Construction of the Wangetti Trail will most likely occur in multiple locations with multiple teams operating simultaneously. The Work Site for each team is generally defined as the location at which the rubber tracked mini-excavator is located, plus 50-100m ahead of the machine where vegetation clearing is being undertaken, plus 50-100m behind the machine where trail finishing works (rock armouring, drainage, trail clean-up etc.) are being undertaken. The Work Site is constantly moving, progressing forward in a linear fashion along the trail.

Day to day access to each work site for each particular team will be as follows:

- Construction vehicles will travel as close as possible to the work site using the approved access tracks. Construction vehicles to be parked in a suitable location along the access track, as close as possible to the intersection with the alignment of the Wangetti Trail. Vehicles must not be parked off-track but must also not be parked so as to obstruct the track;
- Construction personnel will walk along the completed section of trail to reach the work site. The use of mountain bikes (MTBs), electronic mountain bikes (eMTBs) or suitable motorbikes (e.g. farm or 'ag' bikes) to access the site is also acceptable, especially where the distance from the vehicles to the work site is large, or where construction personnel need to carry in fuel or water. The use of the completed trail for access to the work site provides a number of benefits:
 - Assists in compaction and 'curing' of the trail;
 - Prevents unnecessary impacts on vegetation caused by construction personnel travelling 'off-track' to and from their work site;
 - It is the safest way to access the work site;
 - Construction personnel are able to check the condition of the finished sections of the trail twice daily (start and end). If any issues or problems are identified, they can be easily rectified.

Points at which the Wangetti Trail crosses any vehicle tracks (whether they are open to the public or not) are the most likely potential ingress points for members of the public. Exclusion fencing (generally orange para-webbing, extending into the bush for 5-10m either side of the trail) and signage need to be erected at these points to discourage members of the public from accessing the trail prior to it being opened.

Map 4. Access Track Locations - South

Map 5. Access Track Locations - North

7.8 STOCKPILE LOCATIONS

The majority of the Wangetti Trail will be constructed using natural in-situ materials only – rock and soil predominantly. However, imported materials will be required from time to time and may need to be stockpiled temporarily.

Scheduling for any deliveries should be managed to minimise the length of time that stockpiles are required – i.e. deliver the materials as close as possible to the time at which it is required.

Table 5. Construction Materials Stockpile Summary

Construction Treatment	Materials Required	Location of Treatment	Importation Method	Stockpile Locations
Rock Armouring	<ul style="list-style-type: none"> Rock (can be in situ or imported, subject to land manager requirements). 	<ul style="list-style-type: none"> Multiple locations across all segments of the trail; Many in remote locations on steep hillsides and gullies. 	<ul style="list-style-type: none"> In situ rock to be sourced locally and moved to site along the constructed trail using power carrier. 	<ul style="list-style-type: none"> Stockpiled on the completed trail adjacent to the site of the Rock Armouring.
Rock Walling (Up To 500mm)	<ul style="list-style-type: none"> Rock (can be in situ or imported, subject to land manager requirements). 	<ul style="list-style-type: none"> Multiple locations across all segments of the trail; Many in remote locations on steep hillsides and gullies. 	<ul style="list-style-type: none"> In situ rock to be sourced locally and moved to site along the constructed trail using power carrier. 	<ul style="list-style-type: none"> Stockpiled on the completed trail adjacent to the site of the Rock Walling (Up To 500mm).
Retaining Walls (Up To 1000mm)	<ul style="list-style-type: none"> Rock (can be in situ or imported, subject to land manager requirements); Concrete; Mortar; Geofabric; Drainage materials as per drawing. 	<ul style="list-style-type: none"> Multiple locations across all segments of the trail; Many in remote locations on steep hillsides and gullies. 	<ul style="list-style-type: none"> In situ rock to be sourced locally and moved to site along the constructed trail using power carrier; All other materials to be imported, either manually along the constructed trail, or by helicopter, depending on quantity and remoteness. 	<ul style="list-style-type: none"> Stockpiled on the completed trail adjacent to the site of the Retaining Wall (Up To 1000mm).
Ballast Surfacing	<ul style="list-style-type: none"> Ballast rock for base course; Fine crushed rock for wearing course; Geofabric. 	<ul style="list-style-type: none"> Mainly in low-lying areas; Main location to the immediate south of Wangetti township. 	<ul style="list-style-type: none"> Ballast rock for base course and fine crushed rock for wearing course to be imported using trucks and machinery. 	<ul style="list-style-type: none"> To be determined upon construction, but ideally materials will be dropped on the vehicle track exactly at the required locations and spread immediately.

Construction Treatment	Materials Required	Location of Treatment	Importation Method	Stockpile Locations
Pre Cast Concrete Steps	<ul style="list-style-type: none"> Pre-cast concrete steps (available in different sizes); Concrete for foundation of base step; Road base for foundation of mid-flight steps; Mortar; Large rocks as corrals and anchors to sides of flight of steps. 	<ul style="list-style-type: none"> Generally in difficult, steep elevated terrain. 	<ul style="list-style-type: none"> All materials will likely need to be imported by helicopter, given remote and difficult setting. 	<ul style="list-style-type: none"> Stockpiled on the completed trail adjacent/ below the site of the Steps (Pre Cast Steps)
Natural Rock Seats	<ul style="list-style-type: none"> Rock (can be in situ or imported, subject to land manager requirements); Concrete; Mortar; Geofabric; Drainage materials as per drawing. 	<ul style="list-style-type: none"> Multiple locations across all segments of the trail; Generally in locations with good views. 	<ul style="list-style-type: none"> In situ rock to be sourced locally and moved to site along the constructed trail using power carrier; All other materials to be imported, either manually along the constructed trail, or by helicopter, depending on quantity and remoteness. 	<ul style="list-style-type: none"> Stockpiled on the completed trail adjacent to the site of the Trail Furniture (Stone Seats).
Minor Water Crossing	<ul style="list-style-type: none"> Subject to final design, but likely to include: Decking materials – timber, steel mesh, FRP etc.; Framing materials – timber, steel, FRP etc.; Concrete for footings; Fixings. 	<ul style="list-style-type: none"> Multiple locations across all segments of the trail; Many in remote locations on steep hillsides and gullies. 	<ul style="list-style-type: none"> Manually carried in along the completed trail; Lifted in by helicopter. 	<ul style="list-style-type: none"> Stockpiled on the completed trail adjacent to the site of the Minor Water Crossing.
Major Water Crossing	<ul style="list-style-type: none"> Subject to final design 	<ul style="list-style-type: none"> Crossing of Hartley's Creek, upstream of Wangetti township. 	<ul style="list-style-type: none"> All materials to be imported using trucks and machinery, along nearby access route. 	<ul style="list-style-type: none"> To be determined.

There are a number of different stockpile types/scenarios to consider:

1. Major stockpiles at staging areas – given the size of the project, the Contractor will need to set up their own secure staging area/s. These staging areas will likely need fencing, containers for storage of equipment, a site office, toilet facilities, power and water, car parking and a clearly defined and designated stockpile area that is truck accessible. The staging area should also have a large cleared space, from which any helicopter lifting operations can take place. Given the large area covered by the Wangetti Trail it is recommended that staging areas be identified at three different locations – south/Palm Cove, mid/Wangetti and north/Mowbray. Depending on project scheduling, these different staging areas wouldn't all need to be operational at the same time. The Contractor will need to work with the TDPD Project Manager to identify suitable locations for these three staging areas;
2. Truck accessible stockpiles – truck accessible stockpiles can be placed at locations where the Wangetti Trail crosses over a vehicle access track that is suitable for 2WD truck access. Given the majority of the access roads throughout the area are probably not suitable for 2WD truck access, the number of these stockpile locations is very limited. These stockpile locations are likely to be located in areas where the trail comes down to lower altitude, for example, closer to the Captain Cook Highway;
3. 4WD accessible stockpiles – 4WD accessible stockpiles can be placed at locations where the Wangetti Trail crosses over a vehicle access track that is suitable for 4WD vehicle access. Given the majority of the access roads throughout the area are more suited to 4WD, the number of these stockpile locations is greater, but they are of limited value as standard 4WD vehicles have limited capabilities for delivery of bulky materials;
4. Helicopter drop-off locations – during ground-truthing fieldwork, clearings were identified as having potential as helicopter drop-off locations were recorded. These helicopter drop-off locations are generally located close to the trail, but should be reviewed by the Contractor for usefulness. While some may appear close to the trail, if they are located steeply downhill from the trail or with dense vegetation between, they may not have much value for material delivery. The ideal scenario is for any materials being delivered by helicopter to be dropped as close as possible to their required location, preferably on a section of completed trail.

Upon commencement, it is recommended that the Contractor review all access roads in the area to determine their suitability for vehicle access and delivery of materials.

As a general rule, no spoil will be required to be stockpiled. The construction of the trail is a balanced cut to fill methodology, requiring no spoil to be stockpiled or removed from site. Any stockpiling that occurs is temporary and very minor in nature and would be undertaken by stockpiling on the cut bench of the trail.

No waste will need to be stockpiled. Generally speaking, there is minimal waste produced during trail construction. Trail builders are responsible for removing all of their own personal waste daily. Construction of structures such as bridges or boardwalks can generate small amounts of waste that need to be removed, but this should ideally be limited through sound design and fabrication processes, so as to limit bringing in surplus or unnecessary materials in the first place.

Stockpiles should not be placed on native vegetation. Ideally, stockpiles are to be located in previously cleared areas, such as on road verges or cleared, completed sections of trail. If this is not possible, the placement of a plastic tarp may be necessary beneath the stockpile. Any stockpiles of soil or fine crushed rock or similar will require the use of sediment control measures to be put in place.

Camp sites – the construction and operation of the campsites will require vehicle access in most cases. While the clearing of vegetation for the campsites should be limited to the smallest possible footprint around the various pieces of infrastructure (i.e. walkways, tent pads, common area/shelter, toilets etc.), a small staging area will need to be cleared for construction purposes. This staging area would be the stockpiling location for all materials required for the construction of the campsites.

8 GLOSSARY OF TERMS

Term	Definition
Australian Standards (AS)	Voluntary documents that set out specifications, procedures and guidelines that aim to ensure products, services and systems are safe, consistent and reliable.
Australian Walking Track Grading Systems (AWTGS)	System used to grade walking trails on a difficulty scale from grades one to five, operating at two distinct tiers: <ol style="list-style-type: none"> 1. Technical grading determined by land manager using set of technical questions based on the AS 2156.1-2001 Walking Tracks – Classification and Signage; 2. Plain English language description to describe the walk to the public.
Bill of Quantities	Detailed statement of work, dimensions and other details for construction of a trail.
Cairns Shire Council	Local Government Authority for Cairns Shire and land manager for some sections of the Wangetti Trail.
Conceptual Design	Plan developed by specialist trail planners based on outcomes of site assessment and discussions, used to illustrate what the trail may look like, address key strategic priorities and provide high-level cost estimates for construction.
Construction Corridor	Total footprint of impact of construction of the trail. Extends from the top of the upslope batter to the toe of the downslope batter and generally has a height of 2 metre from the ground surface.
Construction Environmental Management Plan (CEMP)	Document prepared by the Contractor outlining how they will avoid, minimise or mitigate effects on the environment and surrounding area.
Construction Induction	Meeting held on or off-site with all project staff members (Contractor and others) prior to any construction work commencing. The meeting purpose is to share and discuss specific project information relating to trail construction.
Construction Methodology	Document prepared to provide high-level guidance to construction activities and information for the Contractor to inform the CEMP.
Construction Segment	A smaller component of the overall trail, allowing for ease of inspections, reporting, invoicing, practical completion and staged opening.
Construction Specifications	Document(s) providing relevant details for the work required to be completed in a trail construction project. This includes information such as materials, scope of work, construction process and quality of work.
Contractor	Person or company that undertakes contract to perform trail construction as set out in construction specifications and tender documents.
Department of Innovation and Tourism Industry Development Tourism Development Projects Division (TDPD)	Queensland state government department charged with a goal to build a thriving state economy and make new ideas and diversification a reality in the changing Queensland job market.
Detailed Design	Plan developed by specialist trail planners demonstrating definitive trail lines and construction specifications to enable construction work to be undertaken.
TDPD Project Manager	Responsible for planning, procurement and execution of the project.
Douglas Shire Council	Local Government Authority for Douglas Shire and land manager for some sections of the Wangetti Trail.

Term	Definition
Electric Mountain Bike (e-MTB)	Mountain bikes with a battery-powered “assist” that comes via pedalling.
Fibre Reinforced Plastic (FRP)	Composite material used in trail construction, often as a decking mesh or beam support structure.
Global Positioning System (GPS)	Navigation satellite system that provides geolocation and time information to a GPS receiver.
GHD	Consulting company contracted to prepare Environmental Assessment, Baseline Ecology Report for Wangetti Trail.
Ground-truthing	Process taken to identify, flag and map the exact route in the field for a proposed trail.
Ground-truthed Corridor	Area consisting of the flagged centre line, plus the agreed 20m buffer to either side (i.e. a total corridor width of 40m).
International Mountain Bicycling Association (IMBA)	An organisation for trail advocacy.
Mareeba Shire Council	Local Government Authority for Mareeba Shire and land manager for some sections of the Wangetti Trail.
Matters of National Environmental Significance (MNES)	Nine components of the environment in Australia that are protected under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
Matters of State Environmental Significance (MSES)	Certain environmental values that are protected under Queensland legislation.
Mountain Bike (MTB)	A bicycle with a light sturdy frame, broad deep-treaded tyres, and multiple gears, designed for riding on mountainous terrain.
Mountain Bike Australia (MTBA)	The national governing body for mountain biking.
Pre-Start Trail Review (PSTR)	On-site review and inspection of the proposed alignment of the trail, undertaken prior to construction commencing with Contractor and TDPD Project Manager.
Project Location	Proposed Wangetti Trail, extending from Port Douglas to Palm Cove.
Project Scope of Works	Agreed work to be undertaken to successfully complete the project.
Queensland Parks and Wildlife Service (QPWS)	Queensland state government agency within the Department of Environment and Science, charged with managing the parks estate.
Sediment Control Measures	Processes and materials put in place to minimise site disturbance and the potential for erosion.
Tourism Development Projects Division (TDPD)	Division within DITID.
Traditional Owners	Aboriginal people who have ongoing traditional and cultural connections to Country. The Traditional Owners for the Country the proposed Wangetti Trail passes through are the Yirrganydji people.
Trail Difficulty Rating System	System used to grade trails with similar levels of technical difficulty. Trails are graded on width, grade (maximum and average), surface, natural obstacles and Technical Trail Features (TTFs). Other factors such as enclosure and exposure can also influence classification.
Wangetti Trail	Proposed trail of 94km, extending from Port Douglas to Palm Cove.

Term	Definition
Wet Tropics Management Authority	Joint Commonwealth and Queensland governments agency charged with managing the Wet Tropics World Heritage Area according to Australia's obligations under the World Heritage Convention.
Wet Tropics Management Plan	Developed in 1998, it provides the legal framework for management of the Wet Tropics of Queensland World Heritage Area.
Work Health and Safety Management Plan	Document prepared by the principal contractor to assist in managing their workplace health and safety obligations.
Wet Tropics World Heritage Area	An outstanding example of the world's natural or cultural heritage, as determined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). The Area covers almost 900,000 hectares and extends from Cooktown to Townville.

9 REFERENCES

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- Australian Mountain Bike Trail Guidelines, Mountain Bike Australia, 2019;
- Australian Standard for Walking Tracks, Part 1: Classification and Signage (AS 2156.1-2001);
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- TTMS website: <https://www.ttms.com.au/>;
- Wangetti Trail Concept Plan, World Trail, 2017;
- Wangetti Trail - Detailed Design, World Trail, 2018;
- QPWS Walking Track manual produced in 1980s by Peter Savage.

Appendix E – Wangetti Trail Project Consultation Report

WANGETTI TRAIL PROJECT CONSULTATION REPORT

CONCEPT TO APPROVALS PHASE



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APPROVALS PHASE

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APPENDICES

INTRODUCTION

In April 2018, the Hon Kate Jones MP, Minister for Innovation and Tourism Industry Development and Minister for Cross River Rail announced the Queensland Government's support for the Wangetti Trail Project - Queensland's first public-led, purpose-built, 94km shared use eco-trail stretching from Palm Cove to Port Douglas.

The project is being delivered by the Department of Innovation and Tourism Industry Development (DITID) in partnership with the Department of Environment and Science, Queensland Parks and Wildlife Services and the Traditional Owners of the country on which the trail traverses. The trail is expected to deliver approx. 150 jobs, attract over 11,000 visitors pa and yield up to \$300M in direct benefits to the region.

DITID is committed to delivering its projects with transparency and integrity. Throughout the project lifecycle, there has been extensive engagement with the local community, tourism industry, councils and regional organisations and conservation interest groups. The Wangetti Trail Project Team maintains a project website (<https://www.ditid.qld.gov.au/our-work/qld-ecotourism-trails/wangetti-trail>) and e-newsletter which is updated regularly with any and all project updates.

This document has been prepared to supplement the suite of requisite environmental and development approvals applications to be lodged with the Wet Tropics Management Authority, Australian Department of Agriculture, Water and the Environment and other State and Local Government assessment authorities.

It is not intended to give an overview of detailed technical activities to date on the project but rather to provide an account of the various community and stakeholder engagement activities at and across certain phases of the project. Importantly, this report articulates how the proposed trail alignment and infrastructure has responded dynamically to community concerns, expert advice, market feedback and engagement with the Traditional Owners of the country.

A summary of these activities and outcomes is provided at **Appendix A** with a detailed account of each phase provided within this report.

2015-2017

CONCEPT PHASE

1. PROJECT VISION DEVELOPMENT

1.1. OVERVIEW

In 2015, World Trail prepared the Wangetti Trail Proposal: *Palm Cove to Port Douglas Shared-Use Trail* to outline an early vision and objectives for the Wangetti Trail - a new shared use eco-accommodation trail from Palm Cove to Port Douglas through the region's National Parks and Wet Tropics World Heritage Area. Following the release of this document, the Wangetti Trail concept gained support from the general public, politicians and business leaders locally. In 2017, Douglas Shire Council and Cairns Regional Council commissioned World Trails to develop a concept plan for the Wangetti Trail proposal.

This growth in support culminated in the Cairns Regional Council and Douglas Shire Council engaging World Trail to prepare a Concept Plan for the Wangetti Trail. The 2017 Concept Plan provided a broad plan of what the Wangetti Trail should be, with initial alignments, preliminary cost estimates, potential demand and possible management considerations. The concept plan proposed a 76km shared use walking/mountain biking trail from Palm Cove to Port Douglas featuring 5 eco-accommodation nodes along the route.

The concept was strongly supported by the Cairns and Port Douglas tourism industry and business community specifically endorsed by:

- Cairns Chamber of Commerce
- Cairns Regional Council
- Douglas Shire Council
- Thala Beach Lodge
- The Hon. Craig Crawford MP, then State Member for Barron River
- Tourism Tropical North Queensland
- The Hon. Warren Entsch MP, Federal Member for Leichardt
- Tourism Port Douglas Daintree
- Advance Cairns, and
- Cairns Airport.

The Concept Report was made publicly available by Cairns Regional and Douglas Shire Councils in 2017.

In April 2018, the Hon Kate Jones MP, Minister for Innovation and Tourism Industry Development and Minister for Cross River Rail announced the Queensland Government's support for the Wangetti Trail Project and allocated \$950,000 for the development of a detailed business case for Government investment consideration.

CONCEPT PHASE ENGAGEMENT OUTCOMES

- *Support from regional organisations, council & Far North Queensland community*
- *The Adventure & Nature Based Tourism Industry is secured for the project concept*
- *Queensland Government announces support for the project and the project proceeds to feasibility stage*

2018

FEASIBILITY PHASE

2. DETAILED BUSINESS CASE DEVELOPMENT

2.1. OVERVIEW

The State engaged several independent advisors to refine and ground-truth the project concept, test the market appetite for the proposed product and commercial structure and undertake a commercial and economic feasibility analysis. Consultants engaged included:

- World Trail - Technical advice
- Aurecon - Environmental assessment and planning advice
- PriceWaterhouse Coopers (PWC) - Commercial and economic assessment
- Bligh Tanner - Engineering advice and quantity surveying

The Wangetti Trail Project Team additionally commenced focused engagement with the Yirrganydji Aboriginal Corporation (YGAC). - The Yirrganydji People are recognised Traditional Owners for the country on which the Wangetti Trail traverses. Engagement with YGAC and their Land and Sea Rangers Corporation was formalised through a MOU that outlined the project vision, objectives, governance framework, business case activities and responsibilities and commercial compensation. This agreement and the working relationship developed with the Yirrganydji People has established a strong relationship of trust and productivity, which has continued throughout the project phases as part of a process to agree and register an Indigenous Land Use Agreement for the Wangetti Trail.

2.2. ENGAGEMENT ACTIVITIES & OUTCOMES

A targeted list of adventure and nature-based tourism operators, industry bodies and prospective proponents were consulted. The outcomes of this market sounding indicated a strong desire from the industry to invest in the Wangetti Trail Project noting the proposed project approvals, delivery and commercial/operating structure inspired confidence in the market and Government commitment to the project.

World Trails engaged the Wet Tropics Management Authority (WTMA) to produce a report on the characteristics and attributes of the Wet Tropics, along which the trail traverses. This further informed ground-truthing activities with Aurecon as environmental assessment advisors, leading to significant alterations to the trail alignment to avoid environmentally sensitive areas. The business case also recommended the removal of camping facilities along the Palm Cove to Wangetti section of trail and restriction to mountain biking as a value engineering mechanism only. This has since been reverted to dual use with one public campsite proposed at the midway point (see Section 4.1).

World Trails also engaged Yirrganydji Rangers to provide cultural heritage advice on key sections of the trail and campsite locations noting particularly culturally sensitive areas to avoid. The trail alignment was adjusted to meet the requirement of the Yirrganydji Rangers.

Finally, the project team undertook targeted consultation with residents of various communities along the trail who had raised concerns with the trail's proximity to residential areas. As a result, the campsite located near Oak Beach was removed and the trail realigned to head up and over the

Macalister Range, thereby avoiding residential areas and reducing the trail length and number of campsites - a reduction in the overall impact within the National Park. Consequently the trail was now able to utilise existing track infrastructure along Twin Bridges and Black Mountain Roads, avoiding the need to deliver some 12kms of new trail. Mapping illustrating this change in alignment and reduction in impacts is provided at **Appendix B**.

BUSINESS CASE DEVELOPMENT ENGAGEMENT ACTIVITIES

- *Direct engagement with tourism market*
- *Execution of preliminary agreement with Traditional Owners for business case activities and support for project*
- *Focused consultation with community*
- *Engagement of independent technical experts*
- *Engagement of Wet Tropics Management Authority*

BUSINESS CASE DEVELOPMENT ENGAGEMENT OUTCOMES

- *Trail alignment altered to avoid culturally sensitive areas based on advice from Traditional Owner Rangers*
- *Trail alignment altered to avoid environmentally sensitive areas and restricted Wet Tropics Management Zones based on technical advice*
- *Trail alignment altered to avoid Oak Beach area and move higher over Macalister Range based on community concerns*
- *Spring Creek Falls Campsite relocated to Twin Bridges location to mitigate community concerns of proximity to Spring Creek Falls*
- *Mowbray River crossing moved from environmentally sensitive Mowbray River estuary to existing Captain Cook Highway bridge corridor*
- *Ground-truthed trail alignment activities result in reduced overall length, greater utilisation of existing trails and infrastructure and less campsites leading to reduced impact overall*

2019

FEASIBILITY PHASE CONT.

3. COMMUNITY CONSULTATION

3.1. OVERVIEW

Following completion of the Business Case and endorsement from Government to fund and deliver the \$41.4M Wangetti Trail, the project team commenced a broader program of community engagement activities whilst project procurement and approvals documentation were being prepared in the background.

Since assuming management of the project in 2018, the project team has had over 250 individual engagement activities with stakeholders including:

- >10 incoming phone calls from local residents
- >100 emails to stakeholders including community members, local residents, advocacy groups, local councils and potential proponents
- >100 face-to-face engagement activities including one-on-one meetings, group meetings, local councils, Traditional Owner engagement, presentations on the Wangetti Trail with community members, local residents, advocacy groups and interested parties
- One letter box drop to Wangetti and Oak Beach residents (May 2019)
- >50 group meetings with external stakeholders including Traditional Owners, National Parks Association of Queensland and local councils

Interactions with stakeholders are tracked and recorded in the project's Client Relationship Management database *Simply Stakeholders*.

Tourism Development Projects Division (TDPD) has also engaged one-on-one with the following public interest groups, industry groups, local businesses and local governments, including:

- Mayor Douglas Shire Council
- Mayor Cairns Regional Council
- Mayor Wujal Wujal Aboriginal Shire Council
- Executive Director, Wet Tropics Management Authority
- President, National Parks Association of Queensland
- Chief Executive Officer, Tourism Tropical North Queensland (TTNQ)
- President, Cairns and Far North Queensland Environment Centre (CAFNEC)
- Chief Executive Officer, Advance Cairns
- Executive Manager, Enterprise North
- President, Cairns Chamber of Commerce
- North Queensland Land Council
- Indigenous Business Australia
- North Queensland Tourism Alliance
- Chairman, Skyrail, and

- Hartleys Creek Crocodile Farm.

Other engagement activities to note for the Wangetti Trail are:

- Regular and ongoing presentations to industry (e.g. TTNQ, Advance Cairns, Global Eco Conference, etc.)
- Social media for Queensland Ecotourism Trails (Facebook and Twitter) commenced in October 2018
- Nine Ministerial Media Statements for the Wangetti Trail have been released
- One fact sheet has been developed and distributed
- Five eNewsletters created and distributed
- Print, online and social media advertising undertaken

3.2. SOCIAL PINPOINT

A key activity undertaken in April 2019 was consultation with the community on the outcomes of the ground truthing for the Business Case trail alignment and presentations of conceptual information around potential ecotourism offerings. The formal community consultation period extended over eight weeks through the online Social PinPoint platform and closed on 31 May 2019. During the period, members of the community were asked to share their ideas and comments on the alignment. To advise the community that the community consultation was underway, advertisements appeared in local newspapers, digital ads were created for online news outlets and Facebook advertising was utilised.

A summary of engagement processes and outcomes is outlined below:

- 4160+ unique visits to online site (Social Pinpoint)
- 154 pieces of feedback (direct emails and online responses)
- 70% of respondents were in Queensland
- 20+ calls and on-ground meetings including 9 resident meetings
- 142,000+ people reached through Facebook
- 352 distributions of the e-newsletter including 36 new subscribers acquired
- majority of feedback is supportive or neutral/constructive

24% of comments were positive with the majority being neutral at 54%. Key themes of responses captured on Social Pinpoint included:

- Trail considerations
- Potential for dual-use across entire trail
- Conservation concerns and strategies
- Impacts of mountain biking
- Developing commercial opportunities.

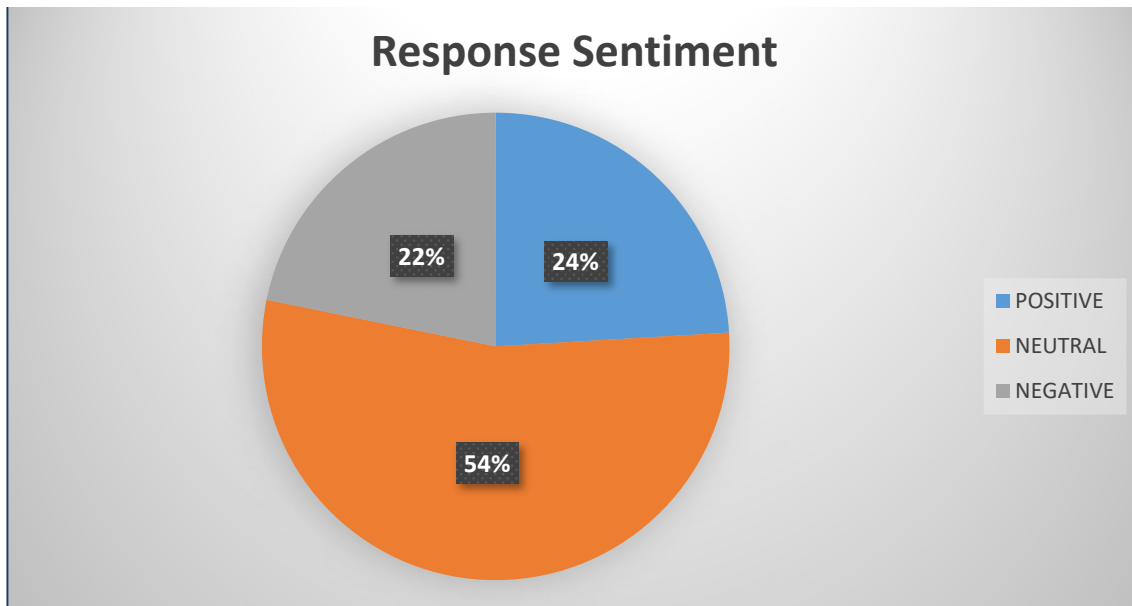


Figure 1 – Percentage of respondent sentiment

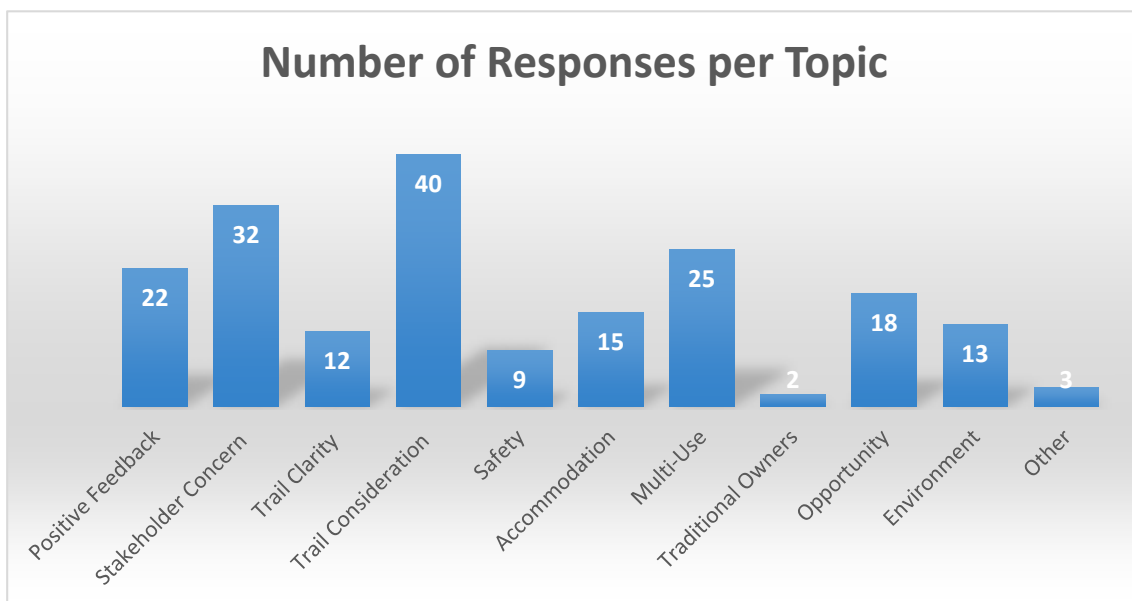


Figure 2 – Categories and distribution of response topics

All comments were monitored daily and added to a comment tracker and remained private on Social Pinpoint

Comments and questions were addressed in accordance with the Queensland Ecotourism Trail Program's Terms and Conditions provided on the Social Pinpoint site, which sets out the instances where Tourism Development Projects Division responds directly. On average, each comment was responded to within two to four weeks by the project team.

The feedback provided during the formal community consultation period has been collected and informed subsequent changes to sections of the trail - specifically around the Wangetti Township (see below).

4. FOCUSSED STAKEHOLDER ENGAGEMENT

4.1. CONSERVATION GROUP ENGAGEMENT

Throughout the project lifecycle, the project team has engaged with conservation interest groups through structured processes and via correspondence. To date, dealings have largely been with the National Parks Association of Queensland (NPAQ) although local interest groups - North Queensland Conservation Council (NQCC), Douglas Shire Sustainability Group (DSSG), Queensland Conservation Council and Cairns and Far North Environment Centre (CAFNEC) - have also lodged submissions and correspondence on the project in addition to the Project Team engaging with the World Wildlife Fund for Nature in 2018.

Whilst these groups are generally supportive of the establishment of the Wangetti Trail and public camping facilities, a number of concerns and points of objection to the project have been consistently raised and are noted below

1. Mountain biking should not be a permitted use along the trail
2. Eco-accommodation sites and facilities should not be permitted within National Park estate
3. The State has not provided approvals documentation for public comment

The Project Team has responded to all correspondence issued regarding the Wangetti Trail and continues to engage informally with these conservation groups. A register of correspondence received and issued in this regard is provided at **Appendix C**. It is important to note this register accounts only for formally submitted pieces of correspondence and does not include the regular informal discussions held between NPAQ and members of the Project Team and Tourism Development Projects Division Projects Chief Executive.

All responses to these conservation groups have provided clarifications to the queries raised - most notably regarding the following items

- Trail width, typology (average grade, speed restrictions etc) and ground truthing methodology undertaken by accredited experts in accordance with national standards
- Target mountain bike market (i.e leisure/recreational riders vs technical/high speed riders) and proposed response to requests to consider separation of uses
- Engagement with the local community and support/partnership with Traditional Owners
- Operational model, trail maintenance framework and partnership with QPWS
- Approvals framework, program and consultation milestones.

4.2. CAIRNS REGIONAL COUNCIL

During the Social Pinpoint community engagement exercise, the Project Team commenced pre-lodgement discussions with Cairns Regional Councils amongst other assessment authorities. Council officers reiterated Council's support for the project being conditional upon a shared-use trail extending all the way from Port Douglas to Palm Cove. As the Wet Tropics zoning restricts any eco-accommodation at the proposed Dark Jungle campsite location, the Project Team agreed to reinstate

the campsite as a smaller scale public campsite only (from the business case proposed amenities block) and revert the trail section back to shared-use from Palm Cove to Wangetti (see **Appendix B**).

4.3. WANGETTI TOWNSHIP ENGAGEMENT

During the consultation period, TDPD undertook a letterbox drop to 15 to 20 people within the hamlet of Wangetti. Subsequent to this, on the ground engagement was also undertaken with any local residents who asked to meet with TDPD to discuss the project. This resulted in nine face-to-face meetings with local residents which were undertaken on 10 May 2019.

As a result of above-mentioned engagement as well as subsequent enquiries from the Wangetti Township, the following has been undertaken:

- The Wangetti Trail alignment was amended and Campsite One near Hartley's Creek has been removed. This is a direct response to concerns of the campsite's proximity to Hartley's Creek
- Douglas Shire Council recently undertook water testing of Hartley's Creek. The purpose of the testing was to gather information on the current status of the water quality to establish a baseline of data that will be tested again during construction of the Wangetti Trail and again during operations to monitor any changes
- TDPD has been working with the Department of Transport and Main Roads (DTMR) on addressing the community's concerns regarding the Captain Cook Highway 80kph speed zoning at the southern approach to the township. DTMR has resolved to extend the 60kph speed zoning to past Quaid Rd once works commence on the Wangetti Trail. Again, this is a direct response to your concerns raised with the project team.

4.4. TRADITIONAL OWNER ENGAGEMENT

A key objective of the Adventure and Nature Based Tourism Opportunities (ANBTO) Program is to secure long-term job and business opportunities for Traditional Owners. Through the ANBTO Program, the State has been conducting meaningful engagement with Traditional Owners who have a native title claim or assert a native title interest in relation to trail area as outlined in Table 1-3.

For the SP2 section of the Wangetti Trail, the State is engaging with the Native Title Claimants identified under the Cairns Regional Claim (Federal Court number QUD692/2016). The State has been advised by North Queensland Land Council (NQLC) that the Yirrganydji People are one of the groups that make up the Cairns Regional Claim Group and that the Cairns Regional Claim Group have agreed that the Yirrganydji People are the relevant group to engage with in relation to the project area. Noting that NQLC has also advised any agreement reached by the Yirrganydji People will be taken back to the wider Cairns Regional Claim Group for endorsement.

Additionally, the Eastern Kuku Yalanji People assert a native title interest north of the Mowbray River and have become a party to the Yirrganydji (Irukandji) People #2 (Federal Court number QUD337/2015). Therefore, State has been engaging with the Eastern Kuku Yalanji People in relation to the development of SP1 and keeping the group informed on the whole Project (SP1 and SP2) and consequently their engagement has been included in Table 1 for completeness.

To date, the following activities have been undertaken/are in development with the Yirrganydji people relating to the assessment and delivery of the Wangetti Trail:

- Execution of an MOU with the Yirrganydji Gurabana Aboriginal Corporation (YGAC) to participate in the business case development process including definition of overall

aspirations for business opportunities for the trail as a precursor to an Indigenous Land Use Agreement (ILUA) and the engagement of Yirrganydji Land and Sea Rangers to provide cultural heritage advice during ground-truthing activities.

- Development of a statutory structure plan for the Wangetti Land Trust Aboriginal Land Act freehold land to be developed as a trail hub for the Wangetti Trail. Establishment of Traditional Owner owned and operated auxiliary trail infrastructure in this location is strongly supported by the Project Team and Douglas Shire Council by way of formal Council resolution.
- Execution of a Cultural Heritage Agreement protocol and engagement of cultural heritage monitors for the construction of the Mowbray River pedestrian bridge
- Drafting of an ILUA for the Wangetti Trail to be agreed and finalised before works commence in late 2020.

Engagement with the Traditional Owner Groups is ongoing and paramount to the successful delivery of the Wangetti Trail. Traditional Owners will be involved throughout all stages of the project - particularly during the procurement process for the eco-accommodation operator.

Table 1 – Traditional Owners Engagement Register

Date	Group	Meeting Purpose
28 May 2018	Yirrganydji People	Wangetti Trail Brief
29 May 2018	Yirrganydji People	Wangetti Trail Brief
25 July 2018	Yirrganydji People	Wangetti Trail Media Event
25 July 2018	Yirrganydji People	Wangetti Trail Discussions
23 August 2018	Eastern Kuku Yalanji People	Meeting with Jabalbina Yalanji Aboriginal Corporation to brief on Wangetti Trail Project
31 August 2018	Yirrganydji People	Wangetti Trail Brief
22 October 2018	Yalanji People	Tourism Workshop
23 October 2018	Yalanji People	Tourism Workshop
19 December 2018	Yirrganydji People	Wangetti Trail Update
5 March 2019	Yirrganydji People	Yirrganydji People Job and Business Aspiration Workshop
6 March 2019	Yirrganydji People	Wangetti Land Trust Workshop and Site Visit
7 March 2019	Eastern Kuku Yalanji People	Eastern Kuku Yalanji People Job and Business Aspiration Workshop
14 May 2019	Eastern Kuku Yalanji People	Wangetti Trail Re-Brief
11 September 2019	Cairns Regional Claim	Re-briefing to Cairns Regional Claim and NQLC Meeting with Projects Chief Executive, TDPD, Director-General, Dept. Environment and Science and

Date	Group	Meeting Purpose
		Jabalbina Yalanji Aboriginal Corporation about Wangetti Trail
18 November 2019	Eastern Kuku Yalanji People	Meeting with Projects Chief Executive, TDPD, Director-General, Dept. Environment and Science and Jabalbina Yalanji Aboriginal Corporation
4 December 2019	Yirrganydji People	Office Space tour with Yirrganydji Gurabuna Aboriginal Corporation
5 December 2019	Yirrganydji People	Wangetti Trail Update and Background on Dawul Wuru Aboriginal Corporation

4.5. MARKET RE-ENGAGEMENT

In 2019, the Wangetti Trail Project Team commenced preliminary engagement activities with the eco-accommodation operator market as a pre-cursor to the formal procurement process to be undertaken during the approvals phase of the Project. The market indicated, amongst other items, a strong desire for the State to be flexible in its determination of the shared-use trail typology and whether this could be split, grade-separated or restricted to walking only. This proposed treatment has also been raised by conservation interest groups during the Social Pinpoint engagement process (see Section 5.1).

As one of the foundational objectives for the Wangetti Trail project is to minimize the project's impacts on Protected Areas - evident in the value engineering exercises completed to this point - the Project Team has since proposed to seek approval for a possible mountain bike bypass using existing backcountry roads and 4WD trails on the western side of the Macalister Range. Utilising this existing infrastructure minimizes any additional impacts on the protected areas which will be limited to minor trail repairs/maintenance only.

It is important to note that whilst approvals will be sought for this proposed mountain bike bypass, any decision regarding its development will be subject to the market process to be undertaken for the eco-accommodation operator which may or may not necessitate its requirement.

4.6. INTERSTATE ENGAGEMENT & PROJECT BENCHMARKING

In August 2019, the project team conducted a hosted study tour to the Grampians National Park with Parks Victoria to discuss their project experience with the Grampians Peak Trail and seek advice on the proposed Wangetti Trail delivery framework.

The study tour was extremely beneficial - validating the proposed delivery framework for the Wangetti Trail - whilst also offering the following learnings:

- Engagement with Traditional Owner Groups during early design development and ground-truthing is critical
- Important to specify design standards and infrastructure before tendering works contracts
- Consistent and constant engagement with the market is necessary to test product and maintain interest and readiness
- Transparency with approvals processes and interest groups is paramount.

2019 CONSULTATION PHASE ACTIVITIES

- *Social PinPoint public submission period*
- *Establishment of ANBTO social media profiles*
- *Establishment of Adventure and Nature Based Tourism Opportunities (ANBTO) newsletter and mailing list*
- *Targeted engagement with industry, stakeholders, councils, Traditional Owner groups and interest groups*
- *Continued engagement with Yirrganydji Traditional Owner groups*
- *Interstate study tour to Grampians National Park with Parks Victoria*

2019 CONSULTATION PHASE OUTCOMES

- *Removal of Hartley's Creek campsite*
- *Reinstatement of Palm Cove to Wangetti dual use section and public campsite*
- *Introduction of proposed MTB bypass link utilizing existing backcountry roads*
- *Baseline testing and monitoring regime for Wangetti water quality established*
- *DTMR resolution to reduce speed in Wangetti to 60kph for full length of township*
- *Broad engagement with local and regional community*
- *Strong community and industry support for trail alignment*
- *Douglas Shire Council resolution to support establishment of TO trail hub at Wangetti*
- *Execution of Cultural Heritage Protocols with Traditional Owner groups for the construction of the Mowbray River pedestrian bridge*
- *Grampians Peak Trails benchmarking indicated Wangetti Trail delivery and TO engagement frameworks are best practice approaches and nation-leading*
- *Clarification provided to conservation groups regarding trail impacts, delivery and operational framework, approvals program and response to independent, community and Traditional Owners advice*

2020

APPROVALS PHASE

5. UPCOMING ACTIVITIES

5.1. FUTURE ENGAGEMENT ACTIVITIES

A draft program of stakeholder engagement and communications activities has been prepared and is provided at **Appendix D**.

The Project Team has also scheduled a working session with NPAQ to discuss how the Wangetti Trail aligns with NPAQ's 10 point plan for ecotourism in National Parks and notably, how the project has been adapted over time in response to community concerns, market feedback, interest group commentary and Traditional Owner engagement.

APPENDIX A - PROJECT LIFECYCLE ENGAGEMENT ACTIVITIES SUMMARY

PHASE	ENGAGEMENT ACTIVITIES	STATUS	OUTCOME
CONCEPT	Develop Concept Design	<i>Completed</i>	Wangetti Trail vision developed and defined with project sponsors
	Canvas industry appetite	<i>Completed</i>	Industry support secured
	Secure Government support	<i>Completed</i>	Project concept endorsed by Government and adopted
FEASIBILITY	Engage with TOs	<i>Completed</i>	Preliminary agreement executed with Traditional Owners
	Engage core project stakeholders	<i>Completed</i>	Project Working Group established
	Ground truth and test the project feasibility	<i>Completed</i>	Environmental and cultural heritage advisors engaged and trail alignment altered
	Benchmark against best practices	<i>Completed</i>	Project delivery framework determined as best practice and nation-leading
	Consult with industry	<i>Completed</i>	Market appetite secured
	Consult with the community	<i>Completed</i>	Community engaged through formal process and outputs inform alteration of trail alignment
	Consult with interest groups	<i>Completed</i>	Interest groups engaged and project framework clarified
	Respond to community input	<i>Completed</i>	Trail alignment adapted and infrastructure reduced to address concerns
APPROVALS	Lodge documentation with assessment authorities	Commenced	UNDERWAY: Pre-lodgment meetings and clarification processes have assisted refinement of project documentation and delivery framework
	Engage community	Commenced	ONGOING: Community updated on status of approvals and upcoming consultation activities
	Respond to project submissions	Not yet commenced	TBD
	Engage further with interest groups	Commenced	UNDERWAY: Engagement with interest groups underway to further clarify project delivery framework and upcoming consultation activities
	Engage with industry	Not yet commenced	TBD
DELIVERY	Continued engagement with the community	Not yet commenced	TBD
	Continued engagement with interest groups	Not yet commenced	TBD
	Partner with TOs	Commenced	ONGOING: Finalisation of Indigenous Land Use Agreements underway
	Partner with industry	Not yet commenced	TBD

APPENDIX B - TRAIL ALIGNMENT REFINEMENT HISTORY





FINAL ALIGNMENT



APPENDIX C - INTEREST GROUPS CORRESPONDENCE REGISTER

NATIONAL PARKS ASSOCIATION OF QUEENSLAND (NPAQ)				
Date	From	To	Subject	Summary
06/06/2018	NPAQ	Qld Govt.	Wangetti Trail proposal	Seeking clarification on: <ul style="list-style-type: none"> - Consultation with Minister for Environment - Business Case scope - Role of QPWS - Environmental risk assessment - Opposition to mountain biking
09/07/2018	NPAQ	Qld Govt.	The future of Queensland's National Parks	Concerns regarding short term economic goals over long term management of protected areas
22/08/2018	Qld Govt.	NPAQ	<i>RE: The future of Queensland's National Parks</i>	Response to concerns and introduction to TDPD
01/03/2019	NPAQ	Qld Govt.	Strategic Growth of National Parks and Other Protected Areas / Ecotourism EOI	Concerns re. ecotourism in protected areas and introduction of NPAQ 10 Points for Leading Practice
28/03/2019	Qld Govt.	NPAQ	<i>RE: Strategic Growth of National Parks and Other Protected Areas / Ecotourism EOI</i>	Response to concerns and agreement to consider 10 Points principles
13/05/2019	NPAQ	Qld Govt.	NPAQ Wangetti Trail Proposal Submission	Concerns regarding impacts of mountain biking uses
02/08/2019	Qld Govt.	NPAQ	<i>RE: NPAQ Wangetti Trail Proposal Submission</i>	Response to concerns and clarification on target mountain bike users (i.e. leisure/low speed), trail typology and management framework
19/08/2019	NPAQ	Qld Govt.	Funding National Parks - Maintenance and Strategic Growth	Concerns regarding lack of State budget allocation for protected areas management and conservation.
21/10/2019	Qld Govt.	NPAQ	<i>RE: Funding National Parks - Maintenance and Strategic Growth</i>	Response to concerns and outline of opportunity for Queensland Ecotourism Trails to provide new revenue sources for park management
26/09/2019	NPAQ	Qld Govt.	Wangetti Trail - Mowbray River Pedestrian Bridge	Concerns regarding tendering Mowbray River Pedestrian Bridge and transparency of approvals process
20/11/2019	Qld Govt.	NPAQ	<i>RE: Wangetti Trail - Mowbray River Pedestrian Bridge</i>	Response to concerns and clarification of approvals frameworks, early works contracts and engagement with assessment authorities to date.
01/11/2019	Dept. Innovation & Tourism Industry Development	Graeme Bartrim	Thank you for invitation to be a speaker at the NPAQ Forum on 24 October 2019	Overview of Queensland Ecotourism Trails maintenance framework and approval of NPAQ's 10 Point leading practice principles
14/11/2019	Dept. Innovation & Tourism	Graeme Bartrim and Susanne Cooper	Follow up email after meeting	As above

	Industry Development			
12/02/2020	NPAQ	Qld Govt	Wangetti Trail Proposal	Concerns regarding mountain bike uses in park, Mowbray River Pedestrian Bridge and transparency of approvals process
QUEENSLAND CONSERVATION COUNCIL (QCC)				
Date	From	To	Subject	Summary
19/10/2018	QCC	Qld Govt	Privatisation of National Parks	Concerns regarding ecotourism in protected areas
23/11/2018	Dept. Innovation & Tourism Industry Development	Dept. Premier & Cabinet	Dot point brief provided to DPC to assist in response to letter above	Response to concerns regarding Queensland Ecotourism Trails objectives and management frameworks
NORTH QUEENSLAND CONSERVATION COUNCIL (NQCC), DOUGLAS SHIRE SUSTAINABILITY GROUP (DSSG) and CAIRNS AND FAR NORTH ENVIRONMENT CENTRE (CAFNEC)				
Date	From	To	Subject	Summary
03/06/2019	NQCC/DSSG/CAFNEC	Dept. Innovation & Tourism Industry Development	Joint Wangetti Trail submission from NQCC, DSSG and CAFNEC	Concerns regarding impacts of mountain biking uses
06/08/2019	Dept. Innovation & Tourism Industry Development	NQCC/DSSG/CAFNEC	<i>RE: Joint Wangetti Trail submission from NQCC, DSSG and CAFNEC</i>	Response to concerns and clarification on target mountain bike users (i.e. leisure/low speed), trail typology and management framework
03/06/2019	NQCC/DSSG/CAFNEC	Dept. Innovation & Tourism Industry Development	Joint Wangetti Trail submission from NQCC, DSSG and CAFNEC	Concerns regarding impacts of mountain biking uses
06/08/2019	Dept. Innovation & Tourism Industry Development	NQCC/DSSG/CAFNEC	<i>RE: Joint Wangetti Trail submission from NQCC, DSSG and CAFNEC</i>	Response to concerns and clarification on target mountain bike users (i.e. leisure/low speed), trail typology and management framework

Appendix F – Yirrganydji Gurabana Aboriginal Corporation Letter of Support

YIRRGANYDJI GURABANA ABORIGINAL CORPORATION

ABN 20 231 864 634

ICN 4314

The Wangetti Trail is one of the most important economic benefit projects for the Yirrganydji people and the Cairns Regional Claim in a generation. Yirrganydji country, where the rainforest meets the reef, has been our home for thousands of years and we are excited to share our land with new visitors and educate them on our culture and significance of its place in our identity, our history and our future generations. The trail will open new pathways through this sacred land as determined by us – the custodians of this country - with the support and resources of the Queensland Government. We have been involved in the project since its earliest concepts and have been engaged by the Queensland Government to refine the alignment of the trail and undertake preliminary cultural heritage assessments of the project through Yirrganydji Gurabana Aboriginal Corporation and our land and sea ranger corporation Dawal Warul. These ground-truthing activities have helped determine the alignment for the trail that offers an enriching experience but also respects the cultural law/lores of our people and this land. We look forward to working with the future trail builder and operator partners to refine this design further.

Delivery of the Wangetti Trail will not just give the Yirrganydji people and other Traditional Owners the ability to invite new visitors to our ancestral homes but also new opportunities for our people to return to country with jobs and business and other long term economic opportunities. Construction and delivery of the trail and campsites will require our specialist knowledge and we are continuing to work with the Queensland Government to determine how this is best utilised by our people through direct engagement and training. Once operational, the trail and its visitors will give us new opportunities to manage country, provide guiding and other tourism and educational experiences to visitors and develop Wangetti Land Trust land into a hub for the trail and other related businesses. We also anticipate that more of our people will gain skills and experience from this project to open doors to broader employment and business opportunities.

We have agreed to work with the Queensland Government to negotiate and execute an Indigenous Land Use Agreement for the Wangetti Trail project that recognises Yirrganydji People's and Cairns Regional Claimant's Native Title and provides our authority for the Queensland Government to undertake specific future acts under the *Native Title Act 1993*. We have been engaged with the Queensland Government in this regard since executing a Memorandum of Understanding in 2018 and continue to be supportive of the Queensland Government's commitment to this process.

We understand a number of environmental and development approvals are required for the delivery of the Wangetti Trail including the following (but not limited to);

- Wet Tropics s32 Permit issued by the Wet Tropics Management Authority (WTMA) in accordance with the *Wet Tropics Management Plan 1998* (WTMP) for:
 - o Undertake Building or maintaining a walking track or associated structure and
 - o Flying a motorised aircraft less than 1000 ft above the area.
- Referral of the Wangetti Trail project to the Commonwealth Government for consideration in accordance with the *Environmental Protection and Biodiversity Conservation Act 1999*
- Section 34 Works Lease issued by the Department of Environment and Science in accordance with the *Nature Conservation Act 1992*
- Development Approvals issued by the State of Queensland, Douglas Shire Council, Cairns Regional Council and Mareeba Shire Council in accordance with the *Planning Act 2016*
- Other such approvals as required.
- That negotiations in respect to an ILUA are ongoing.

YIRRGANYDJI GURABANA ABORIGINAL CORPORATION

ABN 20 231 864 634

ICN 4314

The purpose of this letter is to indicate our support for the Wangetti Trail Project process undertaken to date noting that WTMA is to issue s32 permits under the WTMP and proposed framework for delivery and operation to be agreed in the proposed Indigenous Land Use Agreement with the Queensland Government.

The Wangetti Trail is a chance for the Yirrganydji People and other Traditional Owners who are part of the Cairns Regional Claim QUD 692/2016 current and future generations to return to country to live, work and share our culture in the footsteps of our ancestors.

Yours faithfully

A handwritten signature in black ink, appearing to read 'J. Singleton', written in a cursive style.

Jeanette Singleton

Chairperson

Yirrganydji Gurabana Aboriginal Corporation

Appendix G – DA Form

DA Form 1 – Development application details

Approved form (version 1.2 effective 7 February 2020) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application **involving code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) and parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (individual or company full name)	Department of State Development, Tourism and Innovation - Tourism Development Projects Division
Contact name (only applicable for companies)	Sarah Wilson – GHD Pty Ltd
Postal address (P.O. Box or street address)	Level 13, The Rocket, 203 Robina Town Centre Drive
Suburb	Robina
State	QLD
Postcode	4226
Country	Australia
Contact number	61 7 5413 8133
Email address (non-mandatory)	Sarah.Wilson@ghd.com
Mobile number (non-mandatory)	0459 813 589
Fax number (non-mandatory)	
Applicant's reference number(s) (if applicable)	

2) Owner's consent	
2.1) Is written consent of the owner required for this development application?	
<input checked="" type="checkbox"/> Yes – the written consent of the owner(s) is attached to this development application	
<input type="checkbox"/> No – proceed to 3)	

PART 2 – LOCATION DETAILS

3) Location of the premises (complete 3.1) or 3.2), and 3.3) as applicable)

Note: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see DA Forms Guide: Relevant plans.

3.1) Street address and lot on plan

- ☒ Street address **AND** lot on plan (all lots must be listed), **or**
☐ Street address **AND** lot on plan for an adjoining or adjacent property of the premises (appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).

a)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	Captain Cook Highway, State Reserve	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		31	SP129117	Douglas Shire Council
	Unit No.	Street No.	Street Name and Type	Suburb
			Captain Cook Highway, Reserve	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		6	SP309107	Douglas Shire Regional Council
	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	Captain Cook Highway, Reserve	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		39	SP309107	Douglas Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	National park	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		174	National park - NPW930	Douglas Shire Council
c)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	N/A	N/A
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
			Road reserve - Captain Cook Highway	Douglas Shire Council
d)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A		Captain Cook Highway, Wangetti	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		2	SP309094	Douglas Shire Council

3.2) Coordinates of premises (appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)

Note: Place each set of coordinates in a separate row.

- ☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other:	

- ☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> 54 <input type="checkbox"/> 55	<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94	

		<input type="checkbox"/> 56	<input type="checkbox"/> Other:		
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3.3) Additional premises

- ☐ Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application
- ☐ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

- ☒ In or adjacent to a water body or watercourse or in or above an aquifer

Name of water body, watercourse or aquifer:	Coral sea and various no name minor, non-perennial watercourses draining into the Mossman basin.
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- ☐ On strategic port land under the *Transport Infrastructure Act 1994*

Lot on plan description of strategic port land:	
Name of port authority for the lot:	

- ☐ In a tidal area

Name of local government for the tidal area (if applicable):	
Name of port authority for tidal area (if applicable):	

- ☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*

Name of airport:	
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- ☐ Listed on the Environmental Management Register (EMR) under the *Environmental Protection Act 1994*

EMR site identification:	
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- ☐ Listed on the Contaminated Land Register (CLR) under the *Environmental Protection Act 1994*

CLR site identification:	
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5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see [DA Forms Guide](#).

- ☐ Yes – All easement locations, types and dimensions are included in plans submitted with this development application

- ☒ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? (tick only one box)

- ☒ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? (tick only one box)

- ☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☐ Code assessment ☒ Impact assessment (requires public notification)

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

The proposed works associated with Wangetti Trail Project – South Section A will be located within Douglas Shire Council. The proposed works will comprise of the following components:

- shared use trail to accommodate both mountain bike users and hikers consisting of natural ground and surface treatments.
- waterway crossings structures in the form of single span bridges and rock armour crossings.
- The formalisation of existing access tracks into service tracks to provide restricted access to the shared use trail for construction purposes, operational purposes, maintenance purpose and for emergency purposes.
- Dark Jungle (public camping node and amenities block) which will have a footprint of 0.25 hectares (ha) and will comprise of:
 - 10 x elevated camping decks
 - 1 x toilet block
 - 1 communal gathering area including bike rack, table and seating, cooking and bench area and shelter
 - Interconnecting pathways, boardwalks and access tracks

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms guide: Relevant plans](#).

☒ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect

a) What is the type of development? (tick only one box)

☐ Material change of use ☐ Reconfiguring a lot ☒ Operational work ☐ Building work

b) What is the approval type? (tick only one box)

☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☒ Code assessment ☐ Impact assessment (requires public notification)

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

Development permit for operational works (Code Assessable) for works within a Coastal Management District to construct the shared use trail, bridges, rock armour crossing and service tracks within State coastal land within the coastal management district.

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).

☒ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

- ☐ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application
- ☐ Not required

Section 2 – Further development details

7) Does the proposed development application involve any of the following?

Material change of use	<input checked="" type="checkbox"/> Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	<input type="checkbox"/> Yes – complete division 2
Operational work	<input checked="" type="checkbox"/> Yes – complete division 3
Building work	<input type="checkbox"/> Yes – complete DA Form 2 – Building work details

Division 1 – Material change of use

Note: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.

8.1) Describe the proposed material change of use

Provide a general description of the proposed use	Provide the planning scheme definition (include each definition in a new row)	Number of dwelling units (if applicable)	Gross floor area (m ²) (if applicable)
Shared use trail and ancillary infrastructure including service tracks and waterway crossing structures	Environmental Facility - use definition of an 'Environmental Facility', being a facility for the "conservation, interpretation and appreciation of areas of environmental, cultural or heritage value" and 'walking tracks, seating, shelters, boardwalks, observation decks, bird hides".	N/A	N/A
Dark Jungle (public camping node and amenities block)	Nature-based tourism – The use of premises for a tourism activity including tourist accommodation, that is intended for the conservation, interpretation, and appreciation of environmental, cultural or heritage value, local ecosystem and attributes of the natural environment.	N/A	10 x 4 m diameter elevated camping decks (126 m ²) 1 x toilet block (12.50m ²) 1 communal gathering area including bike rack, table and seating, bench area and shelter (27.90m ²)

☐ Yes

☒ No

Division 2 – Reconfiguring a lot

Note: This division is only required to be completed if any part of the development application involves reconfiguring a lot.

9.1) What is the total number of existing lots making up the premises?

9.2) What is the nature of the lot reconfiguration? (tick all applicable boxes)

<input type="checkbox"/> Subdivision (complete 10))	<input type="checkbox"/> Dividing land into parts by agreement (complete 11))
<input type="checkbox"/> Boundary realignment (complete 12))	<input type="checkbox"/> Creating or changing an easement giving access to a lot from a constructed road (complete 13))

10) Subdivision

10.1) For this development, how many lots are being created and what is the intended use of those lots:

Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				

10.2) Will the subdivision be staged?

☐ Yes – provide additional details below

☐ No

How many stages will the works include?

What stage(s) will this development application apply to?

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?

Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment

12.1) What are the current and proposed areas for each lot comprising the premises?

Current lot		Proposed lot	
Lot on plan description	Area (m ²)	Lot on plan description	Area (m ²)

12.2) What is the reason for the boundary realignment?

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13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? (attach schedule if there are more than two easements)

Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? (e.g. pedestrian access)	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work

Note: This division is only required to be completed if any part of the development application involves operational work.

14.1) What is the nature of the operational work?

<input type="checkbox"/> Road work	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Water infrastructure
<input type="checkbox"/> Drainage work	<input checked="" type="checkbox"/> Earthworks	<input type="checkbox"/> Sewage infrastructure
<input type="checkbox"/> Landscaping	<input type="checkbox"/> Signage	<input checked="" type="checkbox"/> Clearing vegetation
<input checked="" type="checkbox"/> Other – please specify: Development permit for operational works for interfering with quarry material on state coastal land above the high-water mark within a Coastal Management District		

14.2) Is the operational work necessary to facilitate the creation of new lots? (e.g. subdivision)

<input type="checkbox"/> Yes – specify number of new lots:	
<input checked="" type="checkbox"/> No	

14.3) What is the monetary value of the proposed operational work? (include GST, materials and labour)

TBA

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application

Douglas Shire Council

16) Has the local government agreed to apply a superseded planning scheme for this development application?

<input type="checkbox"/> Yes – a copy of the decision notice is attached to this development application
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- ☐ The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
- ☒ No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?

Note: A development application will require referral if prescribed by the Planning Regulation 2017.

- ☐ No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6

Matters requiring referral to the **Chief Executive of the Planning Act 2016**:

- ☐ Clearing native vegetation
- ☐ Contaminated land (*unexploded ordnance*)
- ☐ Environmentally relevant activities (ERA) (*only if the ERA has not been devolved to a local government*)
- ☐ Fisheries – aquaculture
- ☐ Fisheries – declared fish habitat area
- ☐ Fisheries – marine plants
- ☐ Fisheries – waterway barrier works
- ☐ Hazardous chemical facilities
- ☐ Heritage places – Queensland heritage place (*on or near a Queensland heritage place*)
- ☐ Infrastructure-related referrals – designated premises
- ☒ Infrastructure-related referrals – state transport infrastructure
- ☐ Infrastructure-related referrals – State transport corridor and future State transport corridor
- ☐ Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels
- ☐ Infrastructure-related referrals – near a state-controlled road intersection
- ☐ Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas
- ☐ Koala habitat in SEQ region – key resource areas
- ☐ Ports – Brisbane core port land – near a State transport corridor or future State transport corridor
- ☐ Ports – Brisbane core port land – environmentally relevant activity (ERA)
- ☐ Ports – Brisbane core port land – tidal works or work in a coastal management district
- ☐ Ports – Brisbane core port land – hazardous chemical facility
- ☐ Ports – Brisbane core port land – taking or interfering with water
- ☐ Ports – Brisbane core port land – referable dams
- ☐ Ports – Brisbane core port land – fisheries
- ☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)
- ☐ SEQ development area
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
- ☒ Tidal works or works in a coastal management district
- ☐ Reconfiguring a lot in a coastal management district or for a canal
- ☐ Erosion prone area in a coastal management district
- ☐ Urban design
- ☐ Water-related development – taking or interfering with water
- ☐ Water-related development – removing quarry material (*from a watercourse or lake*)
- ☐ Water-related development – referable dams
- ☐ Water-related development – levees (*category 3 levees only*)

<input type="checkbox"/> Wetland protection area
Matters requiring referral to the local government: <input type="checkbox"/> Airport land <input type="checkbox"/> Environmentally relevant activities (ERA) <i>(only if the ERA has been devolved to local government)</i> <input type="checkbox"/> Heritage places – Local heritage places
Matters requiring referral to the Chief Executive of the distribution entity or transmission entity: <input type="checkbox"/> Infrastructure-related referrals – Electricity infrastructure
Matters requiring referral to: <ul style="list-style-type: none"> • The Chief Executive of the holder of the licence, if not an individual • The holder of the licence, if the holder of the licence is an individual <input type="checkbox"/> Infrastructure-related referrals – Oil and gas infrastructure
Matters requiring referral to the Brisbane City Council: <input type="checkbox"/> Ports – Brisbane core port land
Matters requiring referral to the Minister responsible for administering the Transport Infrastructure Act 1994: <input type="checkbox"/> Ports – Brisbane core port land <i>(where inconsistent with the Brisbane port LUP for transport reasons)</i> <input type="checkbox"/> Ports – Strategic port land
Matters requiring referral to the relevant port operator, if applicant is not port operator: <input type="checkbox"/> Ports – Land within Port of Brisbane's port limits <i>(below high-water mark)</i>
Matters requiring referral to the Chief Executive of the relevant port authority: <input type="checkbox"/> Ports – Land within limits of another port <i>(below high-water mark)</i>
Matters requiring referral to the Gold Coast Waterways Authority: <input type="checkbox"/> Tidal works or work in a coastal management district <i>(in Gold Coast waters)</i>
Matters requiring referral to the Queensland Fire and Emergency Service: <input type="checkbox"/> Tidal works or work in a coastal management district <i>(involving a marina (more than six vessel berths))</i>

18) Has any referral agency provided a referral response for this development application?		
<input type="checkbox"/> Yes – referral response(s) received and listed below are attached to this development application <input checked="" type="checkbox"/> No		
Referral requirement	Referral agency	Date of referral response
Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application <i>(if applicable)</i> .		

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules
<input checked="" type="checkbox"/> I agree to receive an information request if determined necessary for this development application <input type="checkbox"/> I do not agree to accept an information request for this development application
Note: By not agreeing to accept an information request I, the applicant, acknowledge:
<ul style="list-style-type: none"> • that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties • Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.
Further advice about information requests is contained in the DA Forms Guide .

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? (e.g. a preliminary approval)			
<input type="checkbox"/> Yes – provide details below or include details in a schedule to this development application <input checked="" type="checkbox"/> No			
List of approval/development application references	Reference number	Date	Assessment manager
<input type="checkbox"/> Approval <input type="checkbox"/> Development application			
<input type="checkbox"/> Approval <input type="checkbox"/> Development application			

21) Has the portable long service leave levy been paid? (only applicable to development applications involving building work or operational work)		
<input type="checkbox"/> Yes – a copy of the receipted QLeave form is attached to this development application <input checked="" type="checkbox"/> No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid <input type="checkbox"/> Not applicable (e.g. building and construction work is less than \$150,000 excluding GST)		
Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
\$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?
<input type="checkbox"/> Yes – show cause or enforcement notice is attached <input checked="" type="checkbox"/> No

23) Further legislative requirements			
<u>Environmentally relevant activities</u>			
23.1) Is this development application also taken to be an application for an environmental authority for an Environmentally Relevant Activity (ERA) under section 115 of the <i>Environmental Protection Act 1994</i>?			
<input type="checkbox"/> Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below <input checked="" type="checkbox"/> No Note: Application for an environmental authority can be found by searching “ESR/2015/1791” as a search term at www.qld.gov.au . An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.			
Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			
<input type="checkbox"/> Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.			
<u>Hazardous chemical facilities</u>			
23.2) Is this development application for a hazardous chemical facility?			
<input type="checkbox"/> Yes – Form 69: Notification of a facility exceeding 10% of schedule 15 threshold is attached to this development application <input checked="" type="checkbox"/> No Note: See www.business.qld.gov.au for further information about hazardous chemical notifications.			

Clearing native vegetation

23.3) Does this development application involve **clearing native vegetation** that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)

☒ No

Note: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.
2. See <https://www.qld.gov.au/environment/land/vegetation/applying> for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a **prescribed environmental matter** under the *Environmental Offsets Act 2014*?

☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter

☒ No

Note: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

☐ Yes – the development application involves premises in the koala habitat area in the koala priority area

☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area

☒ No

Note: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.des.qld.gov.au for further information.

Water resources

23.6) Does this development application involve **taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the Water Act 2000**?

☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development

☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au for further information.

DA templates are available from <https://planning.dsdmp.qld.gov.au/>. If the development application involves:

- Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1
- Taking or interfering with water in a watercourse, lake or spring: complete DA Form 1 Template 2
- Taking overland flow water: complete DA Form 1 Template 3.

Waterway barrier works

23.7) Does this application involve **waterway barrier works**?

☐ Yes – the relevant template is completed and attached to this development application

☒ No

DA templates are available from <https://planning.dsdmp.qld.gov.au/>. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve **aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants**?

☐ Yes – an associated resource allocation authority is attached to this development application, if required under the *Fisheries Act 1994*

☒ No

Note: See guidance materials at www.daf.qld.gov.au for further information.

Quarry materials from a watercourse or lake

23.9) Does this development application involve the **removal of quarry materials from a watercourse or lake** under the *Water Act 2000*?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au and www.business.qld.gov.au for further information.

Quarry materials from land under tidal waters

23.10) Does this development application involve the **removal of quarry materials from land under tidal water** under the *Coastal Protection and Management Act 1995*?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

Note: Contact the Department of Environment and Science at www.des.qld.gov.au for further information.

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the Water Supply Act)?

- ☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the Water Supply Act is attached to this development application
☒ No

Note: See guidance materials at www.dnrme.qld.gov.au for further information.

Tidal work or development within a coastal management district

23.12) Does this development application involve **tidal work or development in a coastal management district**?

- ☒ Yes – the following is included with this development application:
☒ Evidence the proposal meets the code for assessable development that is prescribed tidal work (*only required if application involves prescribed tidal work*)
☐ A certificate of title
☐ No

Note: See guidance materials at www.des.qld.gov.au for further information.

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

- ☐ Yes – details of the heritage place are provided in the table below
☒ No

Note: See guidance materials at www.des.qld.gov.au for information requirements regarding development of Queensland heritage places.

Name of the heritage place:		Place ID:	
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Brothels

23.14) Does this development application involve a **material change of use for a brothel**?

- ☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
☒ No

Decision under section 62 of the Transport Infrastructure Act 1994

23.15) Does this development application involve new or changed access to a state-controlled road?

- ☐ Yes - this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
☒ No

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist	
I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17 <i>Note: See the Planning Regulation 2017 for referral requirements</i>	<input checked="" type="checkbox"/> Yes
If building work is associated with the proposed development, Parts 4 to 6 of DA Form 2 – Building work details have been completed and attached to this development application	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
Supporting information addressing any applicable assessment benchmarks is with the development application <i>Note: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see DA Forms Guide: Planning Report Template.</i>	<input checked="" type="checkbox"/> Yes
Relevant plans of the development are attached to this development application <i>Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.</i>	<input checked="" type="checkbox"/> Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (see 21)	<input type="checkbox"/> Yes <input type="checkbox"/> Not applicable

25) Applicant declaration	
<input checked="" type="checkbox"/> By making this development application, I declare that all information in this development application is true and correct <input checked="" type="checkbox"/> Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the <i>Electronic Transactions Act 2001</i> <i>Note: It is unlawful to intentionally provide false or misleading information.</i>	
<p>Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.</p> <p>Personal information will not be disclosed for a purpose unrelated to the <i>Planning Act 2016</i>, Planning Regulation 2017 and the DA Rules except where:</p> <ul style="list-style-type: none"> • such disclosure is in accordance with the provisions about public access to documents contained in the <i>Planning Act 2016</i> and the Planning Regulation 2017, and the access rules made under the <i>Planning Act 2016</i> and Planning Regulation 2017; or • required by other legislation (including the <i>Right to Information Act 2009</i>); or • otherwise required by law. <p>This information may be stored in relevant databases. The information collected will be retained as required by the <i>Public Records Act 2002</i>.</p>	

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received: Reference number(s):

Notification of engagement of alternative assessment manager

Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment

Note: For completion by assessment manager if applicable

Description of the work	
QLeave project number	
Amount paid (\$)	Date paid (dd/mm/yy)
Date receipted form sighted by assessment manager	
Name of officer who sighted the form	

Appendix H – Landowners consent

13 August 2021

Ms Amy Hestehauge
Environmental Scientist
GHD
by email: amy.hestehauge@ghd.com

Dear Amy

**Wangetti Trail – Owner’s consent – reserve for recreation purposes
R899 over lot 31 on SP129117**

Council, as joint trustee of reserve for recreation purposes R899, consents to the lodgement of the development application for the Wangetti Trail over lot 31 on SP129117 located in the Cairns local government area. It is noted that Douglas Shire Council, as joint trustee with Cairns Regional Council of R899, has provided its consent over the parts of R899 located in the Douglas local government area.

Should you require additional information, please contact me on the above phone number.

Yours sincerely



Cheryl Dean
Property Officer
Planning and Environment

9 September 2021

GHD Pty Ltd
Ms Sarah Wilson
145 Ann Street
BRISBANE QLD 4000

Email to: sarah.wilson@ghd.com

Dear Ms Wilson

OWNER'S CONSENT – WANGETTI TRAIL

Reference is made to the request for owner's consent required to accompany the development application for material change of use and operational tidal works associated with the development of the Wangetti Trail, Stage 2, over the land listed on page 3 of this document.

The department hereby gives owner's consent as the owner to accompany the development application for the purpose of section 51(2) of the *Planning Act 2016* for a **material change of use and tidal works**.

For Road:

Although owner's consent to the development application has been provided and no tenure under the Land Act is required on Trezise Road (Mowbray) and the Captain Cook Highway (Palm Cove – Port Douglas), your client is to undertake works on the land only if and when the development application has been approved by the assessment manager or responsible entity, and in accordance with the conditions of that approval. Please refer to the Douglas Shire Council and the Department of Transport and Main Roads.

For Reserves:

Although owner's consent for the development application has been provided, the grant, issue or final approval of an appropriate tenure (Trustee Lease) and/or registered interest (Easement) over the Reserve lots as listed on page 3 are still subject to any approvals required under the *Land Act 1994*.

For Leases:

Although owner's consent for the development application has been provided, the grant, issue or final approval of a Sublease and/or Easement over Non-competitive Lease 9/2568, described as Lot 13 on NR5512, is still subject to any approvals required under the *Land Act 1994*.

Further, your client will only be able to occupy or undertake works on the lands:

- once the Department's offers for tenure or registered interests (Trustee Lease/Sublease/Easement) have been finalised and any necessary approvals under the Land Act have been obtained and that tenure/interest is in place; and

- if and when the development application has been approved by the assessment manager or responsible entity, and in accordance with the conditions of that approval.

Your client is also required to always comply with the purpose, terms and conditions of the tenure/interest once in place.

Owner's consent from Douglas Shire Council and Cairns Regional Council, as trustees of the reserves listed on page 3, is also required to accompany the DA Form 1.

A copy of this letter is to be attached to your DA Form 1 as the required evidence of owners consent.

Your client will also need to comply with all other legislative and regulatory requirements which may also include approvals that are not part of the assessment of the development application under the *Planning Act 2016* e.g. a marine park permit if in a marine park.

Further, please note that the above consent will expire on **09 March 2022**. Should the development application not be lodged with the assessment manager prior to this date, your client will be required again to lodge the DA Form 1 and any attachments with this Department with a further request for owner's consent - any further request will need to be reconsidered by the Department.

It is also advised that any land use activities must comply with the *Aboriginal Cultural Heritage Act 2003* or the *Torres Strait Islander Heritage Act 2003*.

Finally, owner's consent is required under the *Planning Act 2016* to enable the application to be considered properly made for lodging with the assessment manager and is a completely separate process to assessment of the application under the *Planning Act 2016*.

Accordingly, the State may act at a later date as assessment manager in the assessment of the development application - providing owner's consent will not influence any role the State may have in this development assessment.

If you wish to discuss this matter please contact Deanna Holder, Senior Land Officer on PH: (07) 4016 1903.

All future correspondence relative to this matter is to be referred to the contact Officer at the address below or by email to laateam1enq@resources.qld.gov.au. Any hard copy correspondence received will be electronically scanned and filed. For this reason, it is recommended that any attached plans, sketches or maps be no larger than A3-sized.

Please quote reference number 2021/003105 in any future correspondence.

Yours sincerely



Deanna Holder

Senior Land Officer

A duly authorised delegate of the Minister
under the current Land Act (Ministerial) Delegation
Att. – Attachment 1.

ATTACHMENT 1:**Part A – Reserves:**

Description	Reference	Purpose	Trustee(s)
117SR898	49006406	Camping	Douglas Shire Council
31SP129117 6SP309107 3SP309107 32SP165924 39SP309107 4SP309107	49006406	Recreation Permit to Occupy 0/221759 – Residential purposes registered over part of Lot 39 on SP309107. Permit to Occupy 0/208185 – Commercial/Business purposes namely crocodile farming registered over part of Lot 4 on SP309117.	Douglas Shire Council and Cairns Regional Council (joint trustees) Permittee: Duane Cash Permittee: Hartley's Creek Crocodile Farming Company Pty Ltd

Part B - State Leasehold Land:

Description	Reference	Tenure/Purpose	Lessee
13NR5512	17659182	Non-competitive Lease 9/2568 – Tourism purposes namely tourist accommodation and ancillary facilities	Bellbird Park Developments Pty Ltd

Part C - Unallocated State Land (USL):

Description	Reference	Tenure/Purpose	Registered Owner
12USL9994	47001491	USL	Department of Resources (DoR)
9USL9994	47001493	USL	DoR
8USL9994	47001494	USL	DoR
1CP910509	47020569	USL	DoR
48AP16233	47023999	USL	DoR
2AP19233 1PER208185	47033558 40009327	USL Permit to Occupy 0/208185 – Commercial/Business purposes namely crocodile farming	DoR Hartleys Creek Crocodile Farming Company Pty Ltd

As advised by previous Owner's Consent letter dated 28 January 2021, the following lots listed in the support documentation are not under the control of the Department of Resources. You should obtain Consent from the Department of Environment and Science as registered trustee.

Description	Title Reference	Name	Trustee	Legislation	Purpose
12AP19345 & 15AP19345	47522109	McAlister Range Forest Reserve	Department of Environment and Science	Nature Conservation Act 1992	Forest Reserve
16AP19345	47522039	Kuranda Forest Reserve	Department of Environment and Science	Nature Conservation Act 1992	Forest Reserve
23AP19345	47542391	Kuranda State Forest	Department of Environment and Science	Nature Conservation Act 1992	State Forest
24AP19345	4752118	Kuranda West Forest Reserve	Department of Environment and Science	Nature Conservation Act 1992	State Forest

DA Form 1 – Development application details

Approved form (version 1.2 effective 7 February 2020) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application involving **code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) and parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (individual or company full name)	Department of Tourism, Innovation and Sport (DTIS) - Tourism Development Projects Division (TDPD) (Formerly Department of State Development, Tourism and Innovation (DSDTI) – Tourism Development Project Division)
Contact name (only applicable for companies)	Department of Tourism, Innovation and Sport (DTIS) - Tourism Development Projects Division (TDPD), c/- of Sarah Wilson (GHD)
Postal address (P.O. Box or street address)	Level 13 – The Rocket, 203 Robina Town Centre Drive
Suburb	Robina
State	QLD
Postcode	4226
Country	Australia
Contact number	07 5413 8133
Email address (non-mandatory)	sarah.wilson@ghd.com
Mobile number (non-mandatory)	0459 813 589
Fax number (non-mandatory)	N/A
Applicant's reference number(s) (if applicable)	

2) Owner's consent

2.1) Is written consent of the owner required for this development application?

☒ Yes – the written consent of the owner(s) is attached to this development application

☐ No – proceed to 3)

PART 2 – LOCATION DETAILS

3) Location of the premises (complete 3.1) or 3.2), and 3.3) as applicable)

Note: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see DA Forms Guide: Relevant plans.

3.1) Street address and lot on plan

☒ Street address AND lot on plan (all lots must be listed), **or**

☐ Street address AND lot on plan for an adjoining or adjacent property of the premises (appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).

a)	Unit No.	Street No.	Street Name and Type	Suburb
			Refer to the covering letter	
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
				Douglas Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)

3.2) Coordinates of premises (appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)

Note: Place each set of coordinates in a separate row.

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other: <input type="text"/>	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56	<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other: <input type="text"/>	

3.3) Additional premises

☒ Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application

☐ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

☒ In or adjacent to a water body or watercourse or in or above an aquifer

Name of water body, watercourse or aquifer:

☐ On strategic port land under the *Transport Infrastructure Act 1994*

Lot on plan description of strategic port land:

Name of port authority for the lot:

☐ In a tidal area

Name of local government for the tidal area (if applicable):

Name of port authority for tidal area (if applicable):	
<input type="checkbox"/> On airport land under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i>	
Name of airport:	
<input type="checkbox"/> Listed on the Environmental Management Register (EMR) under the <i>Environmental Protection Act 1994</i>	
EMR site identification:	
<input type="checkbox"/> Listed on the Contaminated Land Register (CLR) under the <i>Environmental Protection Act 1994</i>	
CLR site identification:	

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see [DA Forms Guide](#).

- ☒ Yes – All easement locations, types and dimensions are included in plans submitted with this development application
- ☐ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? (tick only one box)

- ☒ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? (tick only one box)

- ☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☐ Code assessment ☒ Impact assessment (requires public notification)

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

shared use trail for mountain bike users and hikers, four public campsite nodes and four eco accommodation nodes

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms guide: Relevant plans](#).

- ☒ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect

a) What is the type of development? (tick only one box)

- ☐ Material change of use ☐ Reconfiguring a lot ☒ Operational work ☐ Building work

b) What is the approval type? (tick only one box)

- ☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☐ Code assessment ☐ Impact assessment (requires public notification)

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

The works are proposed over State controlled road reserve, local government managed road reserve, freehold lots, leasehold land, state reserve land, national park land, forest reserve and unallocated State land.

The proposed works includes the following components:

- Shared use trail to accommodate both mountain bike users and hikers, consisting of natural ground and surface treatments.

- A number of low-level bridges and crossings including Hartley Creek suspension bridge, boulder rock crossings and gully crossing style bridge for minor waterway crossings
- Four public camp sites
- Four private camp sites
- Utilisation of existing access tracks and extension/addition of access tracks where required
- Mountain bike trail using existing access tracks associated with Twin Bridges Road (Black Mountain Road East and Quaid's Road). Replacement of five waterway crossings along Twin Bridges Road (Black Mountain Road East).

A 20 m corridor is proposed on either side of the trail, referred to as the construction corridor to allow flexibility for the placement of infrastructure to avoid, to the greatest extent possible, impacting on Matters of State Environmental Significance (MSES) and Matters of National Environmental Significance (MNES).

Clearing of vegetation will be limited to the track which will generally be around 1.5 m wide, but will be restricted to a maximum of 1 m wide within environmentally sensitive areas. The width will allow safe passing of users. The trail will have an average gradient of less than 10% and a maximum gradient of no greater than 15% (and only for short distances). These gradients are considered to be in line with the difficulty ratings proposed for the Wangetti Trail. Surface treatments proposed for various sections of the trail include:

- Ballast raised trail
- Artificial rock armour (ARM)
- Standard raised trail (borrow pit)
- Rock armour

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).

☒ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

☒ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application

☐ Not required

Section 2 – Further development details

7) Does the proposed development application involve any of the following?

Material change of use	<input checked="" type="checkbox"/> Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	<input type="checkbox"/> Yes – complete division 2
Operational work	<input checked="" type="checkbox"/> Yes – complete division 3
Building work	<input type="checkbox"/> Yes – complete DA Form 2 – Building work details

Division 1 – Material change of use

Note: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.

8.1) Describe the proposed material change of use

Provide a general description of the proposed use	Provide the planning scheme definition (include each definition in a new row)	Number of dwelling units (if applicable)	Gross floor area (m ²) (if applicable)
Under the Planning Scheme, SP2 meets the use definition of an 'environment facility', being a facility for the	Environment Facility	N/A	N/A

'conservation, interpretation and appreciation of areas of environmental, cultural or heritage value' and includes SP2 components that comprise nature-based attractions, walking tracks, boardwalks, observation decks, etc. Under the Planning Scheme, development of an environment facility within conservation and rural zoning is code assessable.			

8.2) Does the proposed use involve the use of existing buildings on the premises?

☐ Yes

☒ No

Division 2 – Reconfiguring a lot

Note: This division is only required to be completed if any part of the development application involves reconfiguring a lot.

9.1) What is the total number of existing lots making up the premises?

9.2) What is the nature of the lot reconfiguration? (tick all applicable boxes)

☐ Subdivision (complete 10))

☐ Dividing land into parts by agreement (complete 11))

☐ Boundary realignment (complete 12))

☐ Creating or changing an easement giving access to a lot from a constructed road (complete 13))

10) Subdivision

10.1) For this development, how many lots are being created and what is the intended use of those lots:

Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				

10.2) Will the subdivision be staged?

☐ Yes – provide additional details below

☐ No

How many stages will the works include?

What stage(s) will this development application apply to?

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?

Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment

12.1) What are the current and proposed areas for each lot comprising the premises?

Current lot		Proposed lot	
Lot on plan description	Area (m ²)	Lot on plan description	Area (m ²)

12.2) What is the reason for the boundary realignment?			

13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? (attach schedule if there are more than two easements)				
Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? (e.g. pedestrian access)	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work

Note: This division is only required to be completed if any part of the development application involves operational work.

14.1) What is the nature of the operational work?	
<input type="checkbox"/> Road work <input type="checkbox"/> Drainage work <input type="checkbox"/> Landscaping <input checked="" type="checkbox"/> Other – please specify:	<input type="checkbox"/> Stormwater <input checked="" type="checkbox"/> Earthworks <input type="checkbox"/> Signage <input type="checkbox"/> Water infrastructure <input type="checkbox"/> Sewage infrastructure <input type="checkbox"/> Clearing vegetation <ul style="list-style-type: none"> • Operational work for construction or raising of waterway barrier works for waterway crossings • Operational work for works in a coastal management district associated with constructing the trail
14.2) Is the operational work necessary to facilitate the creation of new lots? (e.g. subdivision)	
<input type="checkbox"/> Yes – specify number of new lots:	
<input checked="" type="checkbox"/> No	
14.3) What is the monetary value of the proposed operational work? (include GST, materials and labour)	
\$	

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application
Minister to decide the assessment manager for the development application given it is located within Douglas Shire Council and Cairns Regional Council.
16) Has the local government agreed to apply a superseded planning scheme for this development application?
<input type="checkbox"/> Yes – a copy of the decision notice is attached to this development application <input type="checkbox"/> The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached <input checked="" type="checkbox"/> No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?
Note: A development application will require referral if prescribed by the Planning Regulation 2017.
<input type="checkbox"/> No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6
Matters requiring referral to the Chief Executive of the Planning Act 2016:
<input type="checkbox"/> Clearing native vegetation

- ☐ Contaminated land (*unexploded ordnance*)
- ☐ Environmentally relevant activities (ERA) (*only if the ERA has not been devolved to a local government*)
- ☐ Fisheries – aquaculture
- ☐ Fisheries – declared fish habitat area
- ☐ Fisheries – marine plants
- ☒ Fisheries – waterway barrier works
- ☐ Hazardous chemical facilities
- ☐ Heritage places – Queensland heritage place (*on or near a Queensland heritage place*)
- ☐ Infrastructure-related referrals – designated premises
- ☒ Infrastructure-related referrals – state transport infrastructure
- ☐ Infrastructure-related referrals – State transport corridor and future State transport corridor
- ☐ Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels
- ☐ Infrastructure-related referrals – near a state-controlled road intersection
- ☐ Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas
- ☐ Koala habitat in SEQ region – key resource areas
- ☐ Ports – Brisbane core port land – near a State transport corridor or future State transport corridor
- ☐ Ports – Brisbane core port land – environmentally relevant activity (ERA)
- ☐ Ports – Brisbane core port land – tidal works or work in a coastal management district
- ☐ Ports – Brisbane core port land – hazardous chemical facility
- ☐ Ports – Brisbane core port land – taking or interfering with water
- ☐ Ports – Brisbane core port land – referable dams
- ☐ Ports – Brisbane core port land – fisheries
- ☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)
- ☐ SEQ development area
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
- ☒ Tidal works or works in a coastal management district
- ☐ Reconfiguring a lot in a coastal management district or for a canal
- ☐ Erosion prone area in a coastal management district
- ☐ Urban design
- ☐ Water-related development – taking or interfering with water
- ☐ Water-related development – removing quarry material (*from a watercourse or lake*)
- ☐ Water-related development – referable dams
- ☐ Water-related development – levees (*category 3 levees only*)
- ☐ Wetland protection area

Matters requiring referral to the local government:

- ☐ Airport land
- ☐ Environmentally relevant activities (ERA) (*only if the ERA has been devolved to local government*)
- ☐ Heritage places – Local heritage places

Matters requiring referral to the Chief Executive of the distribution entity or transmission entity:

- ☐ Infrastructure-related referrals – Electricity infrastructure

Matters requiring referral to:

- The **Chief Executive of the holder of the licence**, if not an individual
- The **holder of the licence**, if the holder of the licence is an individual
- ☐ Infrastructure-related referrals – Oil and gas infrastructure

Matters requiring referral to the Brisbane City Council:

<input type="checkbox"/> Ports – Brisbane core port land
Matters requiring referral to the Minister responsible for administering the Transport Infrastructure Act 1994:
<input type="checkbox"/> Ports – Brisbane core port land <i>(where inconsistent with the Brisbane port LUP for transport reasons)</i>
<input type="checkbox"/> Ports – Strategic port land
Matters requiring referral to the relevant port operator , if applicant is not port operator:
<input type="checkbox"/> Ports – Land within Port of Brisbane's port limits <i>(below high-water mark)</i>
Matters requiring referral to the Chief Executive of the relevant port authority:
<input type="checkbox"/> Ports – Land within limits of another port <i>(below high-water mark)</i>
Matters requiring referral to the Gold Coast Waterways Authority:
<input type="checkbox"/> Tidal works or work in a coastal management district <i>(in Gold Coast waters)</i>
Matters requiring referral to the Queensland Fire and Emergency Service:
<input type="checkbox"/> Tidal works or work in a coastal management district <i>(involving a marina (more than six vessel berths))</i>

18) Has any referral agency provided a referral response for this development application?		
<input type="checkbox"/> Yes – referral response(s) received and listed below are attached to this development application		
<input checked="" type="checkbox"/> No		
Referral requirement	Referral agency	Date of referral response
Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application <i>(if applicable)</i> .		

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules
<input checked="" type="checkbox"/> I agree to receive an information request if determined necessary for this development application
<input type="checkbox"/> I do not agree to accept an information request for this development application
Note: By not agreeing to accept an information request I, the applicant, acknowledge: <ul style="list-style-type: none"> that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules. Further advice about information requests is contained in the DA Forms Guide .

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? (e.g. a preliminary approval)			
<input type="checkbox"/> Yes – provide details below or include details in a schedule to this development application			
<input checked="" type="checkbox"/> No			
List of approval/development application references	Reference number	Date	Assessment manager
<input type="checkbox"/> Approval			

<input type="checkbox"/> Development application			
<input type="checkbox"/> Approval			
<input type="checkbox"/> Development application			

21) Has the portable long service leave levy been paid? (only applicable to development applications involving building work or operational work)

- ☐ Yes – a copy of the receipted QLeave form is attached to this development application
☐ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid
☒ Not applicable (e.g. building and construction work is less than \$150,000 excluding GST)

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
\$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

- ☐ Yes – show cause or enforcement notice is attached
☒ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an Environmentally Relevant Activity (ERA) under section 115 of the *Environmental Protection Act 1994*?

- ☐ Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below
☒ No

Note: Application for an environmental authority can be found by searching "ESR/2015/1791" as a search term at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.

Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			

- ☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a hazardous chemical facility?

- ☐ Yes – Form 69: Notification of a facility exceeding 10% of schedule 15 threshold is attached to this development application
☒ No

Note: See www.business.qld.gov.au for further information about hazardous chemical notifications.

Clearing native vegetation

23.3) Does this development application involve clearing native vegetation that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

- ☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)
☒ No

Note: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.
 2. See <https://www.qld.gov.au/environment/land/vegetation/applying> for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a prescribed environmental matter under the *Environmental Offsets Act 2014*?

☒ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter

☐ No

Note: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

☐ Yes – the development application involves premises in the koala habitat area in the koala priority area

☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area

☒ No

Note: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.des.qld.gov.au for further information.

Water resources

23.6) Does this development application involve taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the *Water Act 2000*?

☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development

☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au for further information.

DA templates are available from <https://planning.dsdmip.qld.gov.au/>. If the development application involves:

- Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1
- Taking or interfering with water in a watercourse, lake or spring: complete DA Form 1 Template 2
- Taking overland flow water: complete DA Form 1 Template 3.

Waterway barrier works

23.7) Does this application involve waterway barrier works?

☒ Yes – the relevant template is completed and attached to this development application

☐ No

DA templates are available from <https://planning.dsdmip.qld.gov.au/>. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants?

☐ Yes – an associated resource allocation authority is attached to this development application, if required under the *Fisheries Act 1994*

☒ No

Note: See guidance materials at www.daf.qld.gov.au for further information.

Quarry materials from a watercourse or lake

23.9) Does this development application involve the removal of quarry materials from a watercourse or lake under the *Water Act 2000*?

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development

☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au and www.business.qld.gov.au for further information.

Quarry materials from land under tidal waters

23.10) Does this development application involve the removal of quarry materials from land under tidal water under the *Coastal Protection and Management Act 1995*?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
- ☒ No

Note: Contact the Department of Environment and Science at www.des.qld.gov.au for further information.

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the Water Supply Act)?

- ☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the Water Supply Act is attached to this development application
- ☒ No

Note: See guidance materials at www.dnrme.qld.gov.au for further information.

Tidal work or development within a coastal management district

23.12) Does this development application involve tidal work or development in a coastal management district?

- ☒ Yes – the following is included with this development application:
- ☒ Evidence the proposal meets the code for assessable development that is prescribed tidal work (*only required if application involves prescribed tidal work*)
 - ☒ A certificate of title
- ☐ No

Note: See guidance materials at www.des.qld.gov.au for further information.

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

- ☐ Yes – details of the heritage place are provided in the table below
- ☒ No

Note: See guidance materials at www.des.qld.gov.au for information requirements regarding development of Queensland heritage places.

Name of the heritage place:		Place ID:	
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Brothels

23.14) Does this development application involve a **material change of use for a brothel**?

- ☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
- ☒ No

Decision under section 62 of the *Transport Infrastructure Act 1994*

23.15) Does this development application involve new or changed access to a state-controlled road?

- ☐ Yes - this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
- ☒ No

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist

I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17

☒ Yes

Note: See the *Planning Regulation 2017* for referral requirements

If building work is associated with the proposed development, Parts 4 to 6 of [DA Form 2 – Building work details](#) have been completed and attached to this development application

☐ Yes
☒ Not applicable

Supporting information addressing any applicable assessment benchmarks is with the development application

☒ Yes

Note: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see [DA Forms Guide: Planning Report Template](#).

Relevant plans of the development are attached to this development application

☒ Yes

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).

The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (see 21)

☐ Yes

☒ Not applicable

25) Applicant declaration

☒ By making this development application, I declare that all information in this development application is true and correct

☒ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*

Note: It is unlawful to intentionally provide false or misleading information.

Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.

Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where:

- such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or
- required by other legislation (including the *Right to Information Act 2009*); or
- otherwise required by law.

This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received:

Reference number(s):

Notification of engagement of alternative assessment manager

Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment

Note: For completion by assessment manager if applicable

Description of the work			
QLeave project number			
Amount paid (\$)		Date paid (dd/mm/yy)	
Date receipted form sighted by assessment manager			
Name of officer who sighted the form			

DA Form 1 – Development application details

Approved form (version 1.2 effective 7 February 2020) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application involving **code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) and parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (individual or company full name)	Department of State Development, Tourism and Innovation - Tourism Development Projects Division
Contact name (only applicable for companies)	Sarah Wilson – GHD Pty Ltd
Postal address (P.O. Box or street address)	Level 13, The Rocket, 203 Robina Town Centre Drive
Suburb	Robina
State	QLD
Postcode	4226
Country	Australia
Contact number	61 7 5413 8133
Email address (non-mandatory)	Sarah.Wilson@ghd.com
Mobile number (non-mandatory)	0459 813 589
Fax number (non-mandatory)	
Applicant's reference number(s) (if applicable)	

2) Owner's consent

2.1) Is written consent of the owner required for this development application?

- ☒ Yes – the written consent of the owner(s) is attached to this development application
☐ No – proceed to 3)

PART 2 – LOCATION DETAILS

3) Location of the premises (complete 3.1) or 3.2), and 3.3) as applicable)

Note: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see DA Forms Guide: Relevant plans.

3.1) Street address and lot on plan

☒ Street address AND lot on plan (all lots must be listed), **or**

☐ Street address AND lot on plan for an adjoining or adjacent property of the premises (appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).

a)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	Captain Cook Highway, State Reserve	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		31	SP129117	Douglas Shire Council
	Unit No.	Street No.	Street Name and Type	Suburb
			Captain Cook Highway, Reserve	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		6	SP309107	Douglas Shire Regional Council
	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	Captain Cook Highway, Reserve	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		39	SP309107	Douglas Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	National park	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		174	National park - NPW930	Douglas Shire Council
c)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	N/A	N/A
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
			Road reserve - Captain Cook Highway	Douglas Shire Council
d)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A		Captain Cook Highway, Wangetti	Wangetti
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		2	SP309094	Douglas Shire Council

3.2) Coordinates of premises (appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)

Note: Place each set of coordinates in a separate row.

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> 54 <input type="checkbox"/> 55	<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94	

		<input type="checkbox"/> 56	<input type="checkbox"/> Other:		
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3.3) Additional premises

- ☐ Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application
- ☐ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

- ☒ In or adjacent to a water body or watercourse or in or above an aquifer

Name of water body, watercourse or aquifer:

Coral sea and various no name minor, non-perennial watercourses draining into the Mossman basin.

- ☐ On strategic port land under the *Transport Infrastructure Act 1994*

Lot on plan description of strategic port land:

Name of port authority for the lot:

- ☐ In a tidal area

Name of local government for the tidal area (if applicable):

Name of port authority for tidal area (if applicable):

- ☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*

Name of airport:

- ☐ Listed on the Environmental Management Register (EMR) under the *Environmental Protection Act 1994*

EMR site identification:

- ☐ Listed on the Contaminated Land Register (CLR) under the *Environmental Protection Act 1994*

CLR site identification:

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see DA Forms Guide.

- ☐ Yes – All easement locations, types and dimensions are included in plans submitted with this development application
- ☒ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? (tick only one box)

- ☒ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? (tick only one box)

- ☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☐ Code assessment ☒ Impact assessment (requires public notification)

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

The proposed works associated with Wangetti Trail Project – South Section A will be located within Douglas Shire Council. The proposed works will comprise of the following components:

- shared use trail to accommodate both mountain bike users and hikers consisting of natural ground and surface treatments.
- waterway crossings structures in the form of single span bridges and rock armour crossings.
- The formalisation of existing access tracks into service tracks to provide restricted access to the shared use trail for construction purposes, operational purposes, maintenance purpose and for emergency purposes.
- Dark Jungle (public camping node and amenities block) which will have a footprint of 0.25 hectares (ha) and will comprise of:
 - 10 x 4 m diameter elevated camping decks
 - 1 x 2.5 m x 2.5 m toilet block
 - 1 communal gathering area including bike rack, table and seating, cooking and bench area and shelter
 - Interconnecting pathways, boardwalks and access tracks

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms guide: Relevant plans](#).

☒ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect

a) What is the type of development? (tick only one box)

☐ Material change of use ☐ Reconfiguring a lot ☒ Operational work ☐ Building work

b) What is the approval type? (tick only one box)

☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☒ Code assessment ☐ Impact assessment (requires public notification)

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

Development permit for operational works (Code Assessable) for works within a Coastal Management District to construct the shared use trail, bridges, rock armour crossing and service tracks within State coastal land within the coastal management district.

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).

☒ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

☐ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application

☐ Not required

Section 2 – Further development details

7) Does the proposed development application involve any of the following?

Material change of use ☒ Yes – complete division 1 if assessable against a local planning instrument

Reconfiguring a lot ☐ Yes – complete division 2

Operational work ☒ Yes – complete division 3

Building work ☐ Yes – complete DA Form 2 – Building work details

Division 1 – Material change of use

Note: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.

8.1) Describe the proposed material change of use			
Provide a general description of the proposed use	Provide the planning scheme definition (include each definition in a new row)	Number of dwelling units (if applicable)	Gross floor area (m ²) (if applicable)
Shared use trail and ancillary infrastructure including service tracks and waterway crossing structures	Environmental Facility - use definition of an 'Environmental Facility', being a facility for the "conservation, interpretation and appreciation of areas of environmental, cultural or heritage value" and 'walking tracks, seating, shelters, boardwalks, observation decks, bird hides".	N/A	N/A
Dark Jungle (public camping node and amenities block)	Nature-based tourism – The use of premises for a tourism activity including tourist accommodation, that is intended for the conservation, interpretation, and appreciation of environmental, cultural or heritage value, local ecosystem and attributes of the natural environment.	N/A	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			

Division 2 – Reconfiguring a lot

Note: This division is only required to be completed if any part of the development application involves reconfiguring a lot.

9.1) What is the total number of existing lots making up the premises?				
9.2) What is the nature of the lot reconfiguration? (tick all applicable boxes)				
<input type="checkbox"/> Subdivision (complete 10))		<input type="checkbox"/> Dividing land into parts by agreement (complete 11))		
<input type="checkbox"/> Boundary realignment (complete 12))		<input type="checkbox"/> Creating or changing an easement giving access to a lot from a constructed road (complete 13))		
10) Subdivision				
10.1) For this development, how many lots are being created and what is the intended use of those lots:				
Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				
10.2) Will the subdivision be staged?				
<input type="checkbox"/> Yes – provide additional details below <input type="checkbox"/> No				
How many stages will the works include?				
What stage(s) will this development application apply to?				

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?

Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment

12.1) What are the current and proposed areas for each lot comprising the premises?

Current lot		Proposed lot	
Lot on plan description	Area (m ²)	Lot on plan description	Area (m ²)

12.2) What is the reason for the boundary realignment?

13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? (attach schedule if there are more than two easements)

Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? (e.g. pedestrian access)	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work

Note: This division is only required to be completed if any part of the development application involves operational work.

14.1) What is the nature of the operational work?

<input type="checkbox"/> Road work	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Water infrastructure
<input type="checkbox"/> Drainage work	<input checked="" type="checkbox"/> Earthworks	<input type="checkbox"/> Sewage infrastructure
<input type="checkbox"/> Landscaping	<input type="checkbox"/> Signage	<input checked="" type="checkbox"/> Clearing vegetation
<input checked="" type="checkbox"/> Other – please specify: Development permit for operational works for interfering with quarry material on state coastal land above the high-water mark within a Coastal Management District		

14.2) Is the operational work necessary to facilitate the creation of new lots? (e.g. subdivision)

<input type="checkbox"/> Yes – specify number of new lots:	
<input checked="" type="checkbox"/> No	

14.3) What is the monetary value of the proposed operational work? (include GST, materials and labour)

TBA

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application

Douglas Shire Council

16) Has the local government agreed to apply a superseded planning scheme for this development application?

<input type="checkbox"/> Yes – a copy of the decision notice is attached to this development application
<input type="checkbox"/> The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
<input checked="" type="checkbox"/> No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?

Note: A development application will require referral if prescribed by the Planning Regulation 2017.

☐ No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6

Matters requiring referral to the **Chief Executive of the *Planning Act 2016***:

- ☐ Clearing native vegetation
- ☐ Contaminated land (*unexploded ordnance*)
- ☐ Environmentally relevant activities (ERA) (*only if the ERA has not been devolved to a local government*)
- ☐ Fisheries – aquaculture
- ☐ Fisheries – declared fish habitat area
- ☐ Fisheries – marine plants
- ☐ Fisheries – waterway barrier works
- ☐ Hazardous chemical facilities
- ☐ Heritage places – Queensland heritage place (*on or near a Queensland heritage place*)
- ☐ Infrastructure-related referrals – designated premises
- ☒ Infrastructure-related referrals – state transport infrastructure
- ☐ Infrastructure-related referrals – State transport corridor and future State transport corridor
- ☐ Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels
- ☐ Infrastructure-related referrals – near a state-controlled road intersection
- ☐ Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas
- ☐ Koala habitat in SEQ region – key resource areas
- ☐ Ports – Brisbane core port land – near a State transport corridor or future State transport corridor
- ☐ Ports – Brisbane core port land – environmentally relevant activity (ERA)
- ☐ Ports – Brisbane core port land – tidal works or work in a coastal management district
- ☐ Ports – Brisbane core port land – hazardous chemical facility
- ☐ Ports – Brisbane core port land – taking or interfering with water
- ☐ Ports – Brisbane core port land – referable dams
- ☐ Ports – Brisbane core port land – fisheries
- ☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)
- ☐ SEQ development area
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
- ☒ Tidal works or works in a coastal management district
- ☐ Reconfiguring a lot in a coastal management district or for a canal
- ☐ Erosion prone area in a coastal management district
- ☐ Urban design
- ☐ Water-related development – taking or interfering with water
- ☐ Water-related development – removing quarry material (*from a watercourse or lake*)
- ☐ Water-related development – referable dams
- ☐ Water-related development – levees (*category 3 levees only*)
- ☐ Wetland protection area

Matters requiring referral to the **local government**:

- ☐ Airport land
- ☐ Environmentally relevant activities (ERA) (*only if the ERA has been devolved to local government*)

<input type="checkbox"/> Heritage places – Local heritage places
Matters requiring referral to the Chief Executive of the distribution entity or transmission entity:
<input type="checkbox"/> Infrastructure-related referrals – Electricity infrastructure
Matters requiring referral to:
<ul style="list-style-type: none"> • The Chief Executive of the holder of the licence, if not an individual • The holder of the licence, if the holder of the licence is an individual
<input type="checkbox"/> Infrastructure-related referrals – Oil and gas infrastructure
Matters requiring referral to the Brisbane City Council:
<input type="checkbox"/> Ports – Brisbane core port land
Matters requiring referral to the Minister responsible for administering the Transport Infrastructure Act 1994:
<input type="checkbox"/> Ports – Brisbane core port land <i>(where inconsistent with the Brisbane port LUP for transport reasons)</i>
<input type="checkbox"/> Ports – Strategic port land
Matters requiring referral to the relevant port operator, if applicant is not port operator:
<input type="checkbox"/> Ports – Land within Port of Brisbane's port limits <i>(below high-water mark)</i>
Matters requiring referral to the Chief Executive of the relevant port authority:
<input type="checkbox"/> Ports – Land within limits of another port <i>(below high-water mark)</i>
Matters requiring referral to the Gold Coast Waterways Authority:
<input type="checkbox"/> Tidal works or work in a coastal management district <i>(in Gold Coast waters)</i>
Matters requiring referral to the Queensland Fire and Emergency Service:
<input type="checkbox"/> Tidal works or work in a coastal management district <i>(involving a marina (more than six vessel berths))</i>

18) Has any referral agency provided a referral response for this development application?

- ☐ Yes – referral response(s) received and listed below are attached to this development application
- ☒ No

Referral requirement	Referral agency	Date of referral response

Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application *(if applicable)*.

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules

- ☒ I agree to receive an information request if determined necessary for this development application
- ☐ I do not agree to accept an information request for this development application

Note: By not agreeing to accept an information request I, the applicant, acknowledge:

- that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties
- Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.

Further advice about information requests is contained in the DA Forms Guide.

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? (e.g. a preliminary approval)

☐ Yes – provide details below or include details in a schedule to this development application

☒ No

List of approval/development application references	Reference number	Date	Assessment manager
<input type="checkbox"/> Approval			
<input type="checkbox"/> Development application			
<input type="checkbox"/> Approval			
<input type="checkbox"/> Development application			

21) Has the portable long service leave levy been paid? (only applicable to development applications involving building work or operational work)

☐ Yes – a copy of the receipted QLeave form is attached to this development application

☒ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid

☐ Not applicable (e.g. building and construction work is less than \$150,000 excluding GST)

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
\$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

☐ Yes – show cause or enforcement notice is attached

☒ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an Environmentally Relevant Activity (ERA) under section 115 of the *Environmental Protection Act 1994*?

☐ Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below

☒ No

Note: Application for an environmental authority can be found by searching "ESR/2015/1791" as a search term at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.

Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			

☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a hazardous chemical facility?

☐ Yes – Form 69: Notification of a facility exceeding 10% of schedule 15 threshold is attached to this development application

☒ No

Note: See www.business.qld.gov.au for further information about hazardous chemical notifications.

Clearing native vegetation

23.3) Does this development application involve clearing native vegetation that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

- ☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)
☒ No

Note: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.
2. See <https://www.qld.gov.au/environment/land/vegetation/applying> for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a prescribed environmental matter under the *Environmental Offsets Act 2014*?

- ☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter
☒ No

Note: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

- ☐ Yes – the development application involves premises in the koala habitat area in the koala priority area
☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area
☒ No

Note: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.des.qld.gov.au for further information.

Water resources

23.6) Does this development application involve taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the *Water Act 2000*?

- ☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development
☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au for further information.

DA templates are available from <https://planning.dsdmip.qld.gov.au/>. If the development application involves:

- Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1
- Taking or interfering with water in a watercourse, lake or spring: complete DA Form 1 Template 2
- Taking overland flow water: complete DA Form 1 Template 3.

Waterway barrier works

23.7) Does this application involve waterway barrier works?

- ☐ Yes – the relevant template is completed and attached to this development application
☒ No

DA templates are available from <https://planning.dsdmip.qld.gov.au/>. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants?

- ☐ Yes – an associated resource allocation authority is attached to this development application, if required under the *Fisheries Act 1994*
☒ No

Note: See guidance materials at www.daf.qld.gov.au for further information.

Quarry materials from a watercourse or lake

23.9) Does this development application involve the removal of quarry materials from a watercourse or lake under the *Water Act 2000*?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au and www.business.qld.gov.au for further information.

Quarry materials from land under tidal waters

23.10) Does this development application involve the removal of quarry materials from land under tidal water under the *Coastal Protection and Management Act 1995*?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

Note: Contact the Department of Environment and Science at www.des.qld.gov.au for further information.

Referable dams

23.11) Does this development application involve a referable dam required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the *Water Supply Act*)?

- ☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the *Water Supply Act* is attached to this development application
☒ No

Note: See guidance materials at www.dnrme.qld.gov.au for further information.

Tidal work or development within a coastal management district

23.12) Does this development application involve tidal work or development in a coastal management district?

- ☒ Yes – the following is included with this development application:
☒ Evidence the proposal meets the code for assessable development that is prescribed tidal work (*only required if application involves prescribed tidal work*)
☒ A certificate of title
☐ No

Note: See guidance materials at www.des.qld.gov.au for further information.

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

- ☐ Yes – details of the heritage place are provided in the table below
☒ No

Note: See guidance materials at www.des.qld.gov.au for information requirements regarding development of Queensland heritage places.

Name of the heritage place:		Place ID:	
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Brothels

23.14) Does this development application involve a material change of use for a brothel?

- ☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
☒ No

Decision under section 62 of the *Transport Infrastructure Act 1994*

23.15) Does this development application involve new or changed access to a state-controlled road?

- ☐ Yes - this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
☒ No

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist

I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17 <i>Note: See the Planning Regulation 2017 for referral requirements</i>	<input checked="" type="checkbox"/> Yes
If building work is associated with the proposed development, Parts 4 to 6 of DA Form 2 – Building work details have been completed and attached to this development application	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
Supporting information addressing any applicable assessment benchmarks is with the development application <i>Note: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see DA Forms Guide: Planning Report Template.</i>	<input checked="" type="checkbox"/> Yes
Relevant plans of the development are attached to this development application <i>Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.</i>	<input checked="" type="checkbox"/> Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (see 21)	<input type="checkbox"/> Yes <input type="checkbox"/> Not applicable

25) Applicant declaration

<input checked="" type="checkbox"/> By making this development application, I declare that all information in this development application is true and correct <input checked="" type="checkbox"/> Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the <i>Electronic Transactions Act 2001</i> <i>Note: It is unlawful to intentionally provide false or misleading information.</i>
<p>Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.</p> <p>Personal information will not be disclosed for a purpose unrelated to the <i>Planning Act 2016</i>, Planning Regulation 2017 and the DA Rules except where:</p> <ul style="list-style-type: none"> • such disclosure is in accordance with the provisions about public access to documents contained in the <i>Planning Act 2016</i> and the Planning Regulation 2017, and the access rules made under the <i>Planning Act 2016</i> and Planning Regulation 2017; or • required by other legislation (including the <i>Right to Information Act 2009</i>); or • otherwise required by law. <p>This information may be stored in relevant databases. The information collected will be retained as required by the <i>Public Records Act 2002</i>.</p>

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received: Reference number(s):

Notification of engagement of alternative assessment manager

Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment

Note: For completion by assessment manager if applicable

Description of the work			
QLeave project number			
Amount paid (\$)		Date paid (dd/mm/yy)	
Date receipted form sighted by assessment manager			
Name of officer who sighted the form			

DA Form 1 – Development application details

Approved form (version 1.2 effective 7 February 2020) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application involving **code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) and parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).

PART 1 – APPLICANT DETAILS

1) Applicant details

Applicant name(s) (individual or company full name)	Department of State Development, Tourism and Innovation - Tourism Development Projects Division
Contact name (only applicable for companies)	Sarah Wilson – GHD Pty Ltd
Postal address (P.O. Box or street address)	Level 13, The Rocket, 203 Robina Town Centre Drive
Suburb	Robina
State	QLD
Postcode	4226
Country	Australia
Contact number	61 7 5413 8133
Email address (non-mandatory)	Sarah.Wilson@ghd.com
Mobile number (non-mandatory)	0459 813 589
Fax number (non-mandatory)	
Applicant's reference number(s) (if applicable)	

2) Owner's consent

2.1) Is written consent of the owner required for this development application?

- ☒ Yes – the written consent of the owner(s) is attached to this development application
☐ No – proceed to 3)



Queensland
Government

PART 2 – LOCATION DETAILS

3) Location of the premises (complete 3.1) or 3.2), and 3.3) as applicable)

Note: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see [DA Forms Guide: Relevant plans](#).

3.1) Street address and lot on plan

☒ **Street address AND lot on plan** (all lots must be listed), **or**

☐ **Street address AND lot on plan for an adjoining or adjacent property of the premises** (appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).

a)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	Reserve	N/A
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		31	SP129117	Cairns Regional Government
b)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	National park	N/A
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		174	National park - NPW930	Cairns Regional Government
c)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	N/A	N/A
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
			Road reserve - Captain Cook Highway	Cairns Regional Government
d)	Unit No.	Street No.	Street Name and Type	Suburb
	N/A	N/A	N/A	N/A
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
		13	NR5512	Cairns Regional Government

3.2) Coordinates of premises (appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)

Note: Place each set of coordinates in a separate row.

☐ **Coordinates of premises by longitude and latitude**

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other: <input type="text"/>	

☐ **Coordinates of premises by easting and northing**

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		<input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56	<input type="checkbox"/> WGS84 <input type="checkbox"/> GDA94 <input type="checkbox"/> Other: <input type="text"/>	

3.3) Additional premises

- ☐ Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application
- ☐ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

- ☒ In or adjacent to a water body or watercourse or in or above an aquifer

Name of water body, watercourse or aquifer:	Coral sea and various no name minor, non-perennial watercourses draining into the Mossman basin.
<input type="checkbox"/> On strategic port land under the <i>Transport Infrastructure Act 1994</i>	
Lot on plan description of strategic port land:	
Name of port authority for the lot:	
<input checked="" type="checkbox"/> In a tidal area	
Name of local government for the tidal area (if applicable):	Cairns Regional Government
Name of port authority for tidal area (if applicable):	
<input type="checkbox"/> On airport land under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i>	
Name of airport:	
<input type="checkbox"/> Listed on the Environmental Management Register (EMR) under the <i>Environmental Protection Act 1994</i>	
EMR site identification:	
<input type="checkbox"/> Listed on the Contaminated Land Register (CLR) under the <i>Environmental Protection Act 1994</i>	
CLR site identification:	

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see DA Forms Guide.

- ☐ Yes – All easement locations, types and dimensions are included in plans submitted with this development application
- ☒ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? (tick only one box)

- ☒ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? (tick only one box)

- ☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☒ Code assessment ☐ Impact assessment (requires public notification)

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

The proposed works will be located within the Cairns Regional Council local government area and within national park land. The proposed works will include the following:

- Shared use trail to accommodate both mountain bike users and hikers consisting of natural ground and surface treatments.
- The project intersects a number of waterways and waterway crossings structures are proposed within the waterways.
- The formalisation of existing access tracks into service tracks to provide restricted access to the shared use trail for construction purposes, operational purposes, maintenance purpose and for emergency purposes.

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms guide: [Relevant plans](#).

- ☒ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect			
a) What is the type of development? (tick only one box)			
<input type="checkbox"/> Material change of use	<input type="checkbox"/> Reconfiguring a lot	<input type="checkbox"/> Operational work	<input type="checkbox"/> Building work
b) What is the approval type? (tick only one box)			
<input type="checkbox"/> Development permit	<input type="checkbox"/> Preliminary approval	<input type="checkbox"/> Preliminary approval that includes a variation approval	
c) What is the level of assessment?			
<input type="checkbox"/> Code assessment	<input type="checkbox"/> Impact assessment (requires public notification)		
d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):			
e) Relevant plans			
<i>Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.</i>			
<input checked="" type="checkbox"/> Relevant plans of the proposed development are attached to the development application			
6.3) Additional aspects of development			
<input type="checkbox"/> Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application			
<input type="checkbox"/> Not required			

Section 2 – Further development details

7) Does the proposed development application involve any of the following?	
Material change of use	<input checked="" type="checkbox"/> Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	<input type="checkbox"/> Yes – complete division 2
Operational work	<input type="checkbox"/> Yes – complete division 3
Building work	<input type="checkbox"/> Yes – complete DA Form 2 – Building work details

Division 1 – Material change of use

Note: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.

8.1) Describe the proposed material change of use			
Provide a general description of the proposed use	Provide the planning scheme definition (include each definition in a new row)	Number of dwelling units (if applicable)	Gross floor area (m ²) (if applicable)
Shared use trail for mountain bike users and hikers, construction of a number of water way crossings and formalisation of existing service tracks.	Under the Planning Scheme the proposed works meets the definition of an 'environmental facility', being "Facilities used for the conservation, interpretation and appreciation of areas of environmental, cultural or heritage value."	N/A	N/A
8.2) Does the proposed use involve the use of existing buildings on the premises?			
<input type="checkbox"/> Yes			
<input checked="" type="checkbox"/> No			

Division 2 – Reconfiguring a lot

Note: This division is only required to be completed if any part of the development application involves reconfiguring a lot.

9.1) What is the total number of existing lots making up the premises?

9.2) What is the nature of the lot reconfiguration? <i>(tick all applicable boxes)</i>	
<input type="checkbox"/> Subdivision <i>(complete 10)</i>	<input type="checkbox"/> Dividing land into parts by agreement <i>(complete 11)</i>
<input type="checkbox"/> Boundary realignment <i>(complete 12)</i>	<input type="checkbox"/> Creating or changing an easement giving access to a lot from a constructed road <i>(complete 13)</i>

10) Subdivision				
10.1) For this development, how many lots are being created and what is the intended use of those lots:				
Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				
10.2) Will the subdivision be staged?				
<input type="checkbox"/> Yes – provide additional details below				
<input type="checkbox"/> No				
How many stages will the works include?				
What stage(s) will this development application apply to?				

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?				
Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment			
12.1) What are the current and proposed areas for each lot comprising the premises?			
Current lot		Proposed lot	
Lot on plan description	Area (m ²)	Lot on plan description	Area (m ²)
12.2) What is the reason for the boundary realignment?			

13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? <i>(attach schedule if there are more than two easements)</i>				
Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? <i>(e.g. pedestrian access)</i>	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work

Note: This division is only required to be completed if any part of the development application involves operational work.

14.1) What is the nature of the operational work?		
<input type="checkbox"/> Road work	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Water infrastructure
<input type="checkbox"/> Drainage work	<input type="checkbox"/> Earthworks	<input type="checkbox"/> Sewage infrastructure

<input type="checkbox"/> Landscaping	<input type="checkbox"/> Signage	<input type="checkbox"/> Clearing vegetation
<input type="checkbox"/> Other – please specify: •		
14.2) Is the operational work necessary to facilitate the creation of new lots? (<i>e.g. subdivision</i>)		
<input type="checkbox"/> Yes – specify number of new lots: 		
<input type="checkbox"/> No		
14.3) What is the monetary value of the proposed operational work? (<i>include GST, materials and labour</i>)		
TBA		

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application
Cairns Regional Council
16) Has the local government agreed to apply a superseded planning scheme for this development application?
<input type="checkbox"/> Yes – a copy of the decision notice is attached to this development application
<input type="checkbox"/> The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
<input checked="" type="checkbox"/> No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?
<i>Note: A development application will require referral if prescribed by the Planning Regulation 2017.</i>
<input type="checkbox"/> No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6
Matters requiring referral to the Chief Executive of the <i>Planning Act 2016</i>: <ul style="list-style-type: none"> <input type="checkbox"/> Clearing native vegetation <input type="checkbox"/> Contaminated land (<i>unexploded ordnance</i>) <input type="checkbox"/> Environmentally relevant activities (ERA) (<i>only if the ERA has not been devolved to a local government</i>) <input type="checkbox"/> Fisheries – aquaculture <input type="checkbox"/> Fisheries – declared fish habitat area <input type="checkbox"/> Fisheries – marine plants <input type="checkbox"/> Fisheries – waterway barrier works <input type="checkbox"/> Hazardous chemical facilities <input type="checkbox"/> Heritage places – Queensland heritage place (<i>on or near a Queensland heritage place</i>) <input type="checkbox"/> Infrastructure-related referrals – designated premises <input type="checkbox"/> Infrastructure-related referrals – state transport infrastructure <input checked="" type="checkbox"/> Infrastructure-related referrals – State transport corridor and future State transport corridor <input type="checkbox"/> Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels <input type="checkbox"/> Infrastructure-related referrals – near a state-controlled road intersection <input type="checkbox"/> Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas <input type="checkbox"/> Koala habitat in SEQ region – key resource areas <input type="checkbox"/> Ports – Brisbane core port land – near a State transport corridor or future State transport corridor <input type="checkbox"/> Ports – Brisbane core port land – environmentally relevant activity (ERA) <input type="checkbox"/> Ports – Brisbane core port land – tidal works or work in a coastal management district <input type="checkbox"/> Ports – Brisbane core port land – hazardous chemical facility <input type="checkbox"/> Ports – Brisbane core port land – taking or interfering with water

- ☐ Ports – Brisbane core port land – referable dams
☐ Ports – Brisbane core port land – fisheries
☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)
☐ SEQ development area
☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
☒ Tidal works or works in a coastal management district
☐ Reconfiguring a lot in a coastal management district or for a canal
☐ Erosion prone area in a coastal management district
☐ Urban design
☐ Water-related development – taking or interfering with water
☐ Water-related development – removing quarry material (*from a watercourse or lake*)
☐ Water-related development – referable dams
☐ Water-related development – levees (*category 3 levees only*)
☐ Wetland protection area

Matters requiring referral to the local government:

- ☐ Airport land
☐ Environmentally relevant activities (ERA) (*only if the ERA has been devolved to local government*)
☐ Heritage places – Local heritage places

Matters requiring referral to the Chief Executive of the distribution entity or transmission entity:

- ☐ Infrastructure-related referrals – Electricity infrastructure

Matters requiring referral to:

- The **Chief Executive of the holder of the licence**, if not an individual
 - The **holder of the licence**, if the holder of the licence is an individual
- ☐ Infrastructure-related referrals – Oil and gas infrastructure

Matters requiring referral to the Brisbane City Council:

- ☐ Ports – Brisbane core port land

Matters requiring referral to the Minister responsible for administering the *Transport Infrastructure Act 1994*:

- ☐ Ports – Brisbane core port land (*where inconsistent with the Brisbane port LUP for transport reasons*)
☐ Ports – Strategic port land

Matters requiring referral to the relevant port operator, if applicant is not port operator:

- ☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)

Matters requiring referral to the Chief Executive of the relevant port authority:

- ☐ Ports – Land within limits of another port (*below high-water mark*)

Matters requiring referral to the Gold Coast Waterways Authority:

- ☐ Tidal works or work in a coastal management district (*in Gold Coast waters*)

Matters requiring referral to the Queensland Fire and Emergency Service:

- ☐ Tidal works or work in a coastal management district (*involving a marina (more than six vessel berths)*)

18) Has any referral agency provided a referral response for this development application?

- ☐ Yes – referral response(s) received and listed below are attached to this development application
☒ No

Referral requirement	Referral agency	Date of referral response

Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application (if applicable).		

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules

- ☒ I agree to receive an information request if determined necessary for this development application
- ☐ I do not agree to accept an information request for this development application

Note: By not agreeing to accept an information request I, the applicant, acknowledge:

- that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties
- Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.

Further advice about information requests is contained in the DA Forms Guide.

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? (e.g. a preliminary approval)

- ☐ Yes – provide details below or include details in a schedule to this development application
- ☒ No

List of approval/development application references	Reference number	Date	Assessment manager
<input type="checkbox"/> Approval			
<input type="checkbox"/> Development application			
<input type="checkbox"/> Approval			
<input type="checkbox"/> Development application			

21) Has the portable long service leave levy been paid? (only applicable to development applications involving building work or operational work)

- ☐ Yes – a copy of the receipted QLeave form is attached to this development application
- ☐ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid
- ☒ Not applicable (e.g. building and construction work is less than \$150,000 excluding GST)

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
\$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

- ☐ Yes – show cause or enforcement notice is attached
- ☒ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an **Environmentally Relevant Activity (ERA)** under section 115 of the *Environmental Protection Act 1994*?

☐ Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below

☒ No

Note: Application for an environmental authority can be found by searching "ESR/2015/1791" as a search term at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.

Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			

☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a hazardous chemical facility?

☐ Yes – Form 69: Notification of a facility exceeding 10% of schedule 15 threshold is attached to this development application

☒ No

Note: See www.business.qld.gov.au for further information about hazardous chemical notifications.

Clearing native vegetation

23.3) Does this development application involve clearing native vegetation that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)

☒ No

Note: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.

2. See <https://www.qld.gov.au/environment/land/vegetation/applying> for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a prescribed environmental matter under the *Environmental Offsets Act 2014*?

☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter

☒ No

Note: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

☐ Yes – the development application involves premises in the koala habitat area in the koala priority area

☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area

☒ No

Note: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.des.qld.gov.au for further information.

Water resources

23.6) Does this development application involve taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the *Water Act 2000*?

☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development

☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au for further information.

DA templates are available from <https://planning.dsdmip.qld.gov.au/>. If the development application involves:

- Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1
- Taking or interfering with water in a watercourse, lake or spring: complete DA Form 1 Template 2
- Taking overland flow water: complete DA Form 1 Template 3.

Waterway barrier works

23.7) Does this application involve waterway barrier works?

☐ Yes – the relevant template is completed and attached to this development application

☒ No

DA templates are available from <https://planning.dsdmip.qld.gov.au/>. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants?

☐ Yes – an associated resource allocation authority is attached to this development application, if required under the *Fisheries Act 1994*

☒ No

Note: See guidance materials at www.daf.qld.gov.au for further information.

Quarry materials from a watercourse or lake

23.9) Does this development application involve the removal of quarry materials from a watercourse or lake under the *Water Act 2000*?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

Note: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au and www.business.qld.gov.au for further information.

Quarry materials from land under tidal waters

23.10) Does this development application involve the removal of quarry materials from land under tidal water under the *Coastal Protection and Management Act 1995*?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

Note: Contact the Department of Environment and Science at www.des.qld.gov.au for further information.

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the *Water Supply Act*)?

- ☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the *Water Supply Act* is attached to this development application
☒ No

Note: See guidance materials at www.dnrme.qld.gov.au for further information.

Tidal work or development within a coastal management district

23.12) Does this development application involve tidal work or development in a coastal management district?

- ☒ Yes – the following is included with this development application:
- ☐ Evidence the proposal meets the code for assessable development that is prescribed tidal work (only required if application involves prescribed tidal work)
 - ☐ A certificate of title
- ☐ No

Note: See guidance materials at www.des.qld.gov.au for further information.

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

- ☐ Yes – details of the heritage place are provided in the table below
☒ No

Note: See guidance materials at www.des.qld.gov.au for information requirements regarding development of Queensland heritage places.

Name of the heritage place:		Place ID:	
-----------------------------	--	-----------	--

Brothels

23.14) Does this development application involve a **material change of use** for a brothel?

- ☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
☒ No

Decision under section 62 of the *Transport Infrastructure Act 1994*

23.15) Does this development application involve new or changed access to a state-controlled road?

- ☒ Yes - this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
☐ No

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist

I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17

☒ Yes

Note: See the Planning Regulation 2017 for referral requirements

If building work is associated with the proposed development, Parts 4 to 6 of [DA Form 2 – Building work details](#) have been completed and attached to this development application

☐ Yes

☒ Not applicable

Supporting information addressing any applicable assessment benchmarks is with the development application

Note: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see [DA Forms Guide: Planning Report Template](#).

☒ Yes

Relevant plans of the development are attached to this development application

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).

☒ Yes

The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (see 21)

☐ Yes

☒ Not applicable

25) Applicant declaration

☒ By making this development application, I declare that all information in this development application is true and correct

☒ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*

Note: It is unlawful to intentionally provide false or misleading information.

Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.

Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where:

- such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or
- required by other legislation (including the *Right to Information Act 2009*); or
- otherwise required by law.

This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received: Reference number(s):

Notification of engagement of alternative assessment manager	
Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment			
<i>Note: For completion by assessment manager if applicable</i>			
Description of the work			
QLeave project number			
Amount paid (\$)		Date paid (dd/mm/yy)	
Date receipted form sighted by assessment manager			
Name of officer who sighted the form			

Attachment 4: Letter from Douglas Shire Council and Cairns Regional Council providing consent for works on Council managed land

**Company owner's consent to the making of a development application
under the Planning Act 2016**

I, MERCY BAIRD, Chairperson of the trust mentioned below.

the Wangetti Aboriginal Land Trust

the company being the owner of the premises identified as follows:

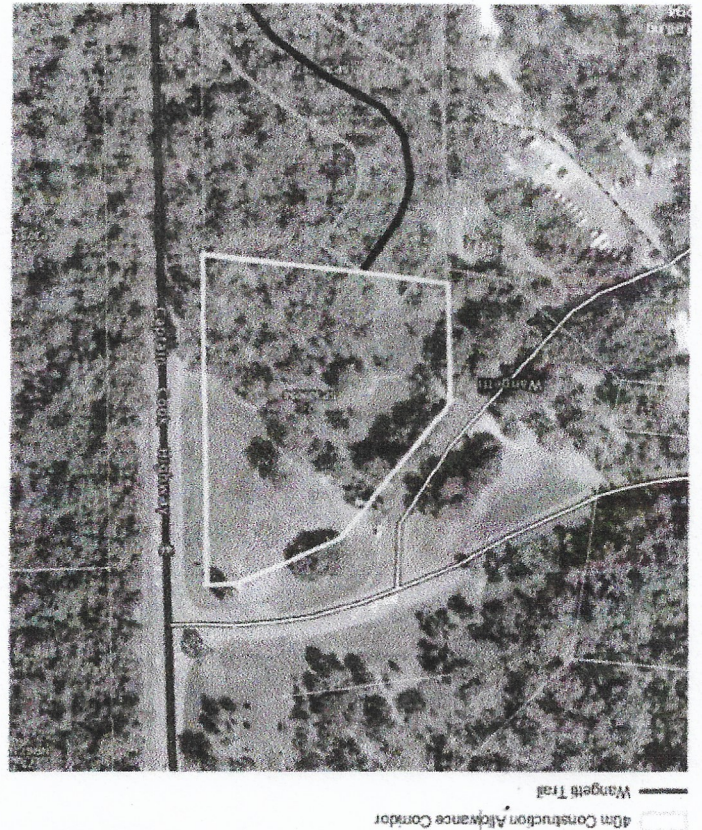
Lot 2 SP309094

consent to the making of a development application under the *Planning Act 2016* by:

The Department of Tourism, Innovation and Sport (DTIS) – State Projects Division

on the premises described above for:

The Wangnetti Trail Project. A development permit for a Material Change of Use (MCU) for an 'Environmental Facility' and 'Nature-Based Tourism' is required from Douglas Shire Council in order to establish the use of a shared use trail and public camping area within Wangnetti South Section for the Wangnetti Trail Project. The project is being delivered by TDPD as part of an adventure-based ecotourism development in north Queensland. The shared use trail will provide walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including the Wet Tropics of Queensland (Wet Tropics) and national parks. The northern section of Wangnetti Trail South Section is located on Lot 2 SP309094 (refer to the figure below) which is managed by Wangnetti Aboriginal Land Trust.



Company Name and ACN: Wangnetti Aboriginal Land Trust

Signature of Chair
 Mercy Baird
 Date 14/01/2022

**Company owner's consent to the making of a development application
under the Planning Act 2016**

I, MERCY BAIRD, Chairperson of the trust mentioned below.

the Wangetti Aboriginal Land Trust

the company being the owner of the premises identified as follows:

Lot 1 SP309094

consent to the making of a development application under the *Planning Act 2016* by:

The Department of Tourism, Innovation and Sport (DTIS) – State Projects Division

on the premises described above for:

Wangetti Trail Project. A development permit for a Material Change of Use (MCU) for an 'Environmental Facility' and 'Nature-Based Tourism' is required from Douglas Shire Council in order to establish the use a shared use trail and public camping area within Wangetti North Section for the Wangetti Trail Project. The project is being delivered by DTIS as part of an adventure-based ecotourism development in north Queensland. The shared use trail will provide walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including the Wet Tropics of Queensland (Wet Tropics) and national parks.



Company Name and ACN: Wangetti Aboriginal Land Trust

Signature of Chair
Mercy Baird

Date

14/6/2022

20 April 2021

Enquiries: Neil Beck
Our Ref: (1008562)
Your Ref: 4132458

Administration Office
64 - 66 Front St Mossman
P 07 4099 9444
F 07 4098 2902

Ms Sarah Wilson
Senior Town Planner
GHD
GPO Box 668
Brisbane Qld 4001

Email: Sarah.Wilson@ghd.com

Dear Madam

**Owner's consent as Trustee of L1 SP129117, L39 SP309107117 & L6 SP309107
Wangetti Qld**

Please be advised that as Trustee of Lot 1 on SP129117, Lot 39 on SP309107 and Lot6 on SP309107, Council is granting consent in order to facilitate the lodgement of the development application for the Wangetti Trail over the land.

Should you wish to discuss this matter further, please contact Neil Beck on telephone 07 4099 9451.

Yours faithfully



For
Paul Hoyer
Manager Environment & Planning



Department of
Environment and Science

Our Ref: CTS 08412/21

23/04/2021

Mr Michael Farrell
Project Executive Director
Department of Tourism Innovation and Sport
Via email: michael.farrell@tourism.qld.gov.au

Request for Owner's Consent to lodge Development Applications for the Wangetti Trail on Queensland Parks and Wildlife Service managed Estate.

Dear Michael,

As requested, I am writing in relation to consent for lodgement of development applications by the Department of Innovation and Tourism Innovation and Sport (DTIS) for the Wangetti Trail ecotourism project on Queensland Parks and Wildlife Service (QPWS) managed estate.

The proposed 94 kilometre, dual-use mountain bike and walking trail (including public camping areas and privately operated ecotourism facilities), plans to traverse multiple land tenures, including national park. As responsible landowner for national parks in Queensland, the Department of Environment and Science acting through QPWS hereby gives owner's consent for lodgement of the development applications for the Wangetti Trail alignment and infrastructure within Macalister Ranger National Park (122NPW911 and 174NPW930), Mowbray National Park (492NPW911) and Kuranda National Park (63AP19345).

Further, please note that the above consent relates to the current development applications that have been reviewed by QPWS and will expire on 30 December 2021. Should the development applications not be lodged with the assessment manager prior to this date, DTIS will require further consent.

The Wangetti Trail proposal will be considered separately by QPWS in accordance with the *Nature Conservation Act 1992*.

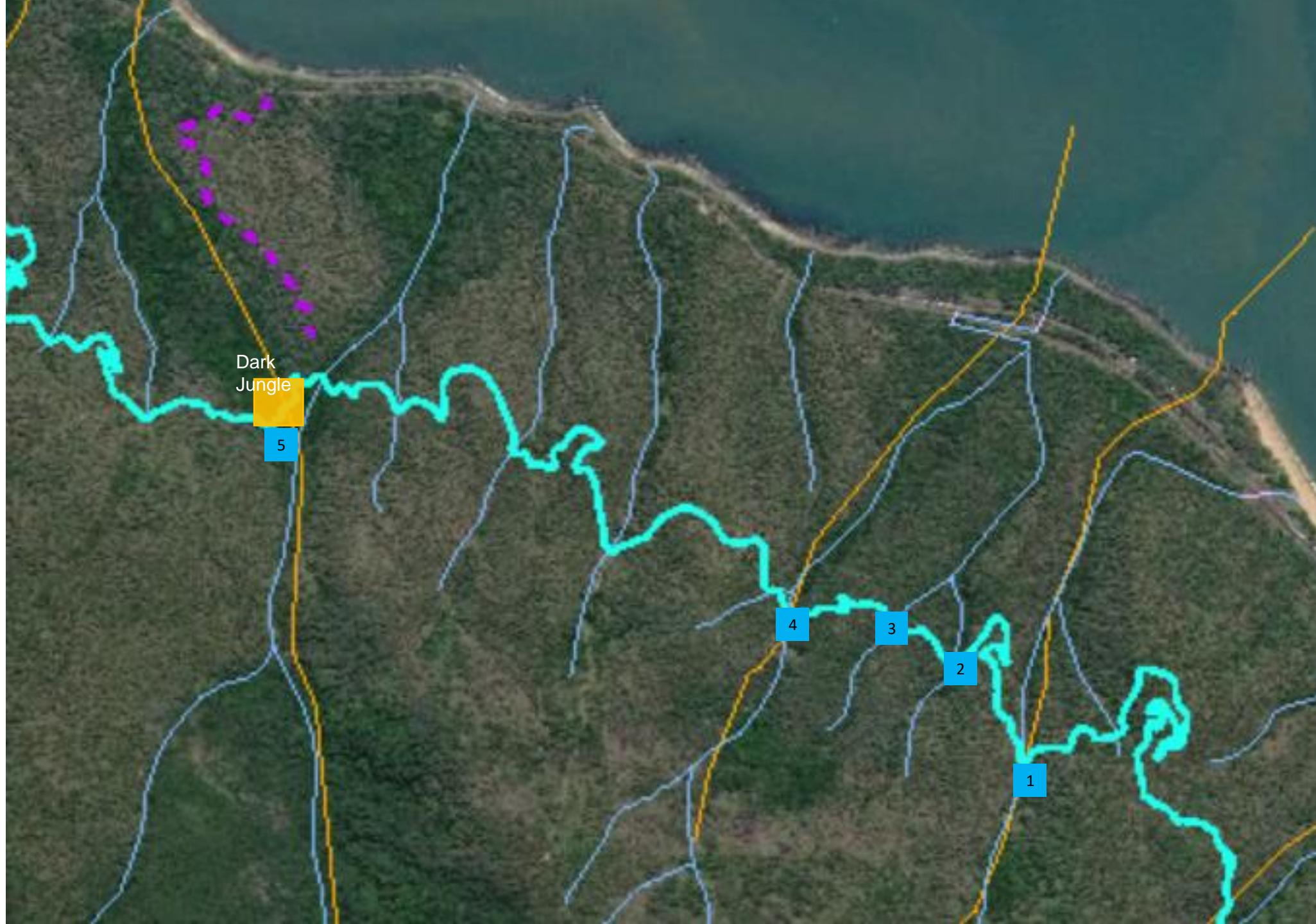
Should you or your officers require any further information, please contact Tracy Rose, Manager – Ecotourism Development, of the Department of Environment and Science on (07) 3096 6346 or by email at Tracy.Rose@des.qld.gov.au.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'S Buchanan', followed by a long horizontal flourish.

Scott Buchanan
A/Executive Director – Northern Parks and Forests
Queensland Parks and Wildlife Service and Partnerships
Department of Environment and Science

Appendix I – Watercourses intersected by Wangetti South A



ID	Location	Depth	Width	Flowing	Notes
1	Lat: -16.70645 Long: 145.62000	Shallow	1 - 5m	Yes	Fast flowing stream over bedrock.



ID	Location	Depth	Width	Flowing	Notes
2	Lat: -16.70488 Long: 145.61894	Shallow	< 1 m	Yes	Low flowing stream. Boulder and rocks. Dense canopy and mid storey cover. Dense leaf litter.

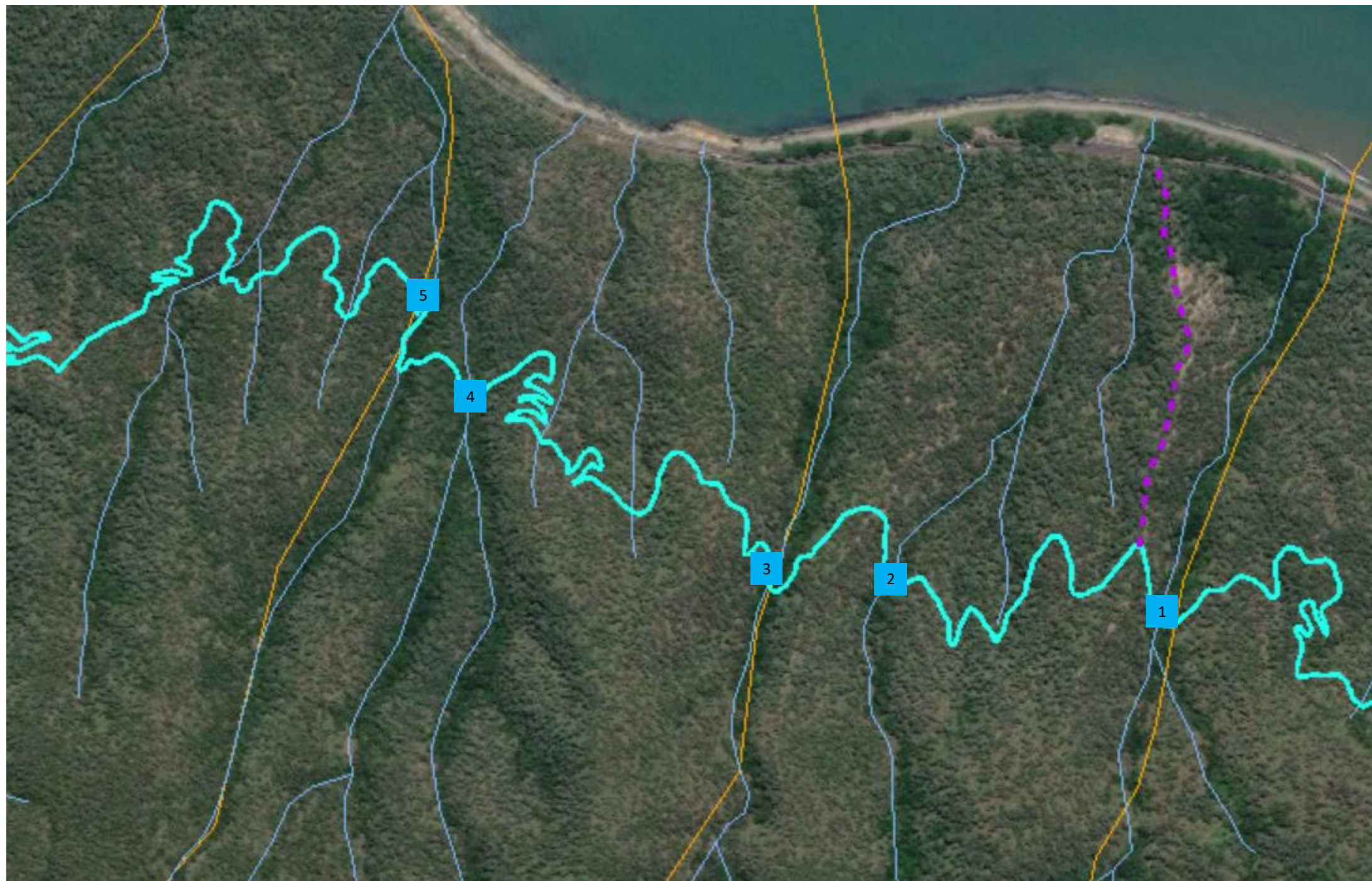


ID	Location	Depth	Width	Flowing	Notes
3	Lat: -16.70439 Long: 145.61803	-	-	Yes	No photos taken. Rocky gully w flowing creek in <i>C. clarksonian</i>

ID	Location	Depth	Width	Flowing	Notes
4	Lat: -16.70379 Long: 145.61632	Shallow	1 – 2 m	Yes	Stream with rocks. Closed canopy. Bed rock or large boulders - granite.



ID	Location	Depth	Width	Flowing	Notes
5	Lat: -16.70105 Long: 145.60956	Pools ~ 1m	1 – 2 m	Yes	Large stream with large boulders and rocks. Closed canopy. Woody debris piles. Dense leaf litter. Pools, runs and falls.



ID	Location	Depth	Width	Flowing	Notes
1	Lat: -16.69935 Long: 145.50333	-	-	-	No photos taken. Field notes mentioned a rocky creek within gallery forest.

ID	Location	Depth	Width	Flowing	Notes
2	Lat: -16.69880 Long: 145.50022	-	-	-	No photos taken. Field notes mention a rocky gully within <i>L. grandifloras</i> gallery forest.

ID	Location	Depth	Width	Flowing	Notes
3	Lat: -16.69898 Long: 145.59889	Shallow	5m	Yes	Flowing creek with rocks and boulders, closed canopy

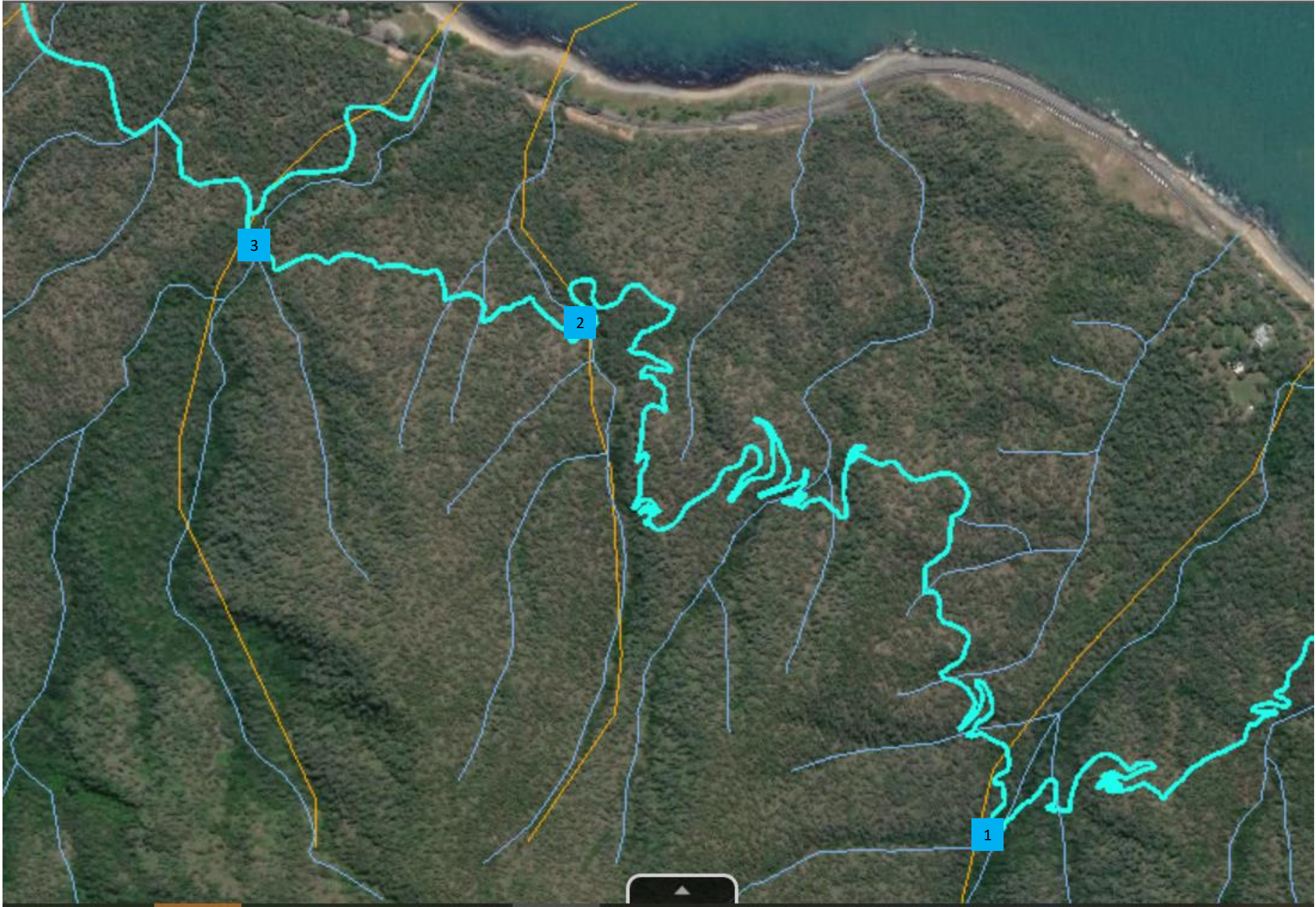


ID	Location	Depth	Width	Flowing	Notes
4	Lat: -16.69691 Long: 145.59550	Shallow	6 – 8 m	No	Flowing creek with large boulders, bed rock. Steep grassy banks on sides.



ID	Location	Depth	Width	Flowing	Notes
5	Lat: -16.69584 Long: 145.59506	< 1m	5 – 6m	Yes	Shallow flowing stream over rock and boulders





ID	Location	Depth	Width	Flowing	Notes
1	Lat: -16.69710 Long: 145.58881	< 1 m	1 – 6 m	Yes	Steep rocky sides. Boulders/rocks in creek line. High bank complexity



ID	Location	Depth	Width	Flowing	Notes
2	Lat: -16.69150 Long: 145.58399	< 1 m	1m		Potentially wider after rani events. Steep, rocky banks



ID	Location	Depth	Width	Flowing	Notes
3	Lat: -16.69028 Long: 145.58602	< 1 m	Flow: 2m Bed: 6m	Yes	Large stones present along creek bottom. Wash out banks 1 m deep.





ID	Location	Depth	Width	Flowing	Notes
1	Lat: -16.68601 Long: 145.57686	< 1 m	1 – 2 m	Yes	Shallow, stony/sandy creek bed.



ID	Location	Depth	Width	Flowing	Notes
2	Lat: -16.68427 Long: 145.57602	Dry	10 m	No	Flat, stony creek bed. Dry in winter



ID	Location	Depth	Width	Flowing	Notes
3	Lat: -16.68025 Long: 145.57318	< 0.5 m	2 – 3 m	Yes	Stony creek bed on semi-flat ground.



ID	Location	Depth	Width	Flowing	Notes
4	Lat: -16.67948 Long: 145.57234	< 1 m	2 m	Yes	Trail follows creek line. Dense lantana present

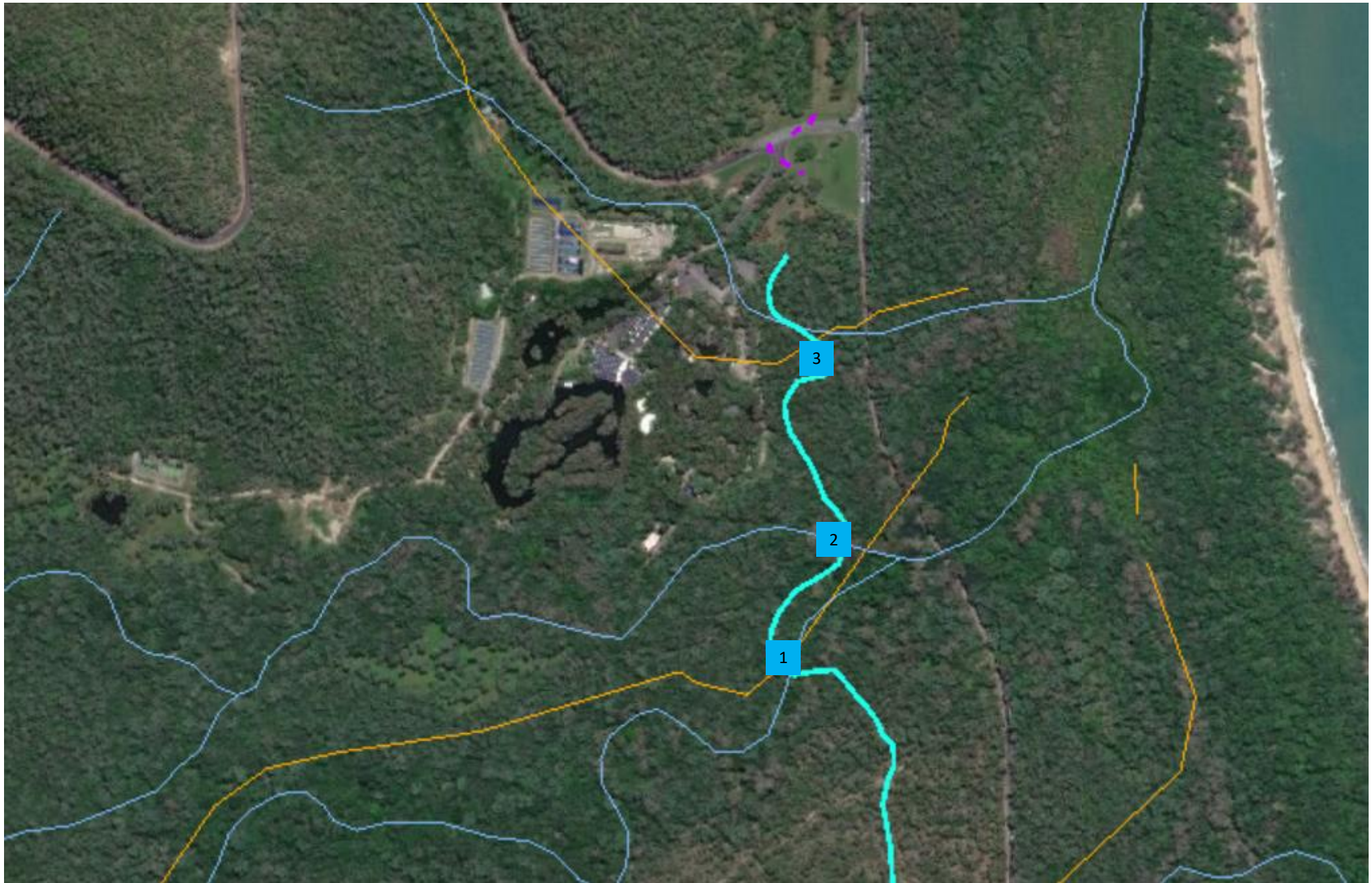


ID	Location	Depth	Width	Flowing	Notes
5	Lat: -16.67627 Long: 145.56766	< 0.5 m	3 – 6 m	Yes	Stony flowing stream. <i>C. clarks</i> on the edge of creek line have medium size hollows - moderately abundant.



ID	Location	Depth	Width	Flowing	Notes
6	Lat: -16.67479 Long: 145.56756	-	-	No	<i>M. viviflora</i> swamp





ID	Location	Depth	Width	Flowing	Notes
1	Lat: -16.66736 Long: 145.56585	< 1 m	6 – 8 m	No	Pools of water present. Small freshwater fish sighted.



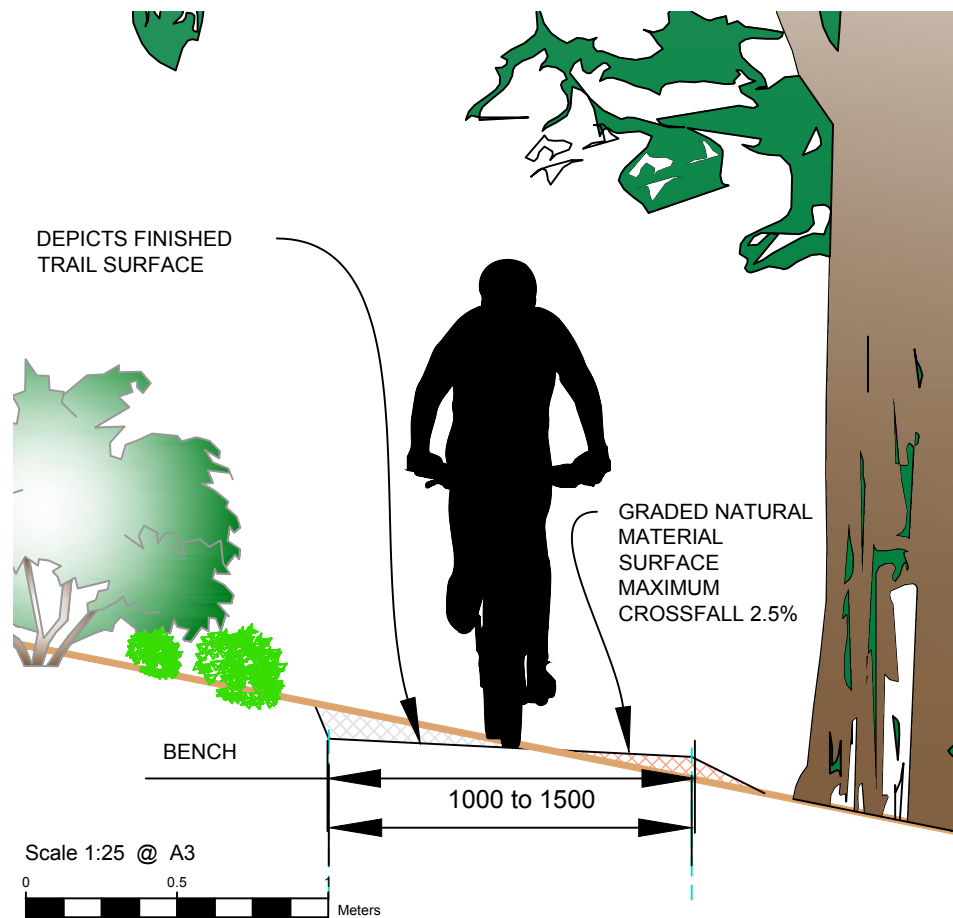
ID	Location	Depth	Width	Flowing	Notes
2	Lat: -16.66589 Long: 145.56633	1 m	-	Yes	Flowing creek line with large Melaleucas. Undercut banks, cobble like rocks, overhanging branches, shallow along runs and deep pools, mid dense understorey, dense leaf litter

No photos taken

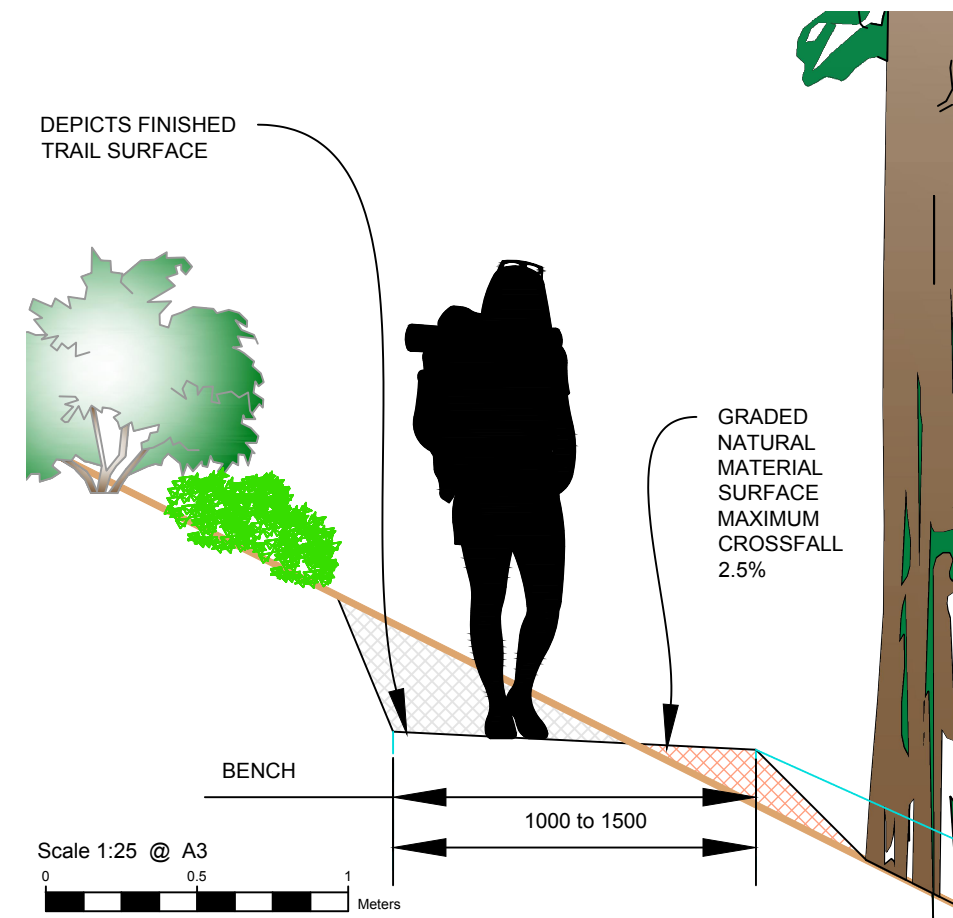
ID	Location	Depth	Width	Flowing	Notes
3	Lat: -16.66455 Long: 145.56568	< 1 m	1 – 2m	No	Potentially subject to inundation of saline water. Stagnant pools throughout.



Appendix J – Design Drawing Register for the Wangetti South Section A



TYPICAL SECTION - 5:1 (20%) CROSS SLOPE
FILL BATTER SLOPE - 2:1



TYPICAL SECTION - 2:1 (50%) CROSS SLOPE
FILL BATTER SLOPE - 1:1

NOTES:

GENERAL:

- The trail will provide access along a slightly modified, natural environment alignment, with little provision of interpretive signage and few facilities.
- Users can expect occasional encounters with others.
- Locate and protect any underground or overhead services prior to commencement of works.
- Trail excavation is to be cut and fill.
- Naturally occurring rock is to be used to protect the uphill cut and the downhill toe where available and appropriate.
- Dimensions in millimetres unless otherwise notated.
- Trail excavation is to be cut and fill.
- Cut batters are at 67.5°. Fill batters are as defined.
- Rocks can be used in the toe of the fill batter to provide additional stabilisation at steeper slopes.
- Rocks and/or plants can be placed (or remain) in the bench area between the Ride & Hike Line and the Fill Batter to guide riders and hikers into the appropriate alignment.
- Cut material will need to be transported along the trail from steeper trail cross slope areas.
- All site clearing is to be restricted to the trail alignment and nominal clearances for cut and fill works.
- Trail layout is to be undertaken using the "Sustainability Guidelines" as defined by the MTBA and as summarised below. More detailed information should be obtained through the MTBA.
- The trail is to be constructed to Class 3 Standard, as defined in AS 2156.1-2001.
- The trail is to be constructed in accordance with the "Blue Square" difficulty rating as defined in the *IMBA - Australia, Trail Difficulty Rating System, 2014, version 2.0*.

NOTES:

MTBA TRAIL SUSTAINABILITY GUIDELINES

THE HALF RULE

- A trail's grade shouldn't exceed half the grade of the hill slope or sideslope that the trail traverses.
- Grades exceeding the half rule may cause water to flow along the trail causing erosion.

THE TEN PERCENT AVERAGE GUIDELINE

- The overall grade of a trail should be 10% or less.
- Some sections may be steeper than 10% and some less steep.
- The ten percent average guideline may need to be adjusted to suit different soil types.

MAXIMUM SUSTAINABLE GRADE

- The maximum sustainable grade is typically 15% to 20% but is dependent on a wide range of factors.
- These factors include soil type, annual rainfall, vegetation and topography constraints and the level of difficulty for users.

GRADE REVERSALS - (see Standard Drawing WTSTD-046-WG2 for details)

- Grade reversals are points at which the trail gradient changes from down to up (or up to down), creating a low point where water is pushed off the trail.
- The more frequent the grade reversals, the smaller the amount of water that needs to cross at each point thereby reducing the potential erosion and the need for drainage infrastructure.

OUTSLOPE

- Outslope is the grading of the trail to a cross slope of 5% following the general slope direction of the local terrain.
- Outsloping enables stormwater to flow across the trail as a sheet rather than as concentrated flow.
- Outslopes will not be appropriate near berms or banked turns or in some loose soil types.

LEGEND:

- AREA OF CUT
- AREA OF FILL
- NATURAL GROUND SURFACE

Rev.	Date	Revision Details	Drn.	Ver.	App.
B	07/04/20	MAJOR LAYOUT & NOTES CHANGES			
A	24/03/20	ISSUED FOR INFORMATION	JR		

Client:



Project:

WANGETTI TRAIL
DETAILED DESIGN

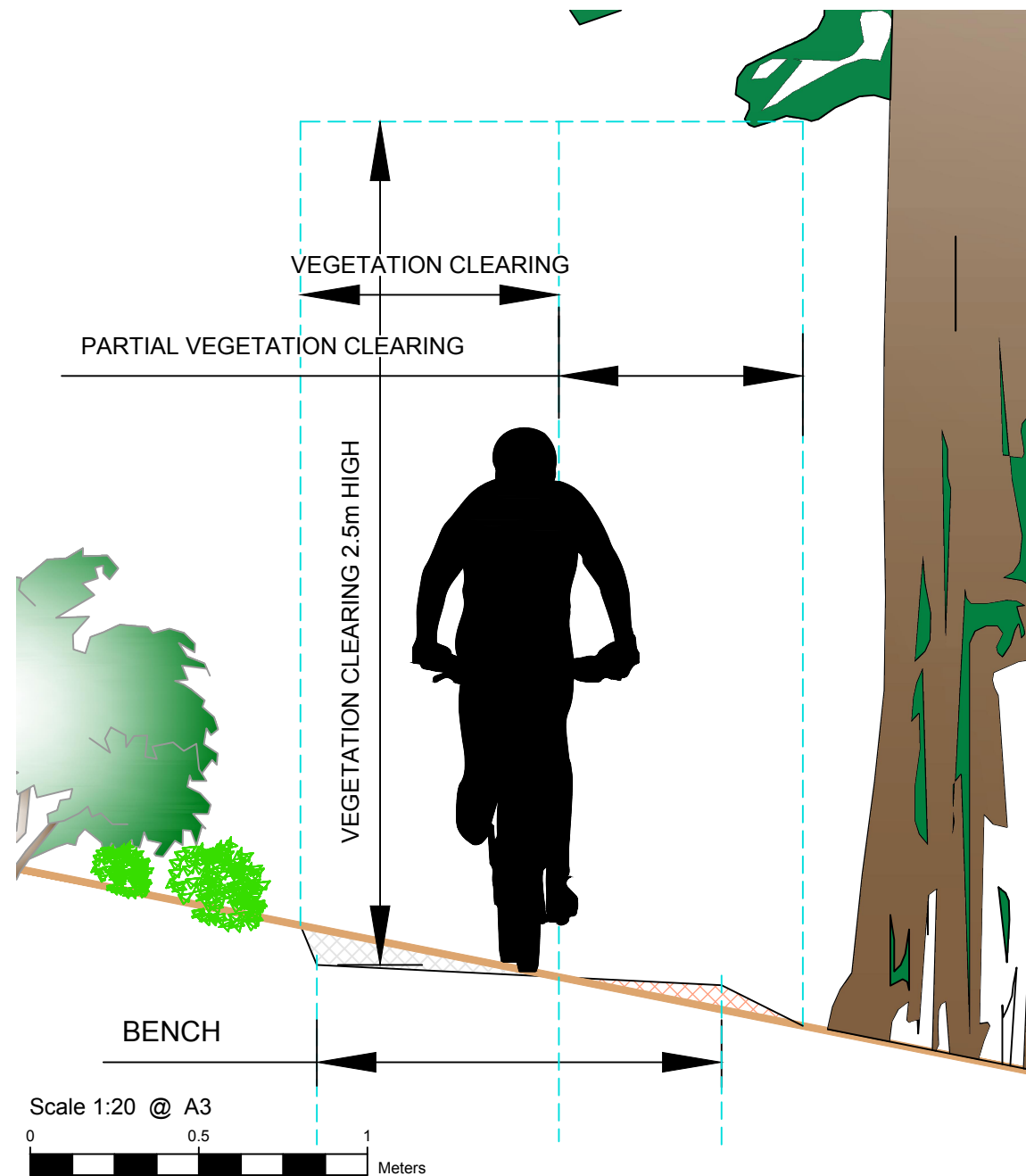
Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

Drawing Title:

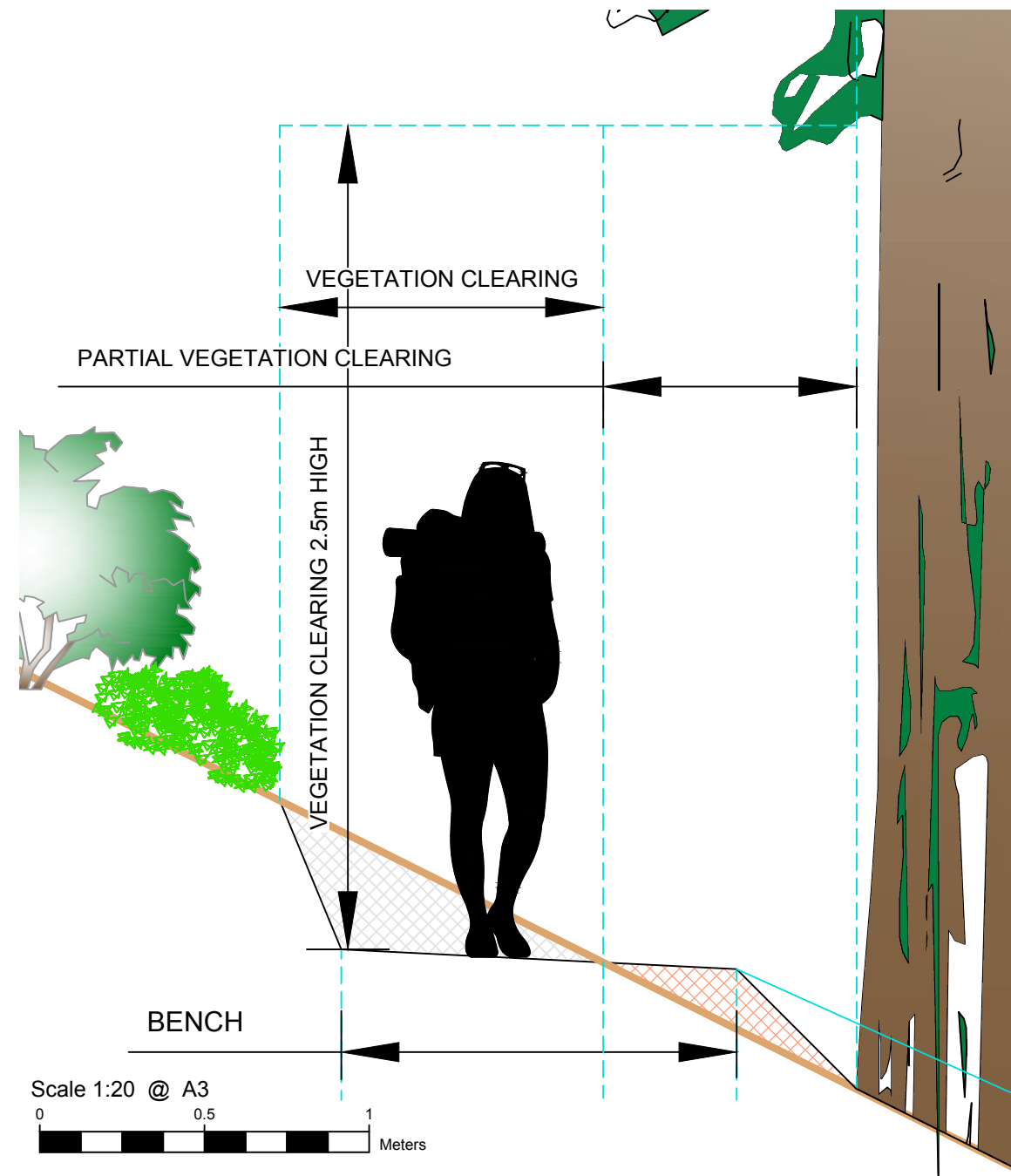
TYPICAL TRAIL BENCHING
STANDARD DRAWING

FOR INFORMATION

Project No.	WT20-Wangetti-001
Scale	1:25
Sheet Size	A3
Drawing No.	WTSTD-001-WG2
Rev.	B



TYPICAL SECTION - 5:1 (20%) CROSS SLOPE
FILL BATTER SLOPE - 2:1



TYPICAL SECTION - 2:1 (50%) CROSS SLOPE
FILL BATTER SLOPE - 1:1

NOTES:

GENERAL:

- Vegetation Clearing should be kept to a minimum.
- Vegetation clearing should not be undertaken outside the Areas depicted on this plan unless approved by the Project Principle.
- Vegetation clearing should be undertaken as defined in AS 4970 - 2009 (Incorporating Amendment No. 1).
- No windrows or stockpiles should be created during vegetation clearing.
- Cut vegetation must be scattered into the surrounding environment, without smothering existing vegetation.

CONSTRUCTION ZONES VERSUS TERRAIN SIDE SLOPE				
TERRAIN CROSS SLOPE	BENCH WIDTH	VEG. CLEARING WIDTH	PARTIAL VEG. CLEARING WIDTH	TOTAL IMPACT WIDTH
5:1 (20%)	1-1.5 m	0.77 m	0.72 m	1.49 m
2:1 (50%)	1-1.5 m	0.98 m	0.77 m	1.75 m

LEGEND:

- AREA OF CUT
- AREA OF FILL
- NATURAL GROUND SURFACE

Rev.	Date	Revision Details	Drn.	Ver.	App.
B	07/04/20	CHANGES TO LAYOUT & NOTES	JR	DS	
A	25/03/20	ISSUED FOR INFORMATION	JR	DS	



Project:
**WANGETTI TRAIL
DETAILED DESIGN**

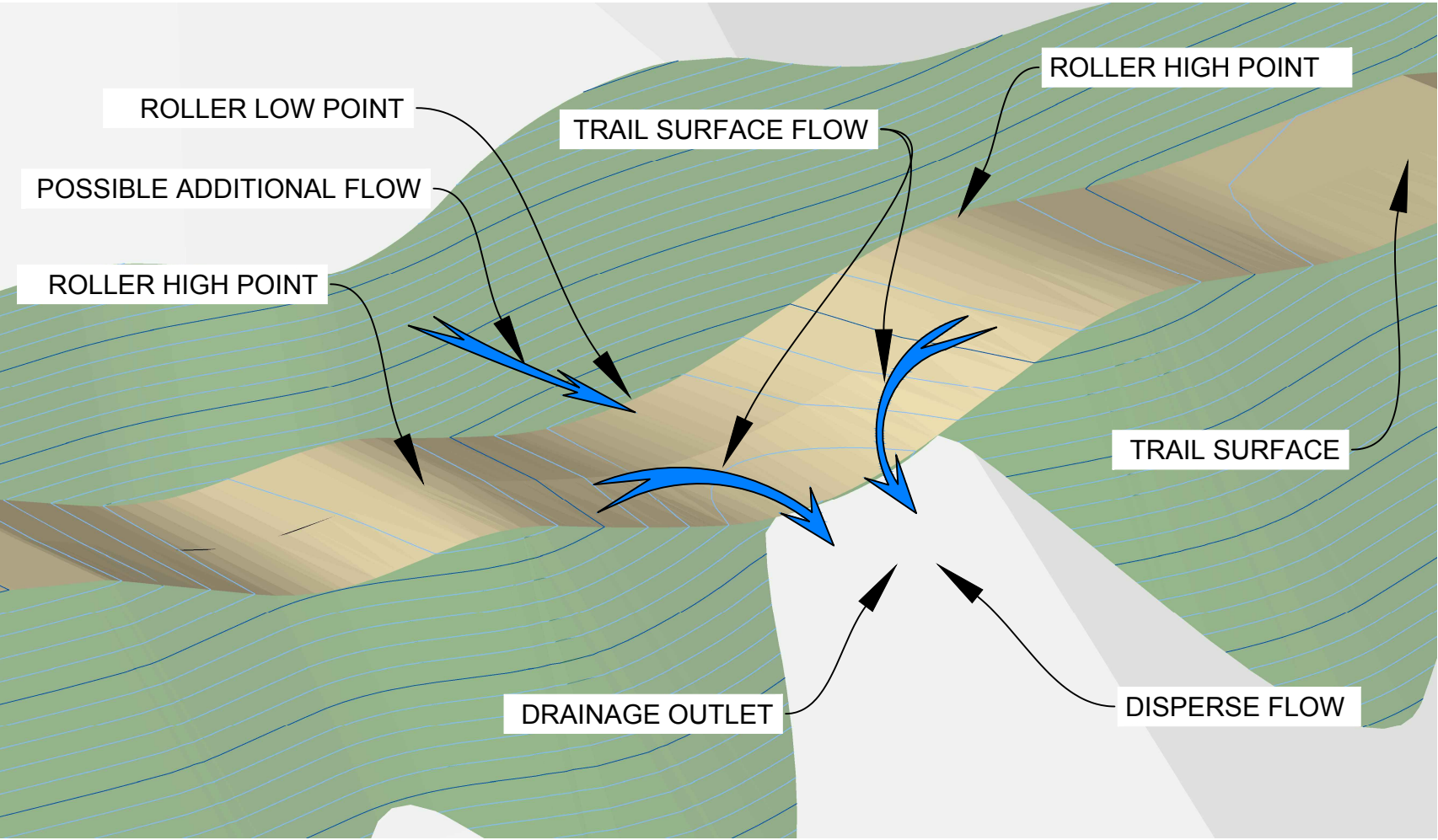
Drawn JR	Signed	Date 07/04/20
Designed DS	Signed	Date 07/04/20
Verified DS	Signed	Date 07/04/20
Approved	Signed	Date

Drawing Title:
**VEGETATION CLEARING
STANDARD DRAWING**

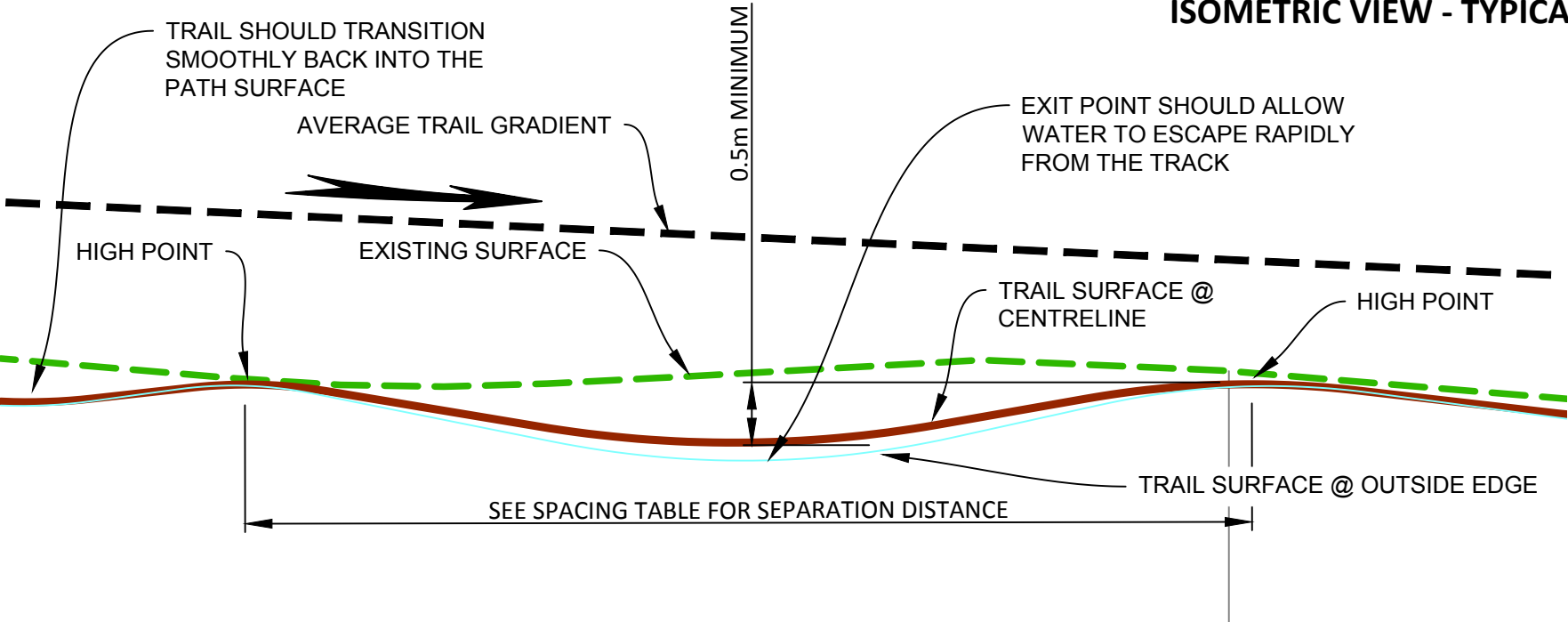
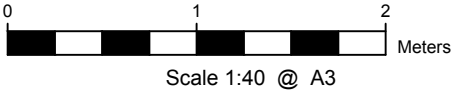
FOR INFORMATION		
Project No. WT20-Wangetti-001	Scale 1:20	Sheet Size A3
Drawing No. WTSTD-033-WG2	Rev. B	

NOTES:

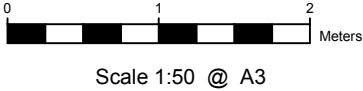
- Grade Reversals can be used on trails for walking, biking or dual use.
- Dimensions and setout of the swale may vary considerably from that depicted, depending on cross slopes, trail gradients and potential stormwater volumes.
- Water should exit the swale at the drainage outlet, ensuring rapid removal of flows from the trail.
- The drainage outlet should disperse water along the contour or across a broad discharge area to reduce velocities and allow for sediment dropout.
- Additional flows may occur from uphill of the grade reversal low point and should be considered in any sizing or erosion protection required.
- Erosion protection, generally using rock, may be required if the location constraints make it difficult to disperse flows.
- Grade reversals should not be confused with waterbars. A grade reversal is one of the most crucial parts in trail construction, both shedding water and also helping to shed speed.
- If a section of trail is on a low gradient with long arc to arcs then the grade reversal is longer and flatter.
- If a section of trail is on a steep gradient with shorter arc to arcs, then the grade reversal needs to be more aggressive, higher and deeper.
- Grade reversals need to be made sustainable and sized correctly to cope with factors like weather, time and riders wear.
- The recommended high point spacing table below provides guidance on these separations.
- Standard grade reversals should always be rollable by both novice and experienced riders.
- Experienced riders should be able to transfer across reverse grades if they are traveling at the necessary pace.
- Grade reversals should not be short, steep and kicky, as this can lead to abrasion, forced risk, injury and a substandard ride experience.
- The grade reversal shape should never force a less experienced rider into the air.
- Contours depicted are at 100mm intervals.



ISOMETRIC VIEW - TYPICAL GRADE REVERSAL @ 8m SPACING



PLAN VIEW - TYPICAL REVERSE GRADE



GENERAL
ARRANGEMENT
SCALE: 1:50

RECOMMENDED REVERSE GRADE SPACING
TABLE

TRAIL GRADIENT (%)	HIGH POINT SPACING (m)
less than 5	20 - 40
5 - 10	16 - 19
10 - 15	12 - 15
15 - 20	8 - 11

A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Drn.	Ver.	App.



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

Drawing Title:

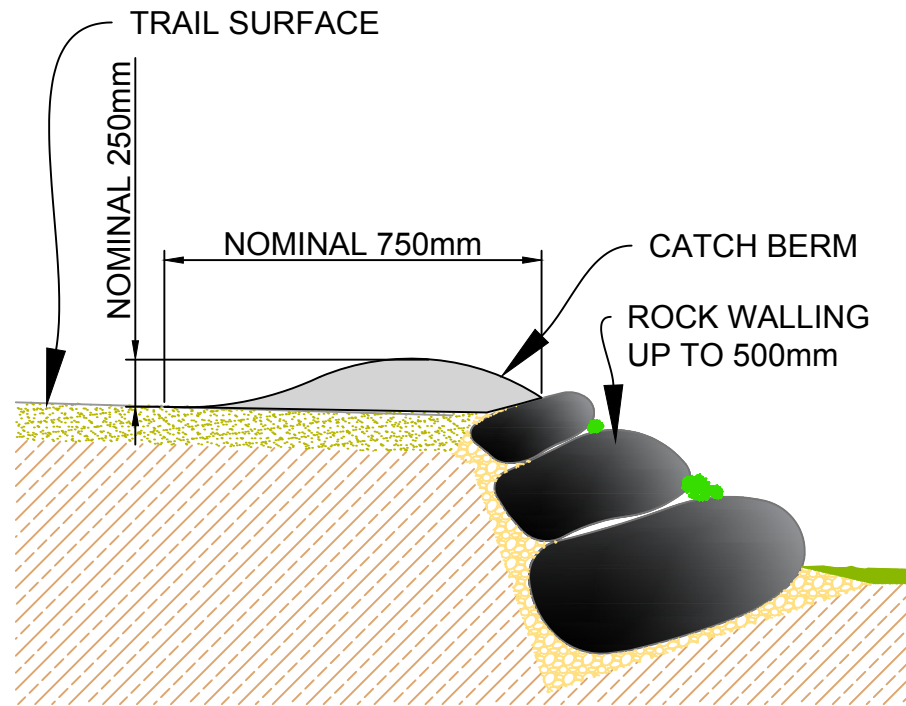
TRAIL GRADE REVERSALS
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

FOR INFORMATION

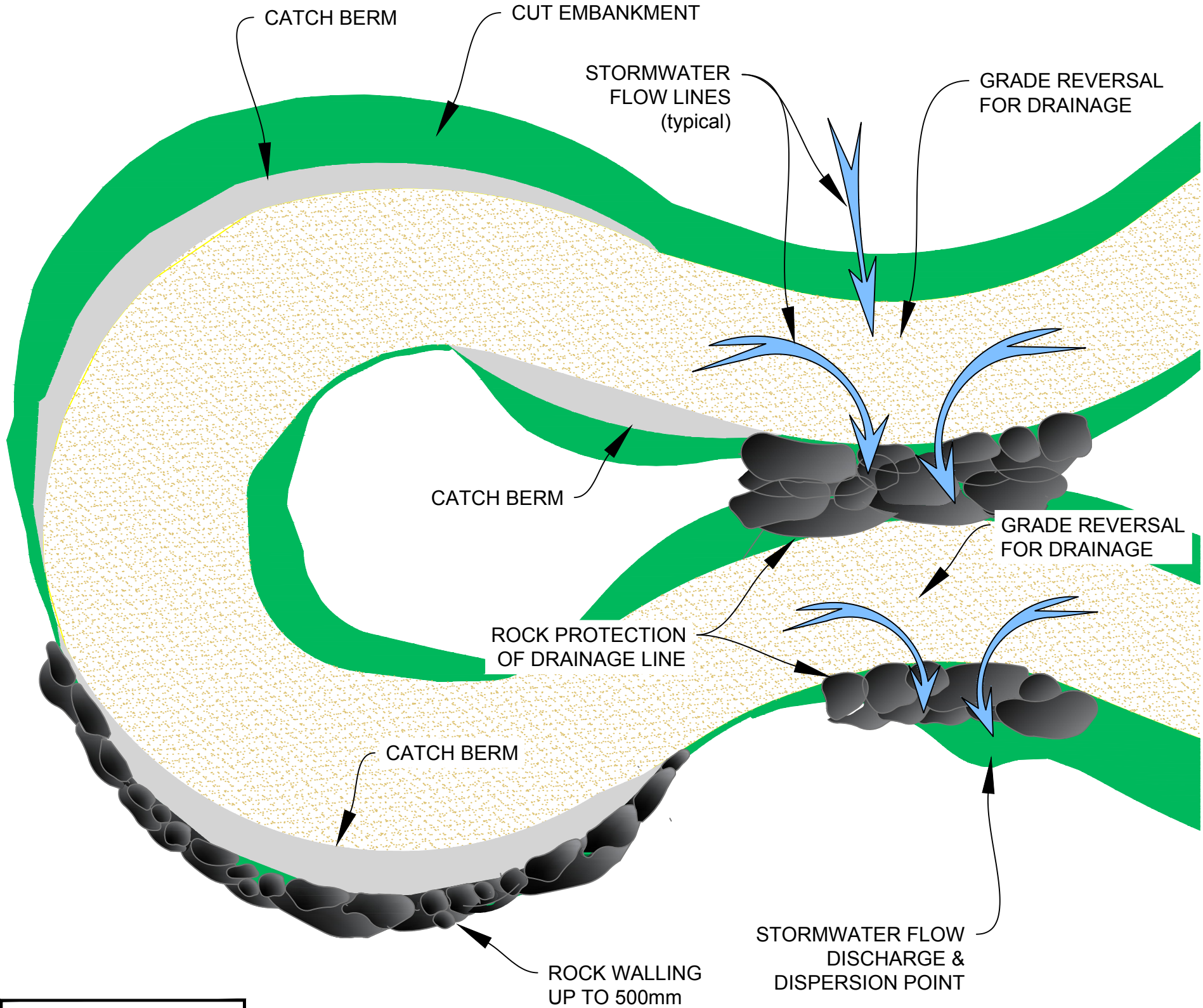
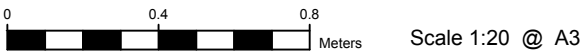
Project No.	WT20-Wangetti-001
Scale	1:50
Sheet Size	A3
Drawing No.	WTSTD-046-WG2
Rev.	A

NOTES:

- GENERAL:
- The rock walled switchback is for steeper cross slopes where rock retaining is required to provide elevation to downhill trail edges.
 - The switchback depicted is indicative only and large variations in shape and dimensions are expected due to the large variations in the topography and hydrology of switchback locations along a trail.
 - This switchback is most suitable for cross slopes of 20% to 33%.
 - Rock Walling will be 500mm or less in height. Refer to WTSTD-034-WG2 for details of rock wall installation.
 - Embankment "Cut" sidewalls should not exceed 1.5m in height.
 - Trail gradients through the switchback should comply with the general trail construction requirements.
 - Trail widening will be required around the arc of the switchback with between 400mm & 700m wider than the standard trail width common.
 - Radii of inside trail edge in the switchback may vary from 0.8m to 4m around the asymmetric arc.
 - See details below for "Catch Berms" that are located at strategic locations to provide a riding edge to direct the ride line.
 - The Catch Berms are constructed of well compacted trail wear surface material.
 - The drainage outlet should disperse water along the contour or across a broad discharge area to reduce velocities and allow for sediment dropout.
 - Additional flows may occur from uphill of the switchback low point and should be considered in any sizing or erosion protection required.
 - Erosion protection downstream of the outlet, generally using rock, may be required if the location constraints make it difficult to disperse flows.

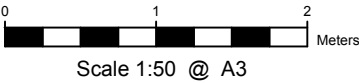


CATCH BERM & ROCK WALL - SECTION VIEW



ROCK WALL SWITCHBACK - PLAN VIEW

GENERAL
ARRANGEMENT
AS SHOWN



ISSUED FOR CLIENT REVIEW	
APPROVED	<input type="checkbox"/>
APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED.....	DATE.....

A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Drn.	Ver.	App.



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

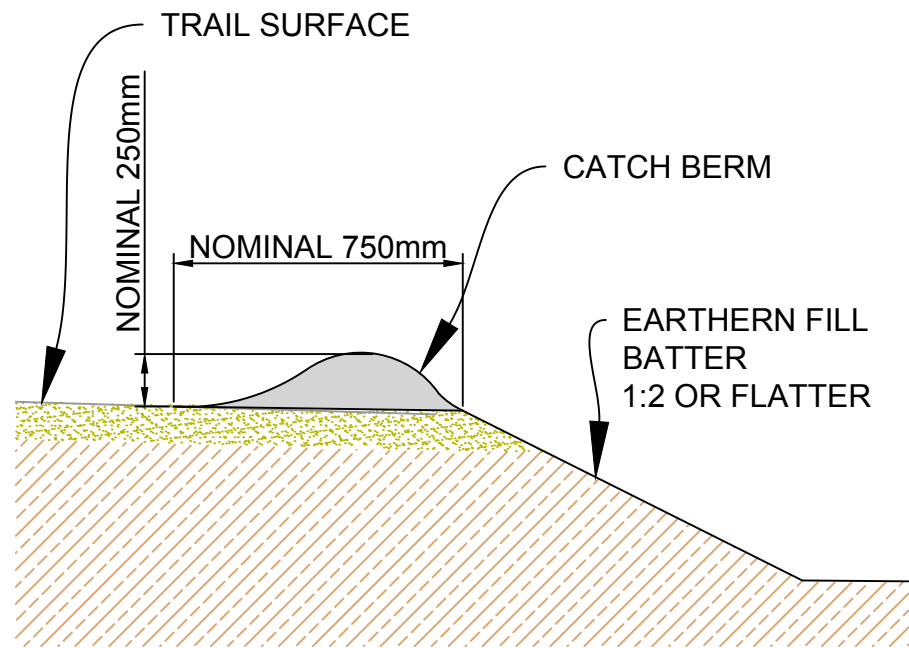
Drawing Title:

ROCK WALLED SWITCHBACK
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

FOR INFORMATION	
Project No.	WT20-Wangetti-001
Scale	AS SHOWN
Sheet Size	A3
Drawing No.	WTSTD-047-WG2
Rev.	A

NOTES:

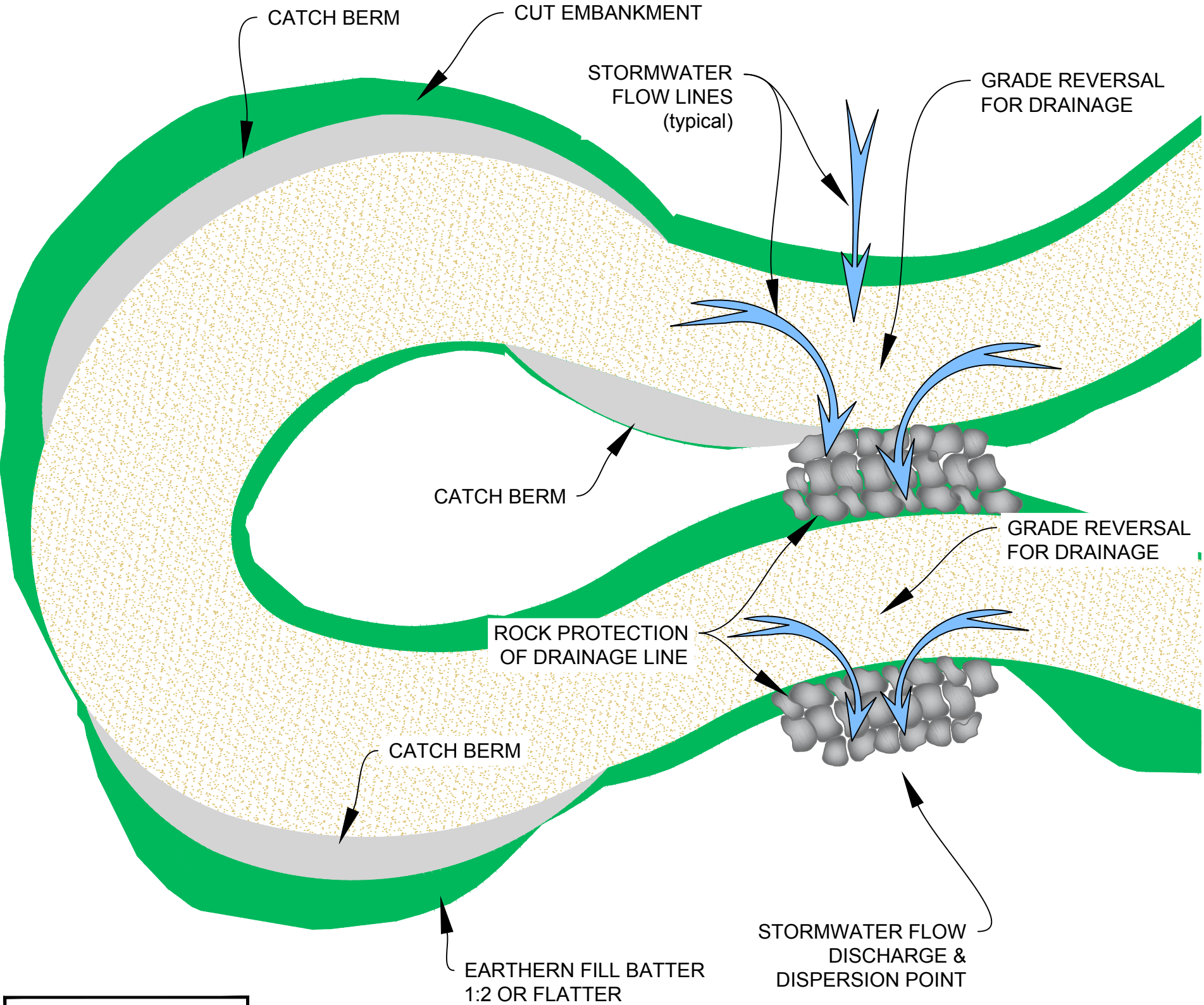
- GENERAL:
- The standard switchback is for flatter cross slopes where earthen batters are sufficient to provide elevation to downhill trail edges.
 - The switchback depicted is indicative only and large variations in shape and dimensions are expected due to the large variations in the topography and hydrology of switchback locations along a trail.
 - This switchback is most suitable for cross slopes flatter than 25%.
 - Embankment fill batters vary from 25% to 50%. Any fill batters steeper than 50% may require structural support and erosion protection depending on the fill material used.
 - Embankment "Cut" sidewalls should not exceed 1.5m in height.
 - Trail gradients through the switchback should comply with the general trail construction requirements.
 - Trail widening will be required around the arc of the switchback with between 400mm & 700mm wider than the standard trail width common.
 - Radii of inside trail edge in the switchback may vary from 0.8m to 4m around the asymmetric arc.
 - See details below for "Catch Berms" that are located at strategic locations to provide a riding edge to direct the ride line.
 - The Catch Berms are constructed of well compacted trail wear surface material.
 - The drainage outlet should disperse water along the contour or across a broad discharge area to reduce velocities and allow for sediment dropout.
 - Additional flows may occur from uphill of the switchback low point and should be considered in any sizing or erosion protection required.
 - Erosion protection downstream of the outlet, generally using rock, may be required if the location constraints make it difficult to disperse flows.



CATCH BERM & FILL BATTER - SECTION VIEW

0 0.4 0.8 Meters Scale 1:20 @ A3

ISSUED FOR CLIENT REVIEW	
APPROVED	<input type="checkbox"/>
APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED.....	DATE.....



STANDARD SWITCHBACK - PLAN VIEW

GENERAL ARRANGEMENT AS SHOWN

0 1 2 Meters Scale 1:50 @ A3

A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Drn.	Ver.	App.



Project: WANGETTI TRAIL DETAILED DESIGN

Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

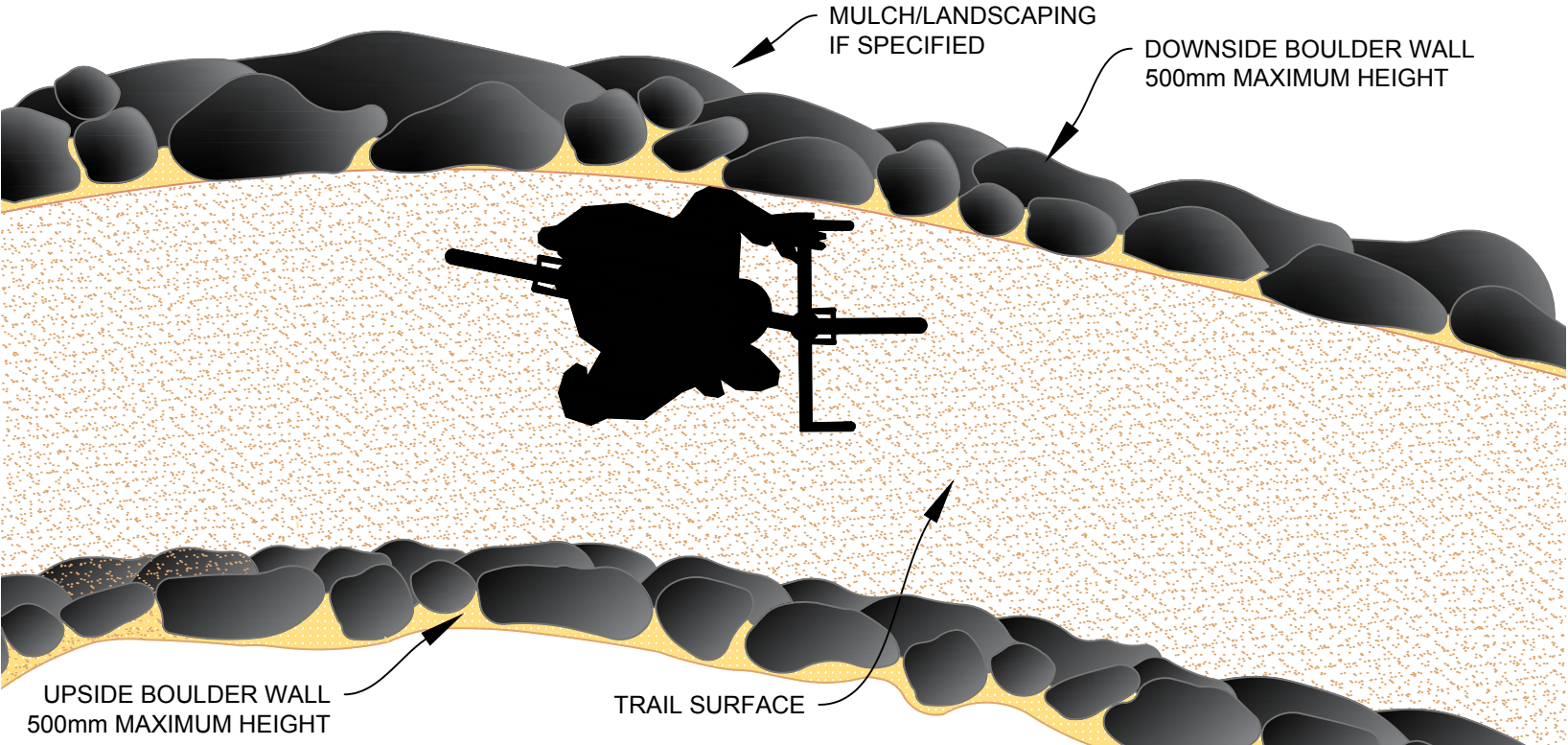
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FOR INFORMATION	
Project No.	WT20-Wangetti-001
Scale	AS SHOWN
Sheet Size	A3
Drawing No.	WTSTD-048-WG2
Rev.	A

NOTES:

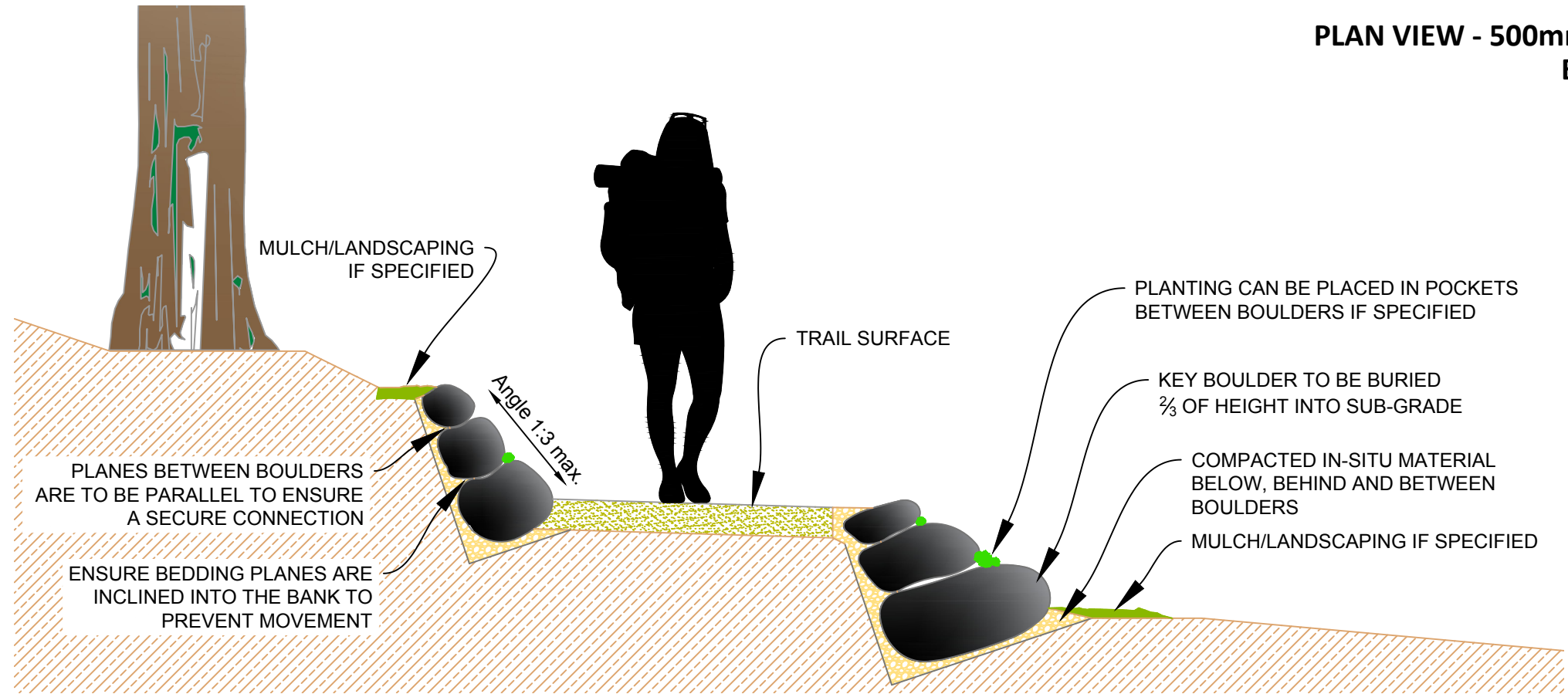
GENERAL:

- Boulders used for the retention wall to be a minimum size of 300mm * 300mm * 300mm.
- The approved boulder type used to form the wall shall be of one consistent type. Typically Granite, Sandstone, Volcanic Red Rock, Phorphyry or other Natural BushRock Boulders unless specified otherwise.
- Boulders as specified with the best and most natural surfaces exposed.
- Sharp / Angled edges are not acceptable.
- Boulder wall to be constructed by an experienced contractor and must not exceed 500mm in height.
- Refer to Standard Drawing WTSTD-004-WG2 for locations where the rock wall needs to be over 500mm.
- Fill used under, behind and between boulders to be in-situ material or equivalent approved material.
- In-situ material is to be compacted to 90% Modified Maximum Dry Density to AS1289.5.4.1.
- This plan depicts boulder walls on both the upside and downside of the track. In many locations only the upside or the downside walls will be required. This plan is meant to be used for the construction of one or the other or both types of retention depending on the local topography.



PLAN VIEW - 500mm BOULDER RETAINING WALL
BOTH SIDES

Scale 1:25 @ A3



LEGEND:

- TRAIL SURFACE
- SELECT FILL
- NATURAL GROUND

ISSUED FOR CLIENT REVIEW

APPROVED	<input type="checkbox"/>
APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED..... DATE.....	

TYPICAL SECTION - 500mm BOULDER RETAINING WALL
BOTH SIDES

GENERAL
ARRANGEMENT
SCALE 1:25

FOR INFORMATION

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NOTES:

- The wall dimensions shown assume a minimum allowable bearing capacity of 100 KPa is available on site.
- Mortar to be 1 part cement to 3 parts sand (by volume). Face joints to be 25mm nominal width.
- Rocks to be selected spalls set in cement mortar beds in horizontal layers. Unless specified otherwise open faced stonepitching to be used where the concrete is recessed 50mm behind the stone facing. If closed face stonepitching is specified, concrete to be flush with stone facing. Select spalls to avoid sharp edges.
- The standard building regulation 1993 requires that a building application be lodged for earth retaining structures >1000mm high. A geotechnical assessment by a suitably qualified engineer is required for all walls founded in poor materials eg. bearing capacity <100 KPa.
- Install weepholes in addition to the longitudinal drain for maintenance and overflow purposes. Weepholes to be 100mm dia upvc at 1000mm max centres, positioned at approx 100mm constant height above ultimate ground level and connected to the longitudinal drain using standard manufacturers fittings.
- Longitudinal drain shall be 300mm * 50mm megaflow or 100mm dia corrugated perforated polyethylene pipe, encased with geofabric (BIDIM A29 or equivalent). The invert of the longitudinal drain and the weephole inlet shall be aligned to allow direct discharge via the weephole.
- All connection, including the joining of lengths of megaflow or corrugated perforated polyethylene pipe, shall be made using standard manufacturers fittings.
- Filter drainage layer for full height and length of wall to be Cordrain or equivalent with Geofabric (BIDIM A29 or equivalent) adhered to both sides. Alternately, a 300mm thick, free draining filter sand/gravel layer separated from insitu material by a type 2 geofabric layer.
- Backfill shall be freedraining, non plastic predominantly granular material with minimum friction angles of 38° and 27° where founding materials are sand or other materials respectively. Do not place backfill behind the wall until at least 10 days after wall construction.
- The 50mm blinding layer can be replaced with a 200 micron IR2 polyethylene sheet when the bottom off the footing excavation is in stable sound material.
- Drawings are not to scale.
- Dimensions in millimetres unless otherwise notated.

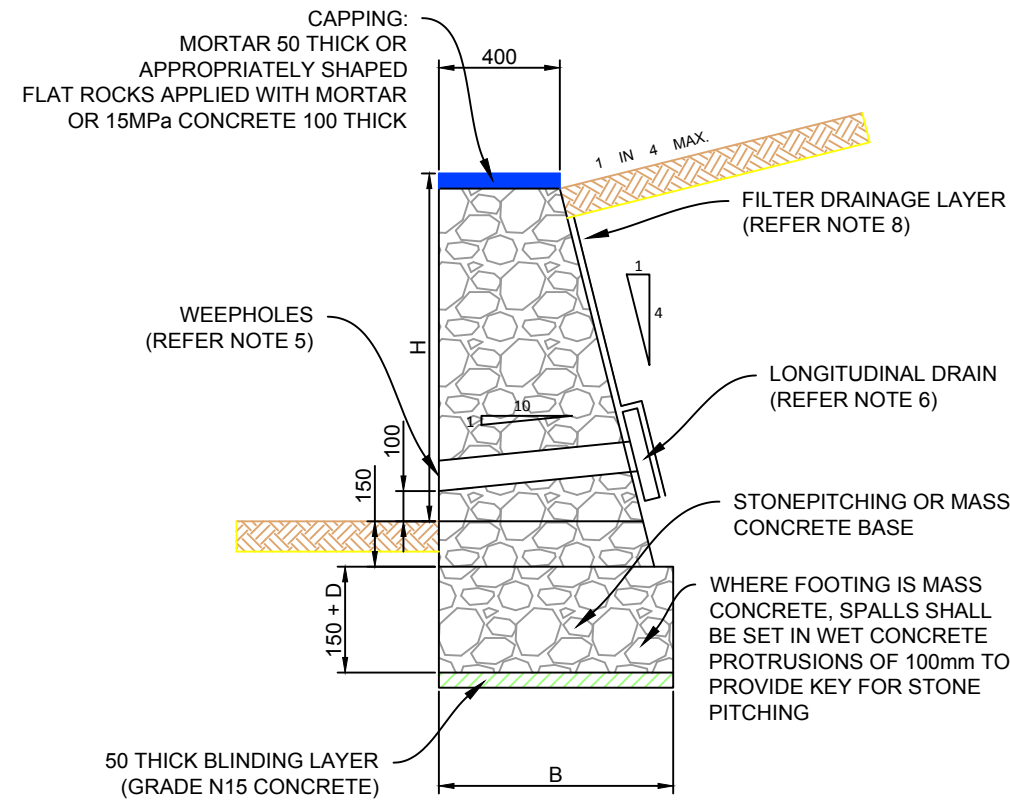
ISSUED FOR CLIENT REVIEW

APPROVED

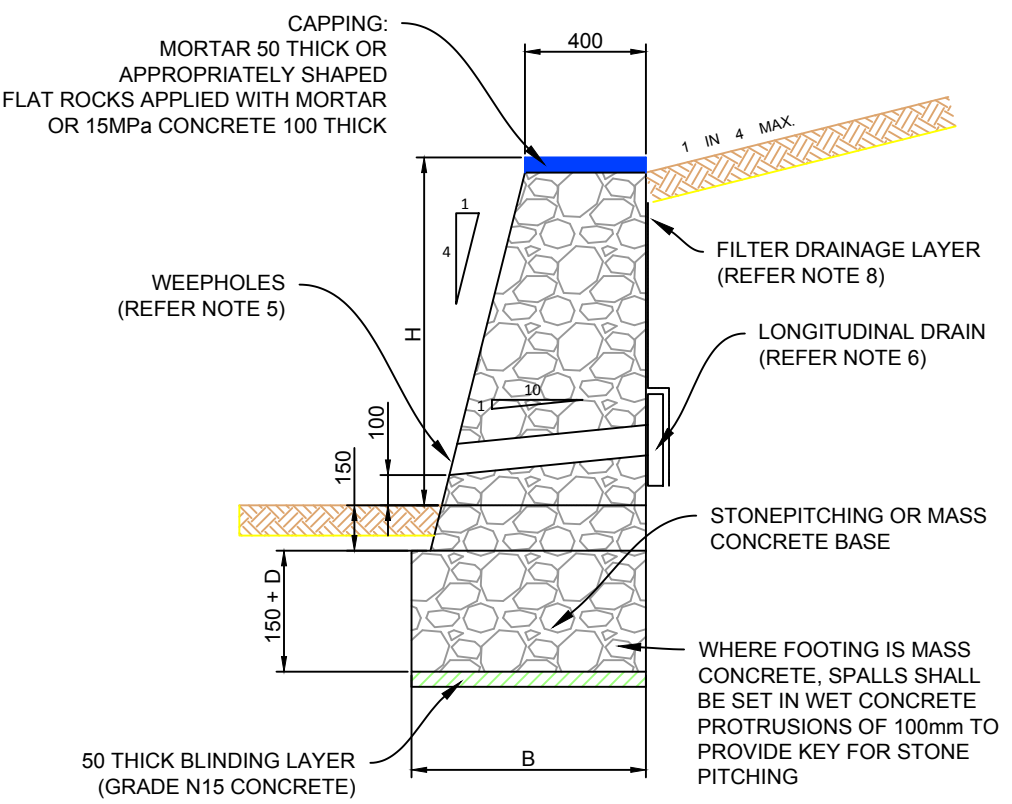
APPROVED AS NOTED

NOT APPROVED

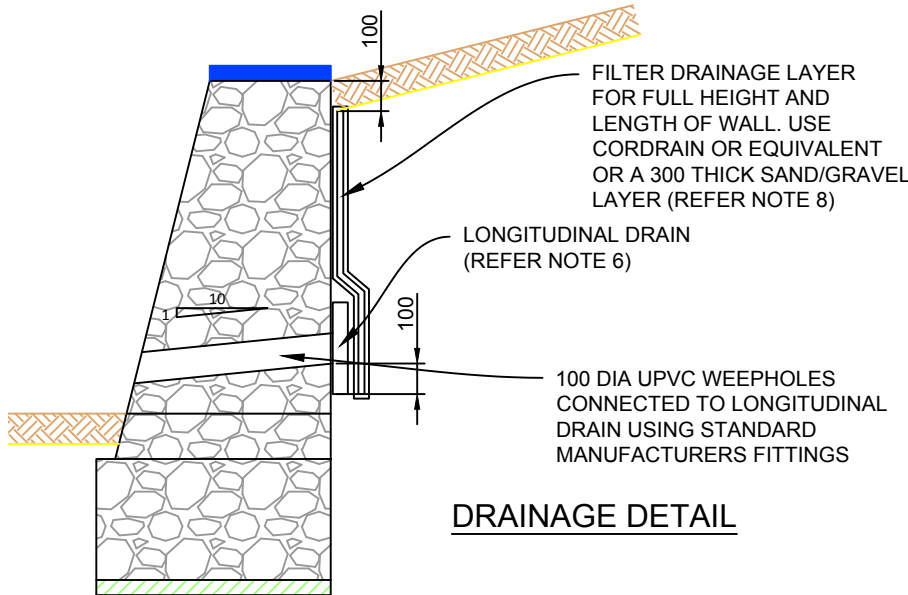
SIGNED..... DATE.....



STONEPITCHED RETAINING WALL
VERTICAL FACE
UNSTABLE INSITU MATERIAL RETAINED



STONEPITCHED RETAINING WALL
4 IN 1 FACE SLOPE
UNSTABLE INSITU MATERIAL RETAINED

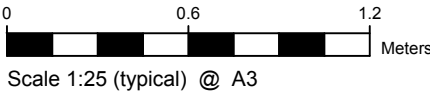


DRAINAGE DETAIL

GENERAL
ARRANGEMENT
SCALE 1:25

WALL DIMENSIONS

SLOPING BACKFILL - 1 IN 4 (MAX) OR LEVEL WITH 5 kPa SURCHARGE		
H	B	D
0 - 400	600	0
401 - 750	660	0
751 - 1000	775	200



Rev.	Date	Revision Details	Drn.	Ver.	App.
A	24/03/20	ISSUED FOR INFORMATION	JR	MB	DS



Project:
WANGETTI TRAIL
DETAILED DESIGN

Drawn JR	Signed	Date 24/03/20
Designed DS	Signed	Date 24/03/20
Verified DS	Signed	Date 24/03/20
Approved	Signed	Date

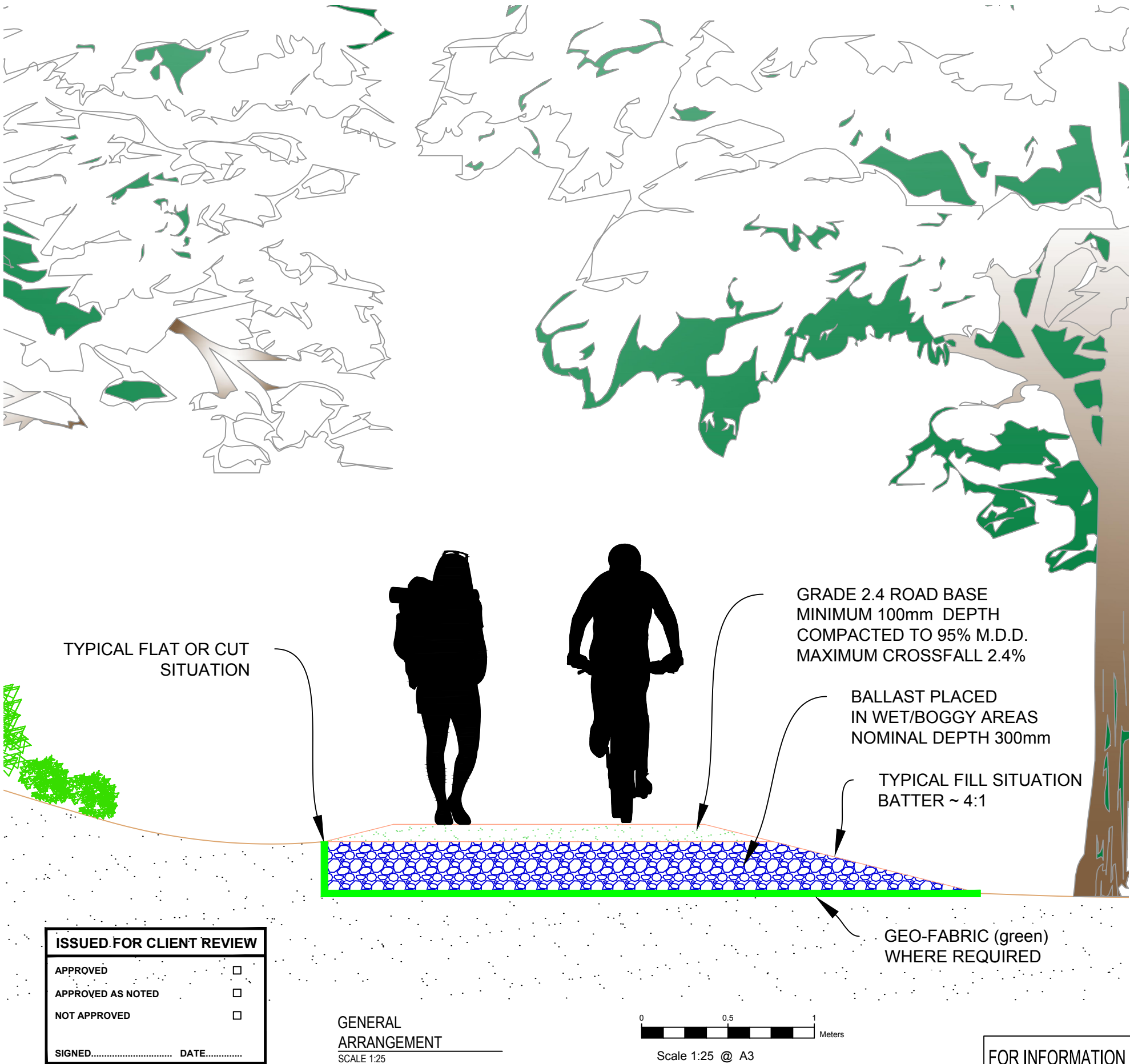
Drawing Title:
ROCK RETAINING WALL UP TO 1000mm
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

FOR INFORMATION	
Project No. WT20-Wangetti-001	Sheet Size A3
Scale 1:25	Rev. A
Drawing No. WTSTD-004-WG2	

NOTES:

- GENERAL:
- Dual direction (two way) trail.
 - Dual use trail for walking and biking.
 - The trail will provide access along a slightly modified, natural environment alignment, with little provision of interpretive signage and few facilities.
 - Ballast surfacing is to be used in wet & boggy locations to provide a solid platform for the trail wearing course layer.
 - Ballast is to be placed in such a way that it does not severely impede local stormwater flows.
 - Locations where the placement of Ballast might impede the natural connectivity of fauna corridors should be identified and remediation infrastructure such as pipes or sections of boulder crossing implemented in a way that will mitigate the blockage.
 - Dimensions in millimetres unless otherwise notated.

- BALLAST PLACEMENT:
- Ballast shall be clean, durable crushed rock with a size distribution of 13mm to 63mm. The majority of particles shall be greater than 37.5mm in size.
 - The Ballast rock shall be hard, non - flaky material with a Bulk Density greater than 1200 Kg/m³ and a Particle Density of greater than 2500 Kg/m³.
 - The nominal depth of 300mm depicted may vary considerably, depending on the depth of unsuitable sub-grade material at each location.
 - Trail width may increase from the general width in the sections with Ballast Surfacing. This is to allow additional shoulder width for trail users through these unsuitable locations.
 - The width of the Ballast may extend up to 3m in particularly boggy areas to provide a stable platform for trail construction.
 - Geofabric underlay of a suitable class may be required under the Ballast to minimise the intrusion of unsuitable material up into the Ballast embankment.
 - Ballast should be compacted using wheel or track rolling, until the particles are firmly meshed and void spaces are minimised.
 - In extreme locations and where low velocity water flows are possible, Geo-Fabric of a suitable class may also be required on top of the Ballast and under the Trail wearing course layer. In these locations the wearing course layer thickness may need to be increased to 150mm or 200mm.



A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Drn.	Ver.	App.



Client:

Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

Drawing Title:

BALLAST SURFACING
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

FOR INFORMATION		
Project No. WT20-Wangetti-001		
Scale 1:25	Sheet Size A3	
Drawing No. WTSTD-045-WG2	Rev. A	

NOTES:

STEP TREADS:

- Step treads are to be supplied by the Paving Group Pty Ltd trading as Stone Directions or equivalent treads as approved by the client or project principle.
- Step treads are precast from a 4:1 white Portland cement mix using screened crushed granite, high grade quartz/sandstone washed sand and fibre reinforcing.
- Steps meets around 55MPa material strength.
- Step treads are available in 4 widths: 1500mm, 1200mm, 900mm & 600mm.
- Other dimensions are as depicted on this plan and include a 50mm overlap between treads.
- In accordance with AS 2156.2 - 2001 Table 4, a Class 3 Walking Track can include up to 36 steps in a row before a landing is required.
- Landings will be a minimum of 900mm in length.
- The specifications of the precast concrete steps depicted in this drawing result in an overall slope/gradient of 28°.
- In some locations, ground conditions may not be conducive to this preset slope. Three options can be considered in these circumstances:
 - Using hand tools, excavate the insitu ground to form the required slope.
 - Import and compact suitable road base to form the ideal slope.
 - Use landings (of varying lengths) to suit the existing slope of the work area.

HANDLING:

- Step treads should be handled using techniques appropriate to the item weight. See the adjacent table for approx. tread weights.
- Treads should be handled in a manner that minimizes the risk of cracking or fracture as treads must be undamaged or weakened before track use.

SITE FOUNDATION MATERIALS:

- The foundation materials on which the stairway is to be constructed must be carefully assessed for foundation rigidity.
- If foundation material conditions are not obvious or the site includes dangerous fall conditions a geotechnical analysisof the foundation materials should be undertaken.
- The foundation materials need to be assessed as to whether they are "Unstable or Sandy" or "Stable".
- Placement methodologies vary depending on this classification.

PLACEMENT:

UNSTABLE or SANDY FOUNDATION MATERIALS:

- The first step must be laid on a concrete slab footing of minimum 75mm depth.
- Concrete is to be minimum 15 MPa which allows the use of post mix or rapid set premix concrete.
- This slab footing must be a minimum of the length and breadth of the precast tread unit.
- The tread unit should be laid level apart from a slight fall to the

- front on the footing using 10 to 15mm of 4:1 mortar mix.
- Additional tread units should be laid with a 50mm overlap over the previous tread and with either another slab footing the size of the tread or at a minimum a strip footing along the sides and back of the tread.
- The strip footing should be a minimum of 100mm wide by 75 mm deep.
- The additional tread should again be laid on a 10 to 15mm mortar bed and levelled to provide a slight fall to the front of around 10mm.
- More additional treads can be added using a similar methodology.
- All slab and strip footings should be laid in an excavation or bounded with suitable rocks or local material to ensure concrete overflow does not impede backfill against the finished stairway using soils or rock protection.

STABLE FOUNDATION MATERIALS:

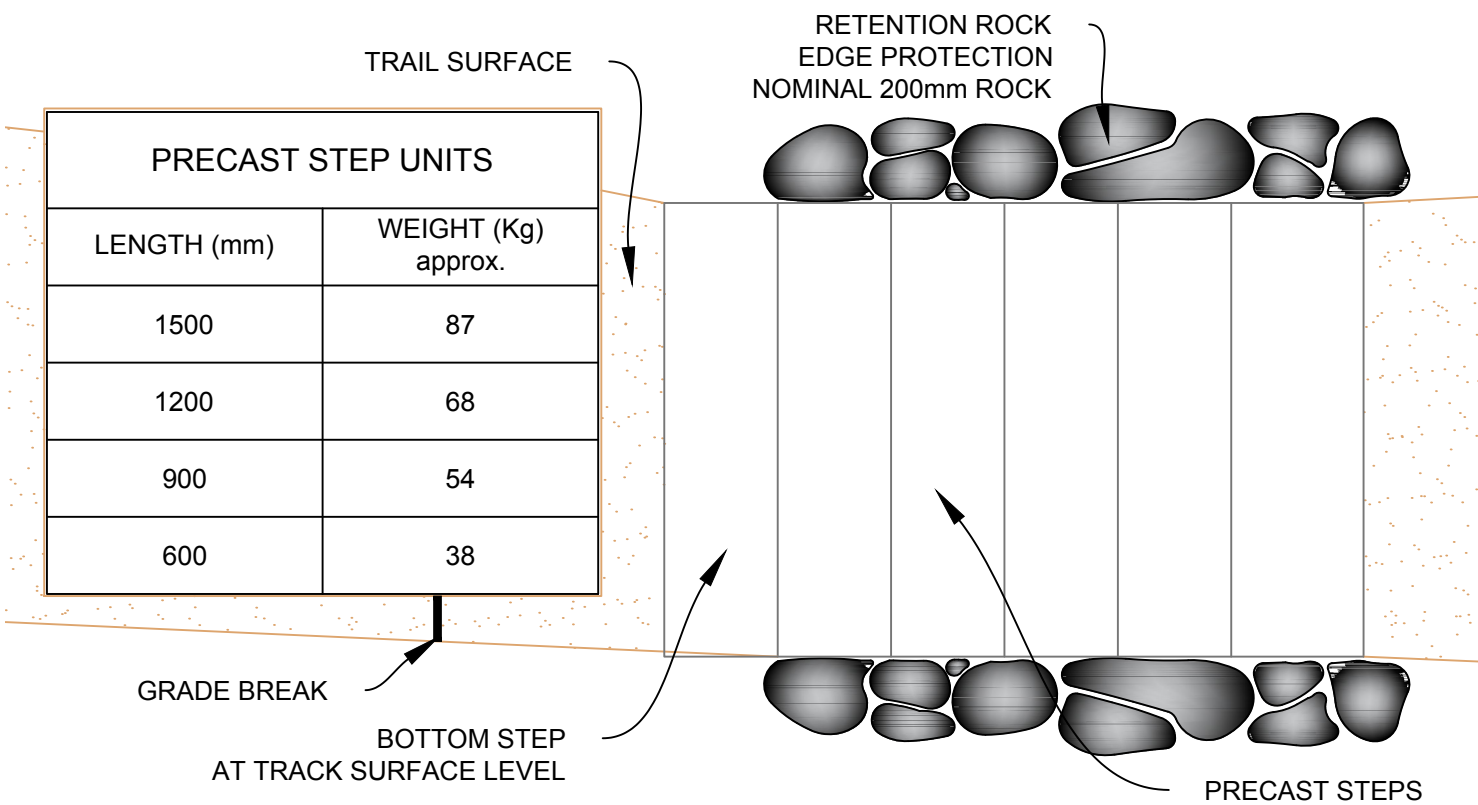
- Treads may be laid directly onto hard stable surfaces (eg shale or granite type materials) plumbed and leveled using a 4:1 mortar mix.
- Treads may be laid directly onto a well compacted 75mm layer of good quality road base again using a 4:1 mortar mix.
- The road base must be contained within an excavation or by appropriate retention rocks to facilitate compaction.
- Where this containment is not possible a concrete slab footing must be used particularly on the bottom tread.
- The contained road base or concrete footing must be at least the full size of the tread.
- Additional treads can be laid on well compacted road base using 10-15mm 4:1 mortar mix with a 50mm overlap over the previous tread.

GENERAL PLACEMENT

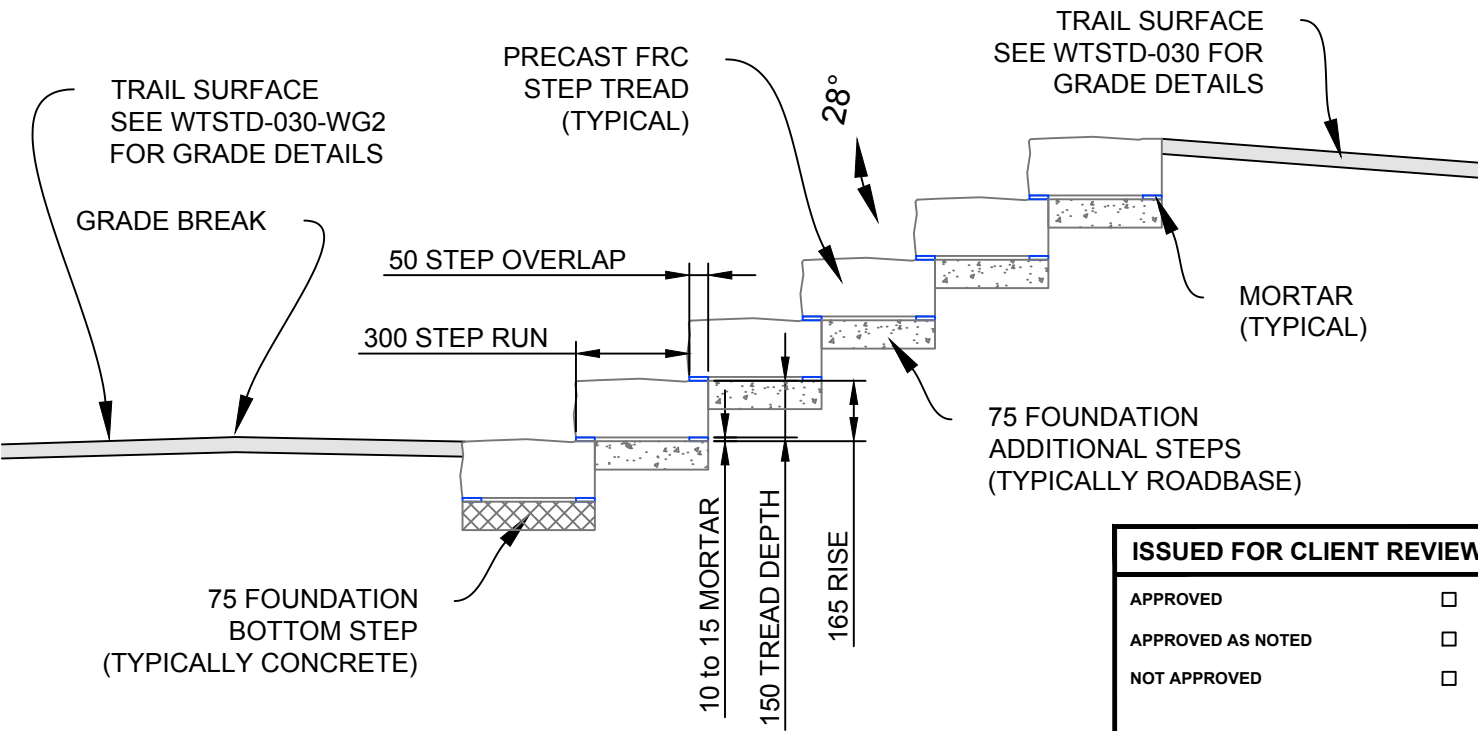
- The mortar mix should be continuous around the bottom edge of the tread unit with some mortar will overflow up and into the hollow part of the tread unit to assist in holding the tread in place.
- The mortar mix must be placed on solid material with all flaky or loose material removed to ensure good bonding.
- The treads are designed to have a 300mm run and a 165mm rise. The mortar depth is critical in achieving this run/rise ratio.
- Additional side support to ensure the treads remain in place can be provided through backfill against the sides using soils or retention rock.
- Retention rock should be used in areas where water flows are likely to occur. Retention rock can be bound in place using a 4:1 mortar mix.
- Step treads are supplied with 3 pattern styles. Ensure styles are mixed and matched to avoid any obvious symmetry and maximize a "natural look".
- Dimensions in millimetres unless otherwise notated.

TRAIL ALIGNMENT

- See WTSTD-030-WG2 for details on trail grading requirements above, below & at landings between stair sections.

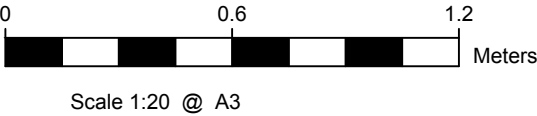


TYPICAL PLAN VIEW - PRECAST STEPS WITH RETENTION ROCK



TYPICAL SECTION PRECAST STEPS - 5 STEP EXAMPLE

GENERAL ARRANGEMENT
SCALE 1:20



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Rev.	Date	Revision Details	Drn.	Ver.	App.
E	07/04/20	TRAIL GRADE & BOTTOM STEP ALTERED	JR	DS	DS
D	14/08/19	ADDITIONAL NOTES ADDED	JR	DS	DS
C	07/08/19	RETENTION ROCK PLAN VIEW ADDED	JR	DS	DS
B	17/12/18	ADDITIONAL NOTES ADDED	JR	DS	DS
A	22/11/18	ISSUED FOR INFORMATION	JR	DS	DS



Client:	
Project:	
Drawn	JR
Signed	
Date	07/04/20
Designed	DS
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Date	07/04/20
Verified	DS
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Date	07/04/20
Approved	
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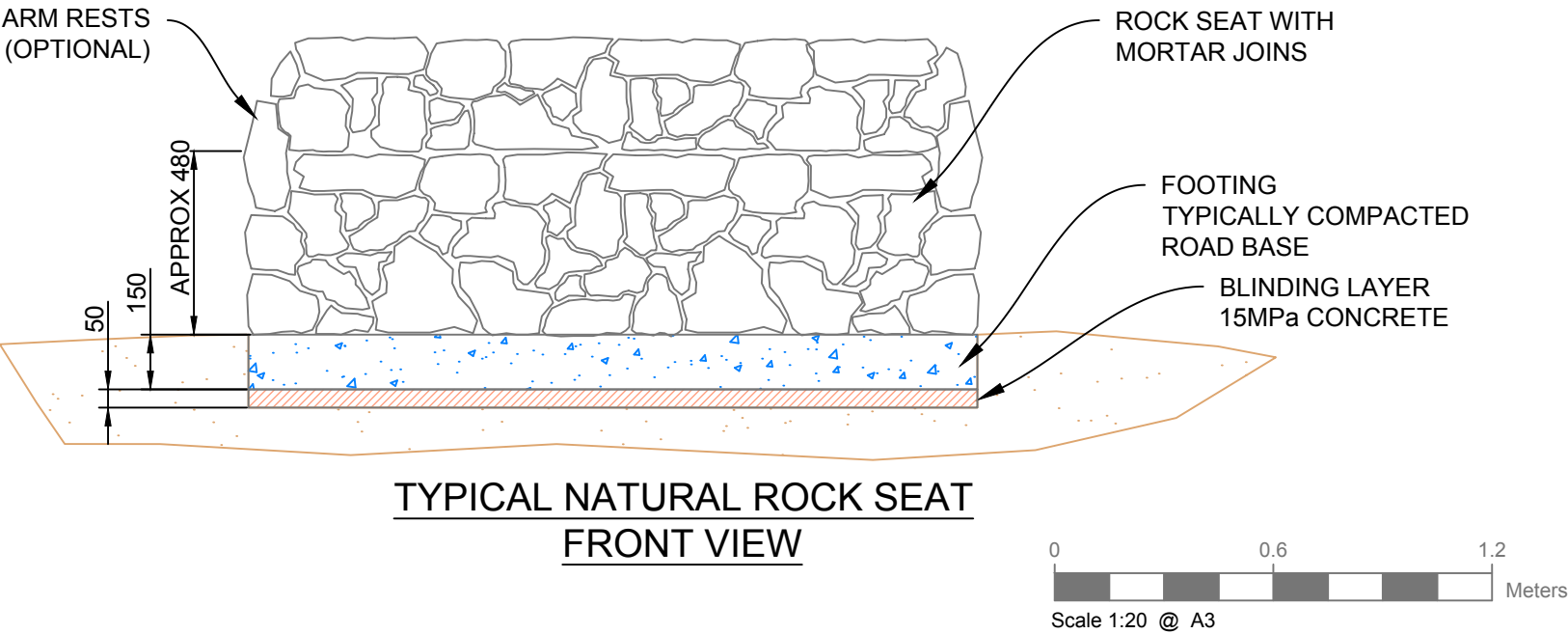
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Project No.	WT20-Wangetti-001
Scale	1:20
Sheet Size	A3
Drawing No.	WTSTD-003-WG2
Rev.	E

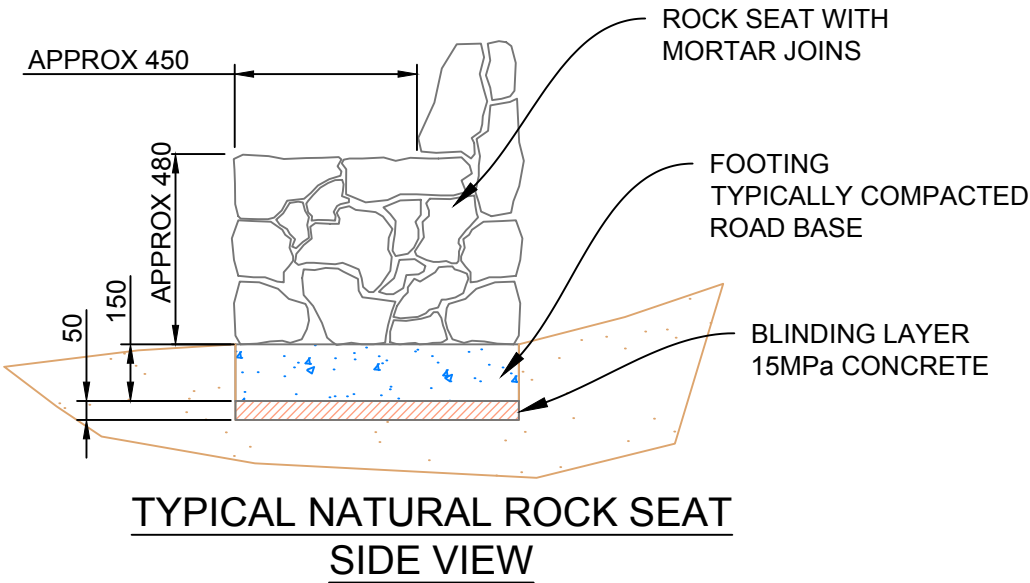
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Project No.	WT20-Wangetti-001
Scale	1:20
Sheet Size	A3
Drawing No.	WTSTD-003-WG2
Rev.	E

NOTES:

- The seat design depicted is a single seat layout that represents a whole range of possible configurations.
- Seats may in a line, curved, built into a retaining wall and can be anywhere from 1 to many metres in length.
- Seats may have a back rest as depicted or may be constructed as a bench with no backrest at all. When associated with a retaining wall, the wall can become the backrest.
- Rock used for seat construction must be of an appropriate shape, texture and colour to match the native rock and must provide a natural appearance relative to its location .
- Mortar to be 1 part cement to 3 parts sand (by volume). Face joints to be 25mm nominal width.
- Rocks to be selected spalls set in cement mortar beds in horizontal layers. Unless specified otherwise open faced stone pitching to be used where the concrete is recessed 50mm behind the stone facing. If closed face stonepitching is specified, concrete to be flush with stone facing. Select spalls to avoid sharp edges.
- Where the seat is associated with a retaining wall it must not impede the drainage system constructed behind and through the wall.
- Weepholes from the retaining wall must continue through the seat through 100mm dia upvc at 1000mm max centres, positioned at a slope of 1 in 10.
- All connection, including the joining of lengths of megaflo or corrugated perforated polyethylene pipe, shall be made using standard manufacturers fittings.
- In stable foundation materials the 150mm seat footing can be constructed using well compacted road base. The outer edges must be scraped back to a clean hard surface so that the bottom layer of mortar will adhere to the surface.
- In unstable or high clay foundations the footing must be constructed using 15MPa concrete and the bottom row of rocks are to be embedded around 100mm into the concrete.
- The core of the seat can be filled with well compacted good quality granular material with minimal clay content.
- The 50mm blinding layer can be replaced with a 200 micron IR2 polyethylene sheet when the bottom off the footing excavation is in stable sound material.
- Dimensions in millimetres unless otherwise notated.



TYPICAL NATURAL ROCK SEAT
FRONT VIEW



TYPICAL NATURAL ROCK SEAT
SIDE VIEW

GENERAL
ARRANGEMENT
SCALE 1:20

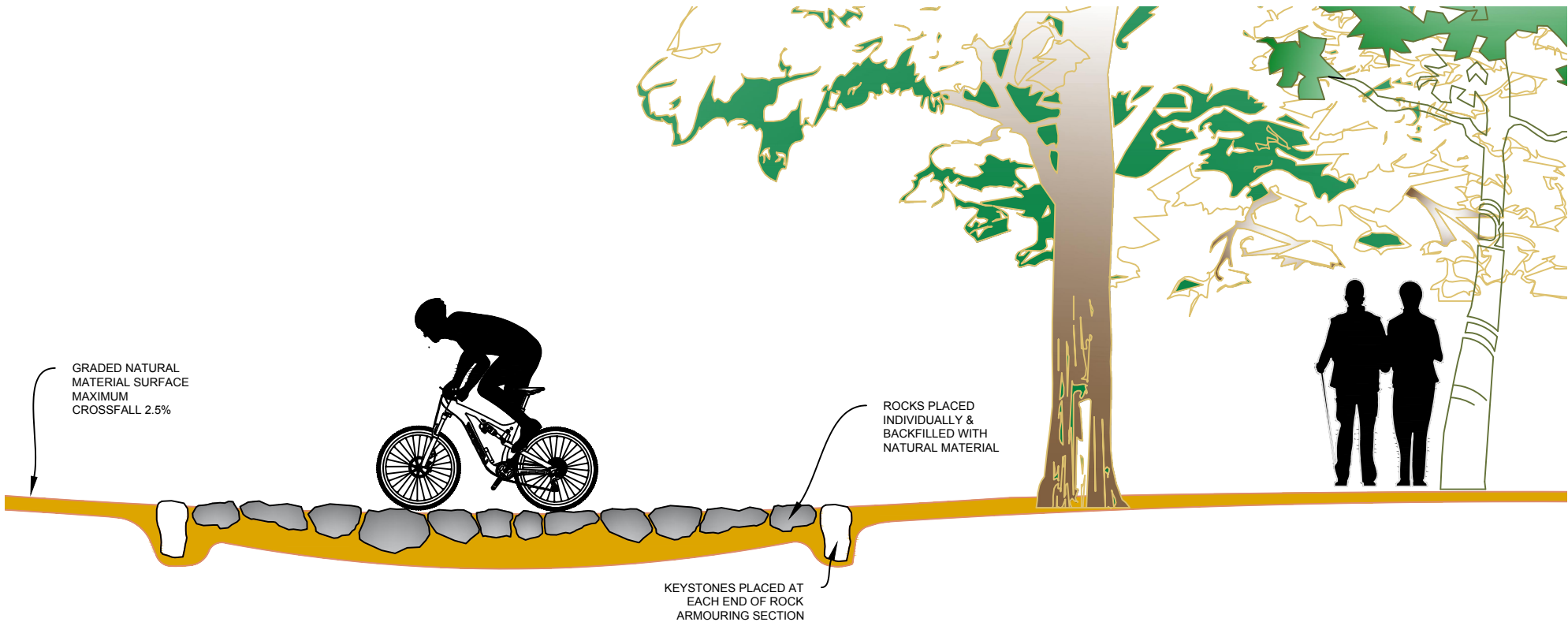
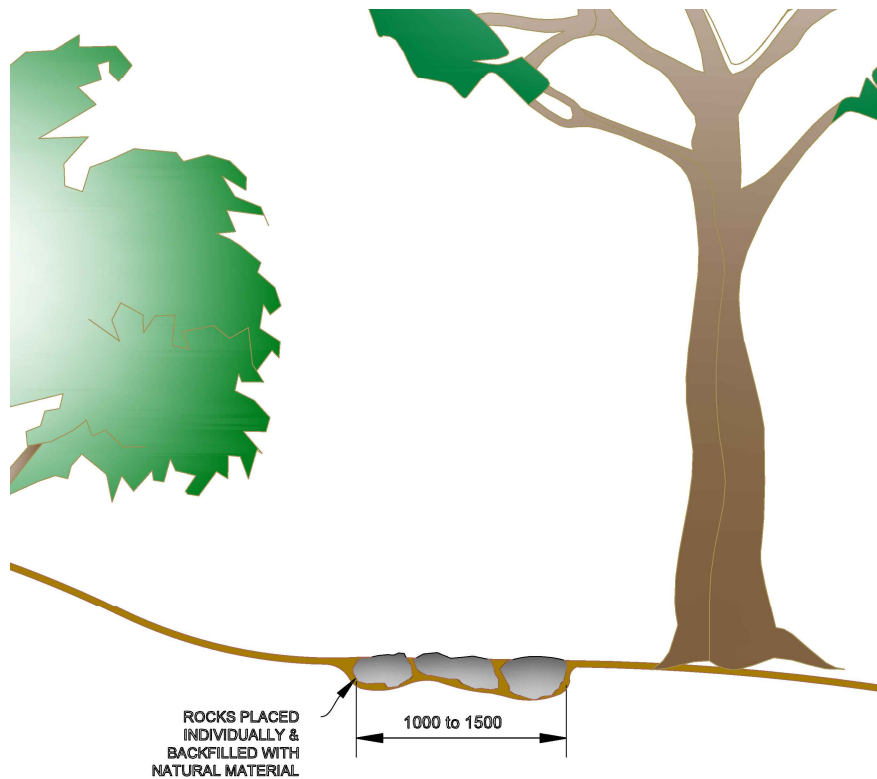
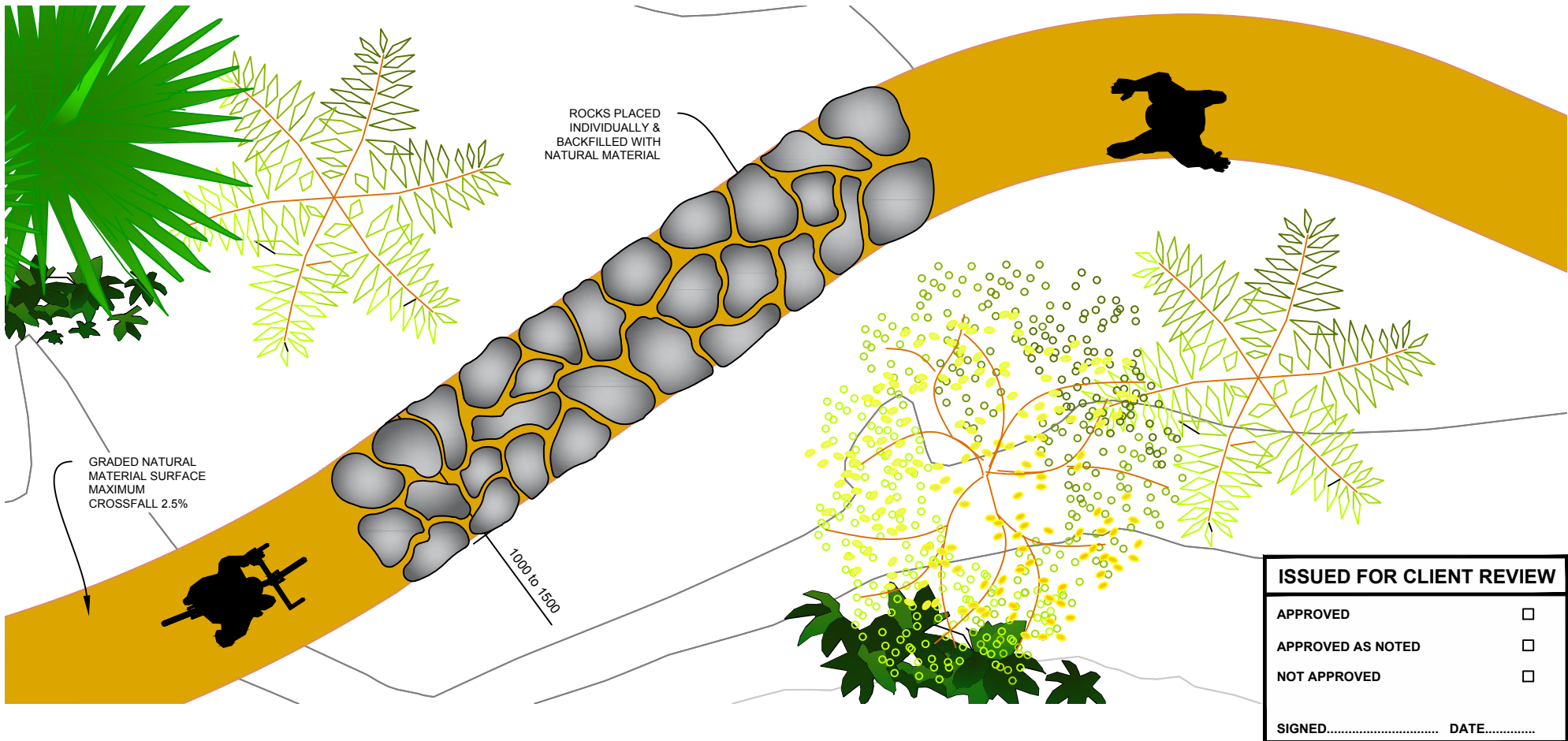


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				Client:		Project:		Drawn	Signed	Date	Drawing Title:		FOR INFORMATION	
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								DS		24/03/20	PLACEMENT AND DIMENSIONS		WT20-Wangetti-001	
								DS		24/03/20	STANDARD DRAWING		Scale	
								Approved					1:20	
													Sheet Size	
													A3	
													Drawing No.	
													WTSTD-005-WG2	
													Rev.	
													A	

NOTES:

- Rock Armouring (RA) is to be used in trail sections that are often wet and boggy or to reduce erosion and increase traction on steeper trail sections.
- RA consists of natural or imported rock depending on availability with a minimum size of 400mm and up to 800mm.
- Typical dimensions for rock armoured areas would be 1200mm (minimum) wide and often 5000mm long
- RA sections may be straight or curved depending on the local topography and the track alignment at that location.
- Rocks are to be placed into the wet foundation material and backfilled with dry graded local material that is of a similar consistency to the general track surface.
- Each rock should be bedded into graded foundation material in such a way that it will remain stable with no rocking or misplacement.
- Rocks used for armouring should be of an appropriate shape, texture and colour to match the native rock and must provide a natural appearance relative to its location .
- Rocks should be placed so that the top surface provides reasonable traction for cycle and foot traffic. Distance between rocks will depend on the degree of "bogginess" and the ability of the foundation material to hold up the backfill material between the individual rocks.
- The texture of the top surface of the rocks should allow for reasonable traction for cycle and foot traffic with minimal slippage.
- Once the rocks have been placed, natural topsoil should be raked or swept into the gaps between the rocks and compacted to minimise future slumping or rock instability.



Scale 1:50 @ A3

GENERAL
ARRANGEMENT
SCALE 1:50

A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Drn.	Ver.	App.

Client:



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn

Signed

Date

Designed

Signed

Date

Verified

Signed

Date

Approved

Signed

Date

Drawing Title:

ROCK ARMOURING - DUAL USE
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

FOR INFORMATION

Project No.

WT20-Wangetti-001

Scale

1:50

Sheet Size

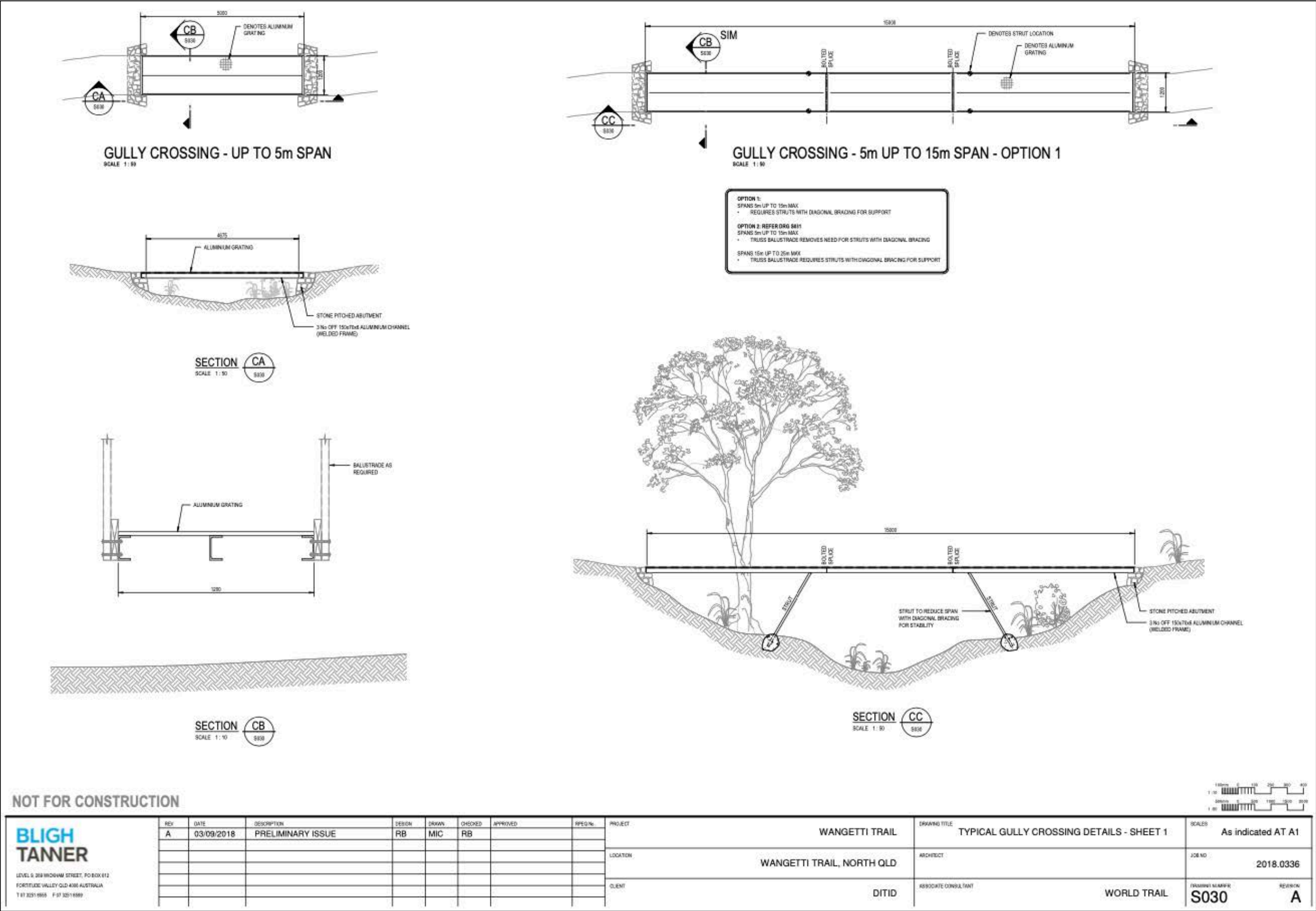
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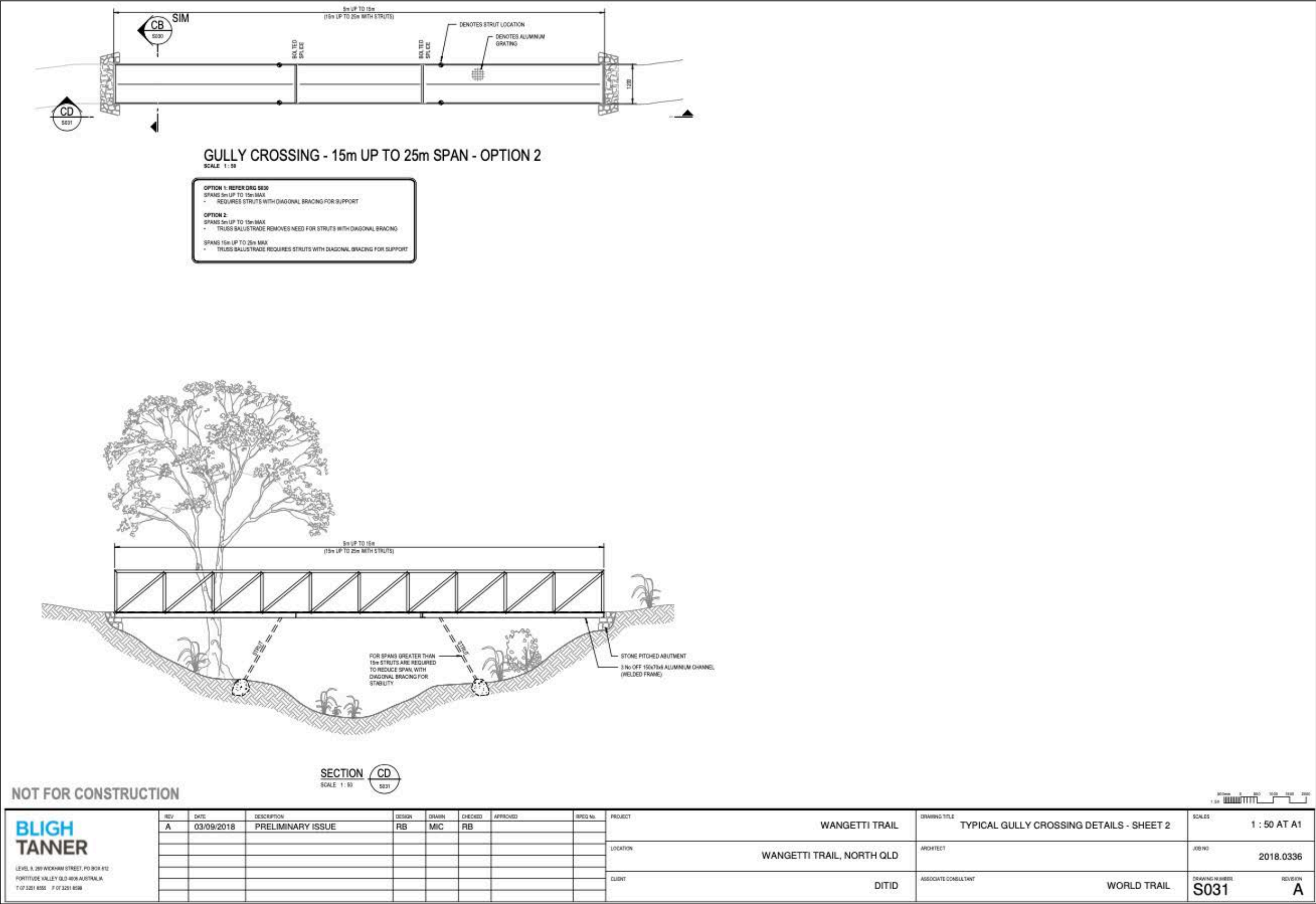
Drawing No.

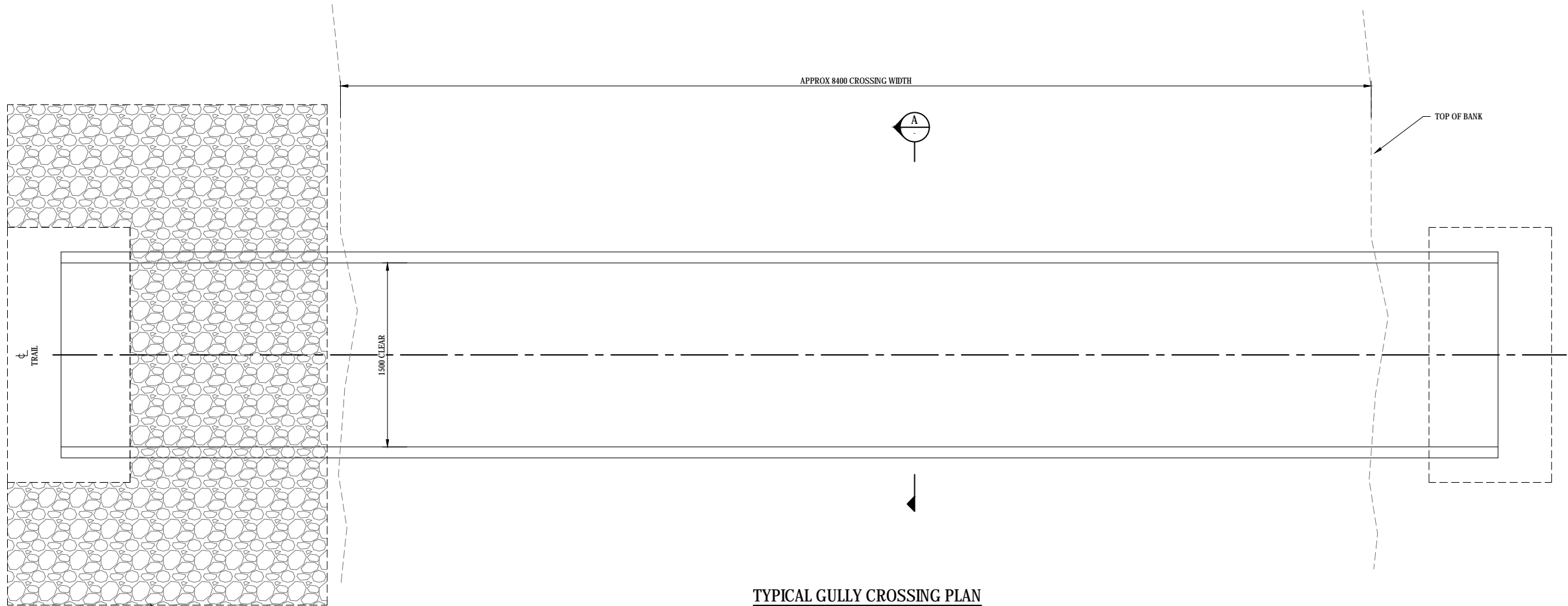
WTSTD-007-WG2

Rev.

A

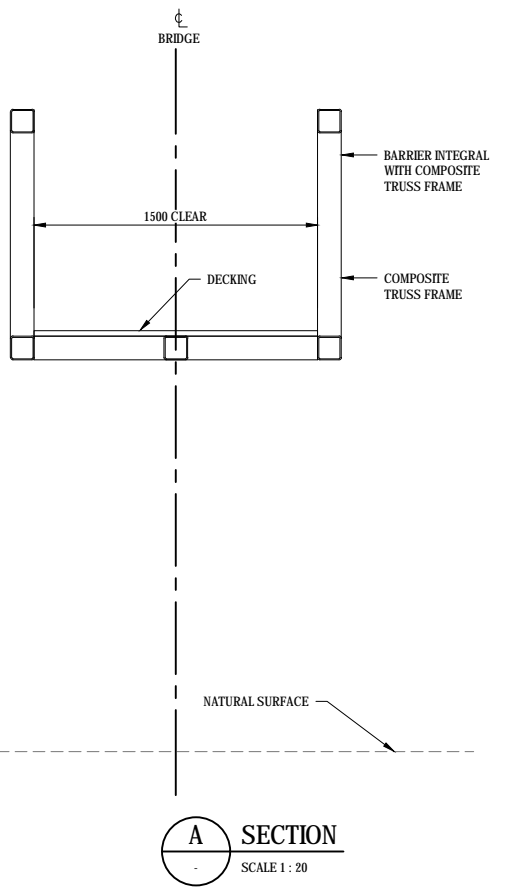






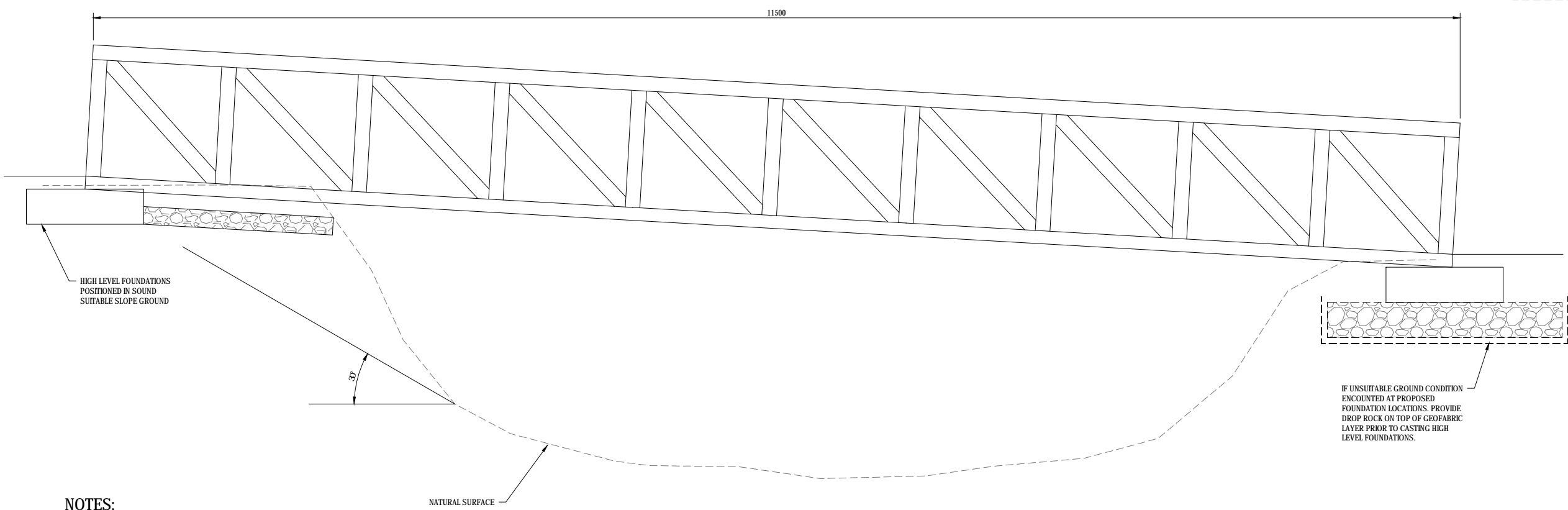
TYPICAL GULLY CROSSING PLAN

SCALE 1:20



SECTION A

SCALE 1:20



TYPICAL GULLY CROSSING SECTION

SCALE 1:20

CONCEPT GULLY CROSSING SHOWN FOR B41
CONCEPT CROSSING B40 - 5.3m APPROX CROSSING WIDTH SIMILAR
CONCEPT CROSSING B39 - 6.0m APPROX CROSSING WIDTH SIMILAR

NOTES:
PROPOSED WORKS OUTCOMES

1. LIVE LOAD TO AS2156.2 - 4 kPa FOR VIEWING PLATFORMS AND 3kPa FOR ACCESS WAYS FOR TRACKS CLASS 3
2. PROPOSED CLEAR WIDTH ON PATH TO BE 1.5m.

PRELIMINARY

rev	description	app'd	date
A	CONCEPT ISSUE	*AA	16.05.19

DEPARTMENT OF INNOVATION, TOURISM INDUSTRY DEVELOPMENT
WANGETTI TRAIL
CONCEPT GULLY CROSSINGS
GA - OPTION



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PO Box 819, Cairns QLD 4870
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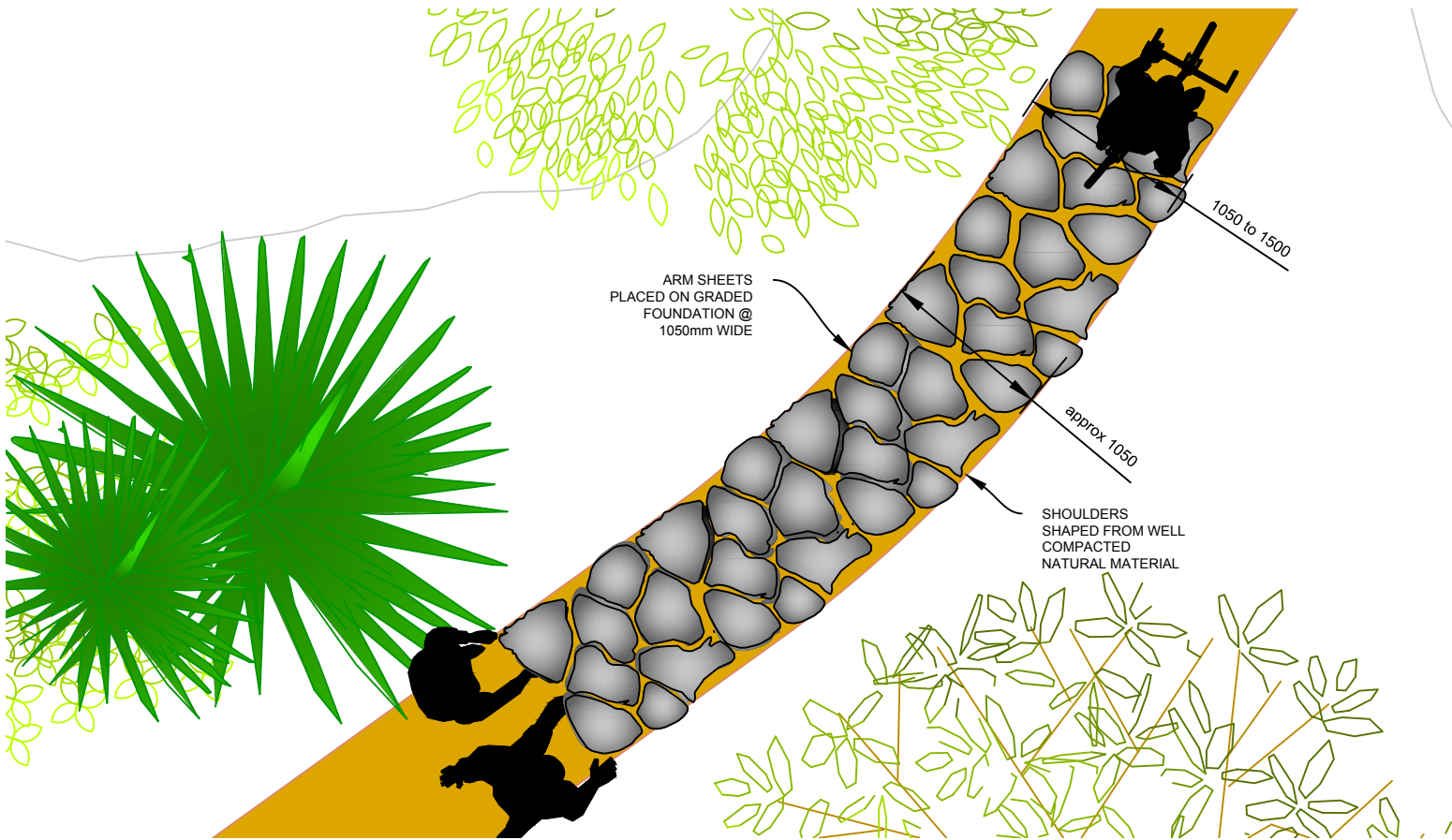
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scale | AS SHOWN for A1 | job no. | 42-21067
date | MAY 2019 | rev no. | A

approved (PD) SK017

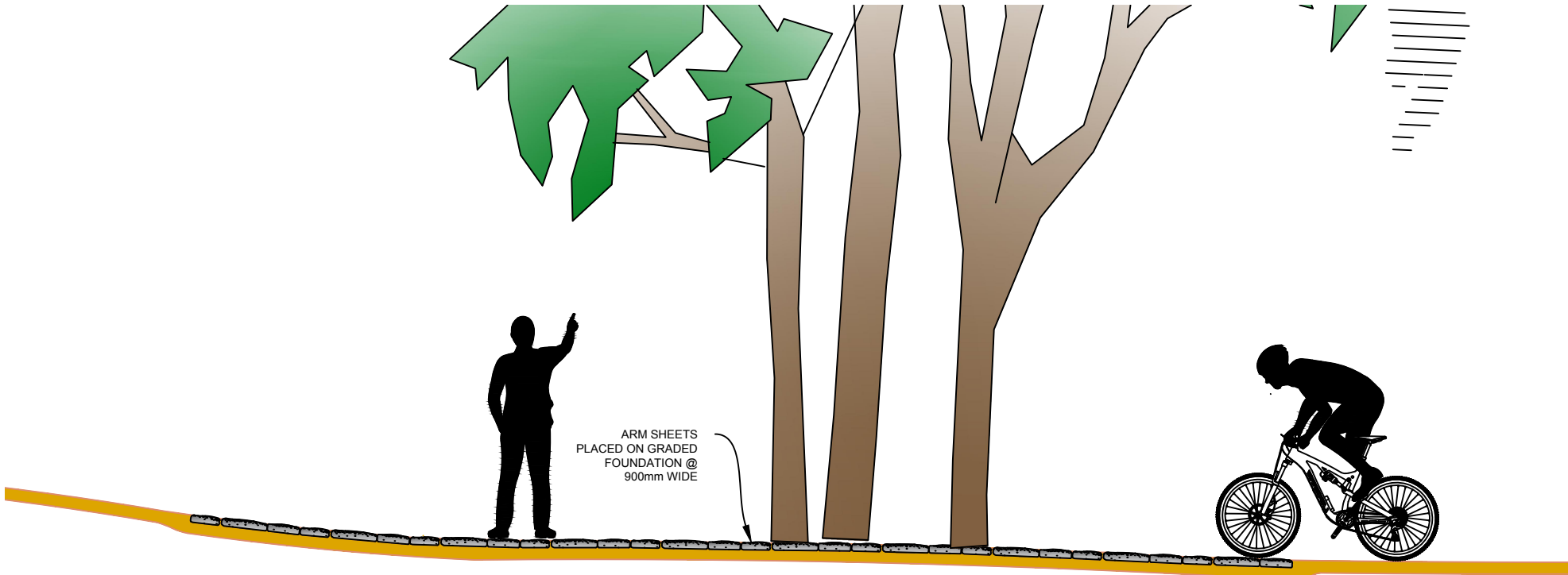
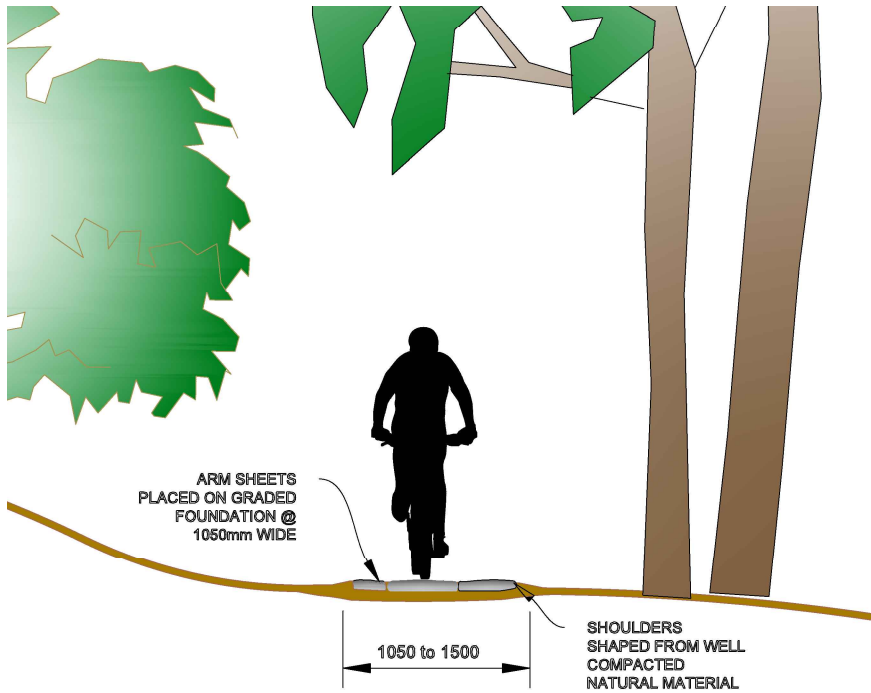
NOTES:

- Adjustable Rock Matting (ARM) is to be used in trail sections that are often wet and boggy or to provide a safe braking surface on unavoidable declines.
- ARM is manufactured in 1050mm by 1050mm sheets that have the capacity to be bent either vertically or horizontally to suit the required topography and trail alignment.
- The trail section providing a foundation for ARM should be leveled and treated to be free of protruding rocks or roots prior to installation.
- A base layer of imported material may be required to provide a suitable foundation for the ARM if the natural material is found to be unsuitable.
- Any excess loose material should be stockpiled nearby to be used as a coating surface after the ARM has been installed.
- ARM sheets should be installed from the lowest point and working uphill, checking the alignment as installation proceeds.
- Sheets can be cut to allow removal of sections to facilitate alignment around large unmovable objects or to allow tighter curves in difficult trail alignment sections.
- Each sheet should be checked to ensure it is sitting evenly and solidly on the ground without rocking or movement under pressure.
- The ARM sheets should be joined with cable ties and any excess matting trimmed.
- Secure the ARM sheets to the ground with pegs placed through the matting..
- Finish by raking or sweeping the stockpiled topsoil over the ARM sheets, filling and compacting soil into the gaps between the rocks.
- Ensure the ARM placement and soil topping provides a trafficable surface for both walking and biking.



ISSUED FOR CLIENT REVIEW

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GENERAL ARRANGEMENT
SCALE 1:50

Rev.	Date	Revision Details	Drn.	Ver.	App.
B	07/04/20	ARM SIZE CHANGE TO 1050mm	JR	DS	DS
A	24/03/20	ISSUED FOR INFORMATION	JR	DS	DS

Client:



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn	Signed	Date
JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

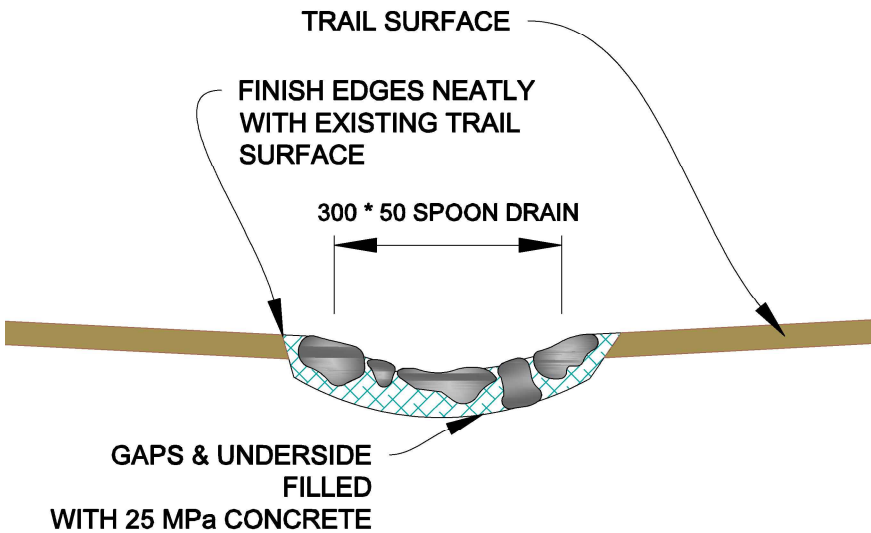
Drawing Title:
ADJUSTABLE ROCK MATTING 1050mm
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

FOR INFORMATION

Project No.	WT20-Wangetti-001
Scale	1:50
Sheet Size	A3
Drawing No.	WTSTD-011-WG2
Rev.	B

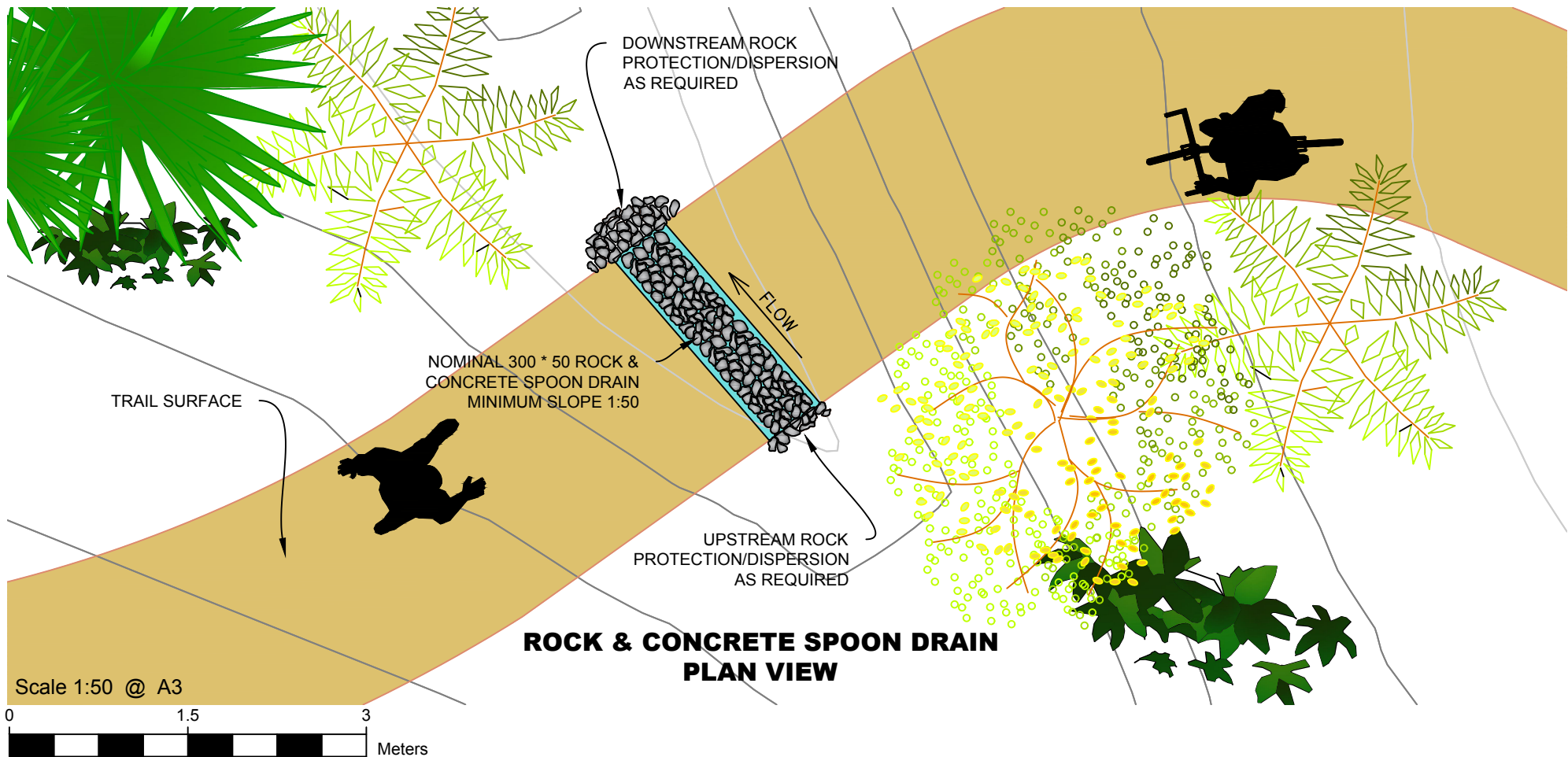
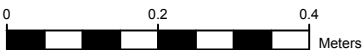
NOTES:

- Spoon Drains are to be used to convey surface runoff across the trail at a concentrated location without using below ground conduits while minimizing erosion.
- The spoon drain profile and alignment should be constructed in such a way that disturbances to trail walkability are minimized.
- Dimensions and layout depicted are nominal only and may vary to suit site topography and expected runoff surface flows.
- All dimensions are in millimeters unless advised otherwise.
- Rocks are to be placed in such a way that they are interlocked and well bedded into a 25 MPa concrete bed poured onto the spoon drain foundation.
- 25 MPa Concrete to be poured into the gaps between the rocks and along the edges to form a neat transition to the trail surface.
- All exposed concrete should be finished to a rough texture to minimise slipping and provide further roughage to impede water flows.
- The tops of the rocks should be cleaned of concrete to provide a natural finish.
- Concrete should be tamped to ensure there is no air entrapment and that the concrete is placed firmly against the foundation material.
- Rock protection should be placed at the discharge end to minimise erosion and to provide flow dispersion of the runoff.
- In some locations rock protection may be required at the upstream end to minimise erosion as the runoff flows enter the spoon drain.



ROCK & CONCRETE SPOON DRAIN
TYPICAL SECTION

Scale 1:10 @ A3



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APPROVED ☐

APPROVED AS NOTED ☐

NOT APPROVED ☐

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FOR INFORMATION

Project No.
WT20-Wangetti-001

Scale varies
Sheet Size
A3

Drawing No.
WTSTD-019-WG2
Rev.
A

Rev.	Date	Revision Details	Drn.	Ver.	App.
A	25/03/20	ISSUED FOR INFORMATION	JR		

GENERAL
ARRANGEMENT
SCALE varies

Client:



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn JR	Signed	Date 25/03/20
Designed DS	Signed	Date 25/03/20
Verified DS	Signed	Date 25/03/20
Approved	Signed	Date

Drawing Title:

ROCK & CONCRETE SPOON DRAINS
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

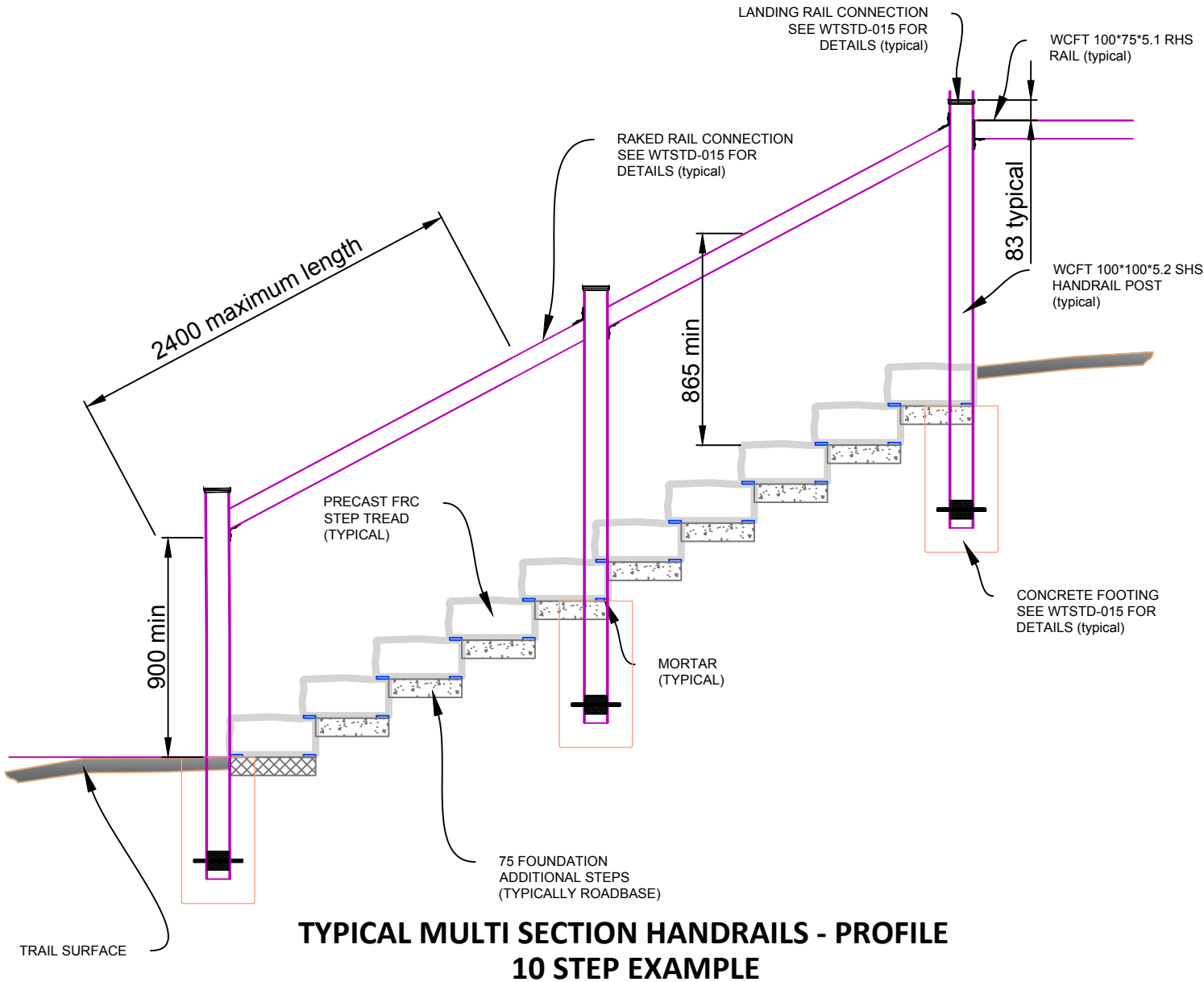
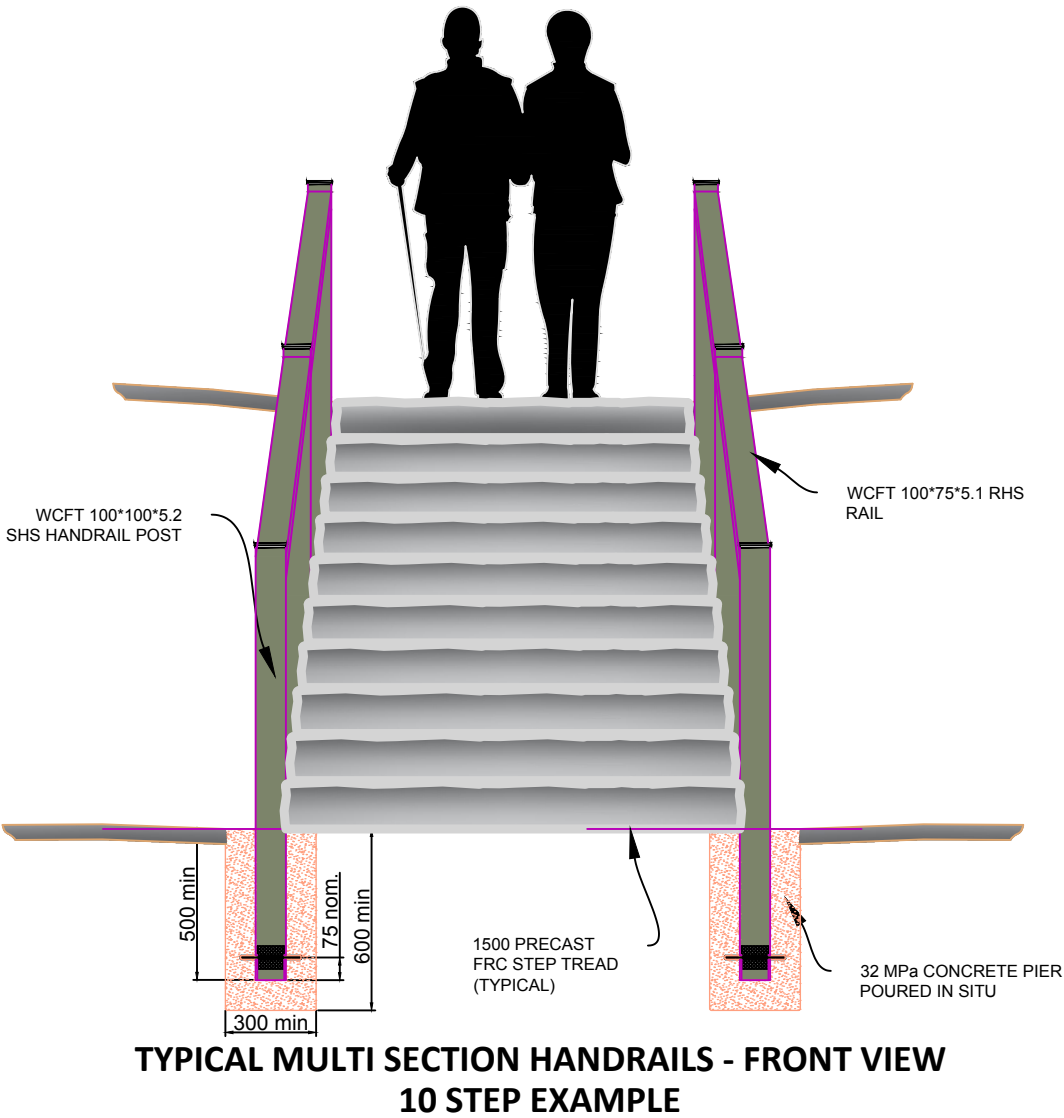
NOTES:

GENERAL:

- The handrail layout depicted in this standard drawing is a typical layout for handrail sections with rails longer than 2400mm.
- Layouts in specific trail locations may vary considerably from that depicted however the design and construction requirements will still apply.
- The handrails depicted are to be placed in combination with the stair treads depicted in Standard drawing WTSTD-003-WG2 or along landings above, below or between these stair tread sections.
- The stairway example depicted in this standard drawing uses 1500mm wide precast treads. The design would also be appropriate for treads of other widths.
- This standard drawing must be used in conjunction with WTSTD-015-WG2 that defines the post placement and rail connection details.
- This standard drawing is suitable for stairs consisting of between 7 & 14 treads. See Standard drawing WTSTD-0014-WG2 for stairs consisting of 5 or less treads. Stairs of 15 or more treads would require an additional intermediate raking connection post to maintain a minimum rail length of 2400mm.
- Where the stair alignment has a corner at the top or the bottom of the stairway, double posts may be necessary to either protect entry/exit to the stairway or to connect neatly to horizontal railings.

HANDRAILS & POSTS:

- Handrails, posts and fixtures are supplied by Wagners CFT Manufacturing Pty Ltd, Toowoomba or equivalent as approved by the client or principle.
- Handrails and posts are constructed from a fibreglass/resin composite.
- All components must be installed as defined in this standard drawing and as described in Wagners Installation Guide, Rev. B - Sept 2010 or other installation documentation relevant to the supplier.



NOTES CONTINUED:

HANDRAILS & POSTS:

Care should be taken to ensure posts do not touch or bind with the stair treads and they are aligned so that the rail is straight rather than being aligned to the edge of the stair treads.

CONCRETE FOOTINGS:

- Excavations for concrete footings must be cleaned out prior to pouring concrete so that they do not contain any loose material, tree roots or rocks or ponding water.
- Posts and concrete mix must be placed into the footing in such a way that the integrity of the excavation is maintained.
- Concrete should be tamped with a suitable rod after placement to ensure there is no air entrapment within the footing.
- Where footings are located adjacent to precast step treads, the post and concrete top surface should be placed and finished such that it does not impede the correct placement of the step tread.
- Standard Drawing - WTSTD-003-WG2 depicts the dimensions and installation requirements of the step treads.

GENERAL
ARRANGEMENT
SCALE 1:25

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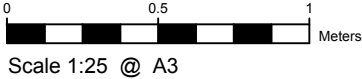
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C	07/04/20	ADDITIONAL NOTES ADDED	JR		
B	01/08/19	ISSUED FOR INFORMATION	JR		
A	15/06/19	ISSUED FOR INFORMATION	JR		



Client: **WANGETTI TRAIL**
Project: **DETAILED DESIGN**

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JR		07/04/20
Designed	Signed	Date
DS		07/04/20
Verified	Signed	Date
DS		07/04/20
Approved	Signed	Date

Drawing Title:
TRAIL HANDRAIL - MULTI SECTION
PLACEMENT AND DIMENSIONS
STANDARD DRAWING



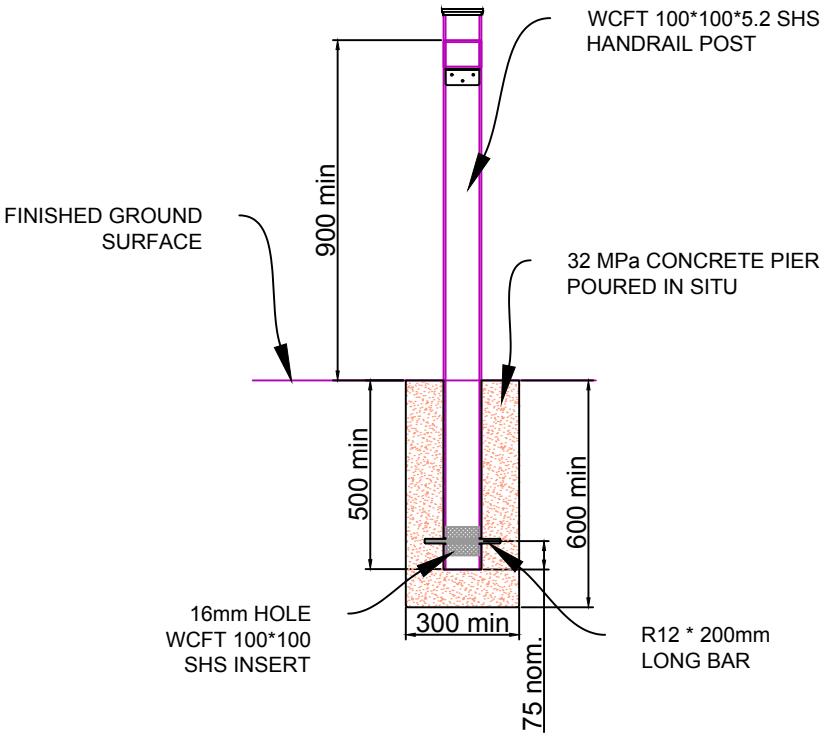
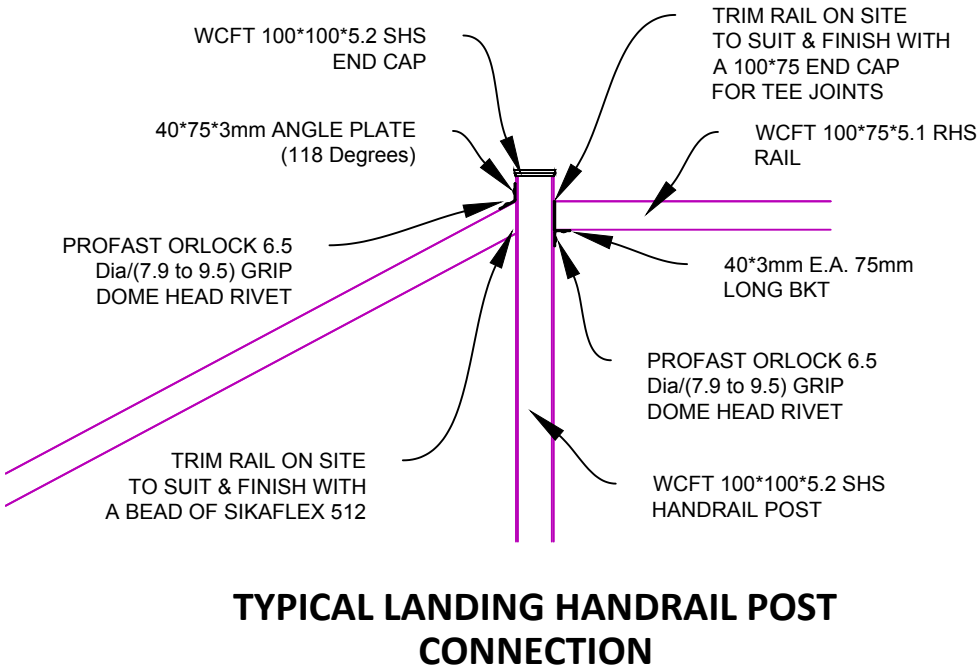
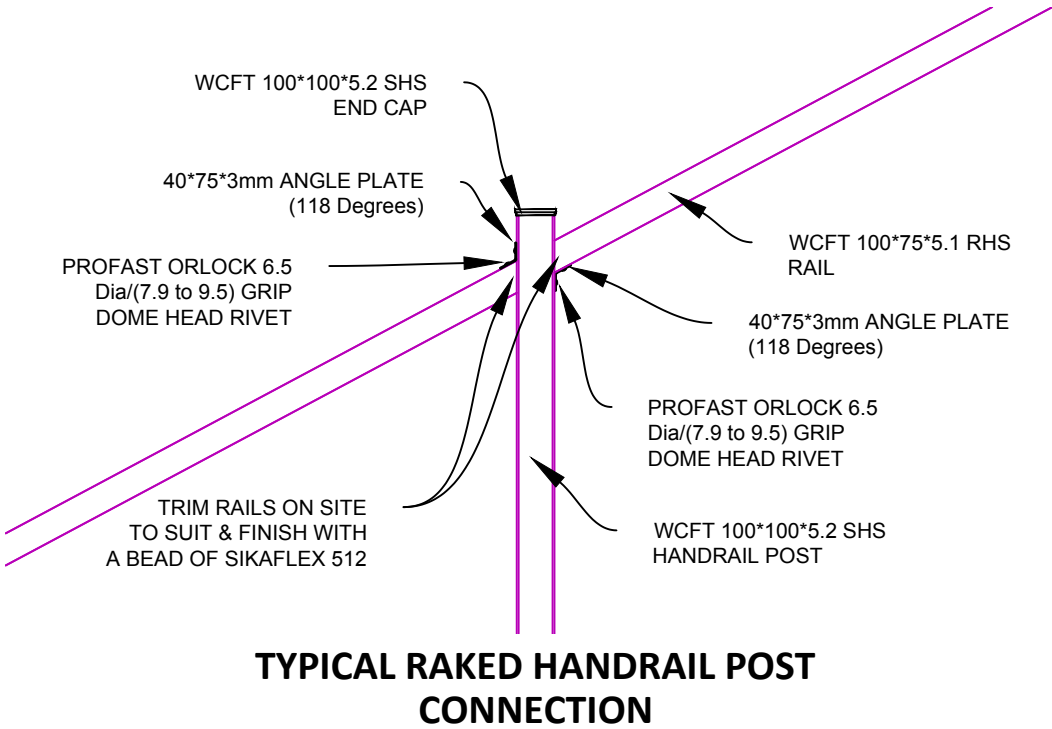
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Scale	1:25
Sheet Size	A3
Drawing No.	WTSTD-013-WG2
Rev.	C

NOTES:

- GENERAL:
- The handrail layout depicted in this standard drawing is a typical layout for handrails built in conjunction with the precast step treads depicted in Standard Drawing - WTSTD-003-WG2.
 - The post installation and handrail connections depicted in this plan are to be used in combination with Standard drawings WTSTD-013-WG2 or WTSTD-014-WG2.
 - Other handrail layouts may require different angles, footing dimensions of connection fixtures than those defined in this drawing.
 - Where the stair alignment has a corner at the top or the bottom of the stairway, double posts may be necessary to either protect entry/exit to the stairway or to connect neatly to horizontal railings.
 - All materials and fixtures should be checked on site for damage or incorrect dimensions prior to assembly of the handrail.
 - Specific components depicted on this plan may be replaced by equivalent products if the replacement is approved by the client or principle.
 - All dimensions depicted on this plan are in millimeters unless otherwise noted.

- HANDRAILS & POSTS:
- Handrails, posts and fixtures are as supplied by Wagners CFT Manufacturing Pty Ltd, Toowoomba or equivalent product as approved by council.
 - Handrails and posts are constructed from a fibreglass/resin composite.
 - All components must be installed as defined in this standard drawing and as described in Wagners Installation Guide, Rev. B - Sept 2010 or equivalent installation guides applicable to selected equivalent products.
 - Other dimensions are as depicted on this plan and include a 50mm overlap between treads.
 - Angular rail to post joints may be finished with a modified 100*100 end cap for tee joints instead of a bead of silicon. This will require some cutting on site to provide neat fitment of the modified end cap.
 - The top of rail must be kept at least 900mm above the walkable surface at all locations.
 - Post end caps are to be installed as described in the Wagners Installation Guide which involves cutting a groove in the post using a specialist tool and using heat during placement or installed as defined in the insallation guide of an approved equivalent product.

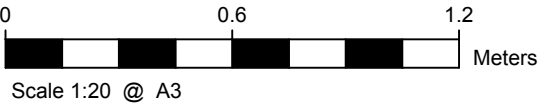
- CONCRETE FOOTINGS:
- Excavations for concrete footings must be cleaned out prior to pouring concrete so that they do not contain any loose material, tree roots or rocks or ponding water.
 - Posts and concrete mix must be placed into the footing in such a way that the integrity of the excavation is maintained.
 - Concrete should be tamped with a suitable rod after placement to ensure there is no air entrapment within the footing.
 - Where footings are located adjacent to precast step treads, the post and concrete top surface should be placed and finished such that it does not impede the correct placement of the step tread.
 - Standard Drawing - WTSTD-003-WG2 depicts the dimensions and installation requirements of the step treads.



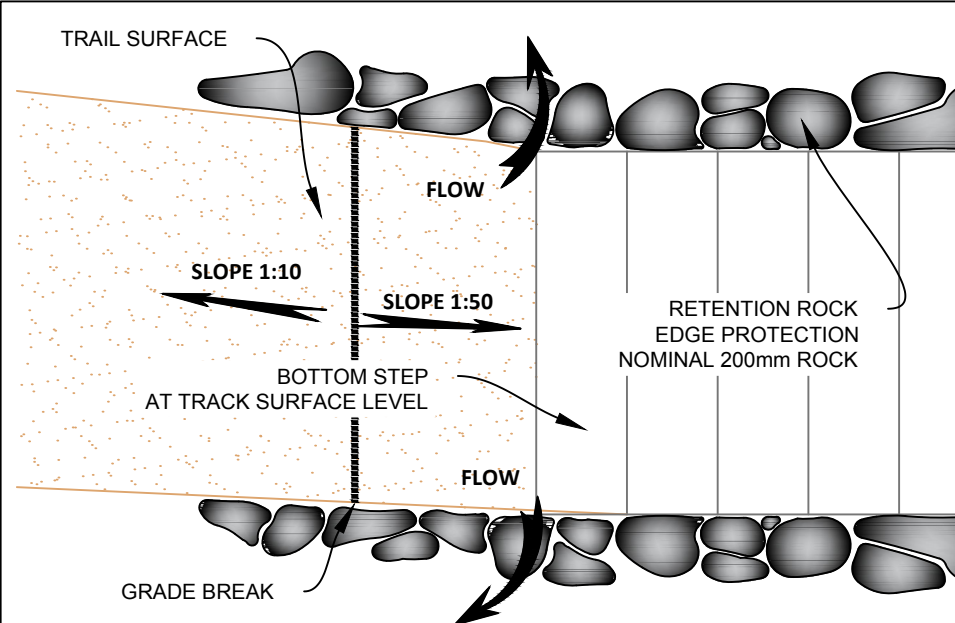
TYPICAL HANDRAIL POST INSTALLATION

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SIGNED..... DATE.....	

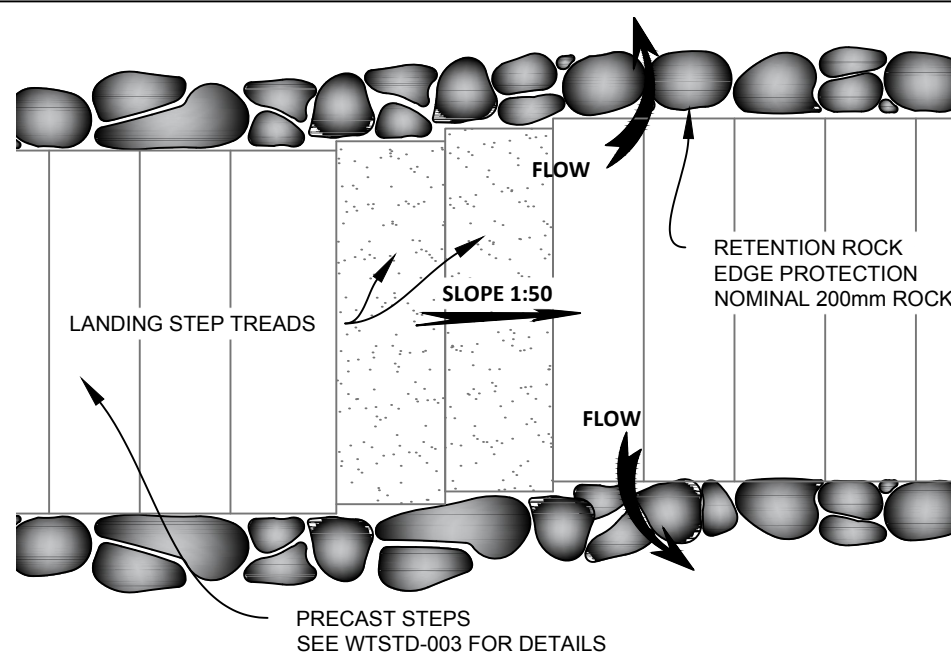
GENERAL
ARRANGEMENT
SCALE 1:20



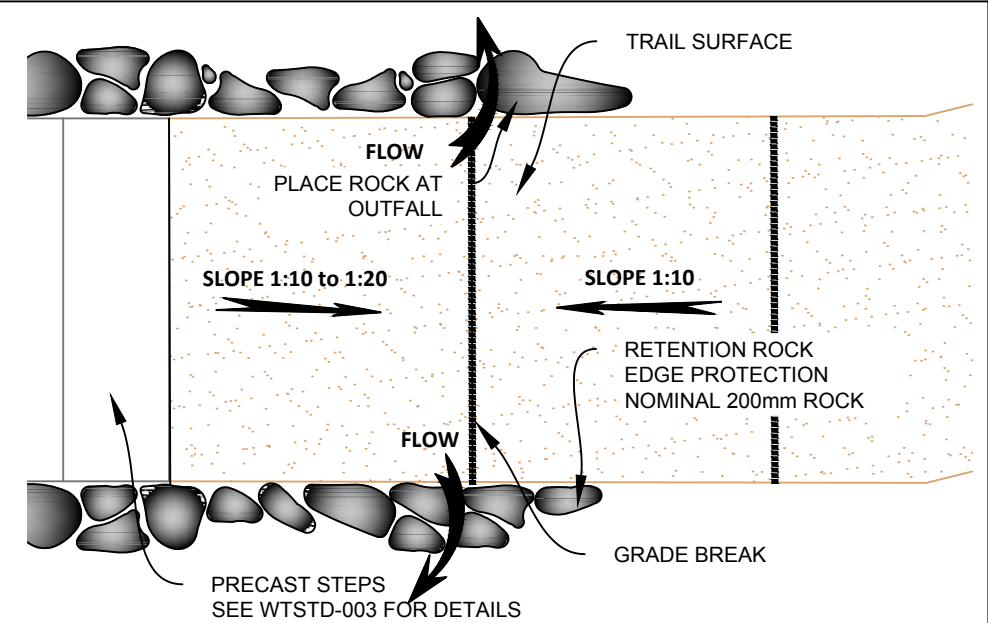
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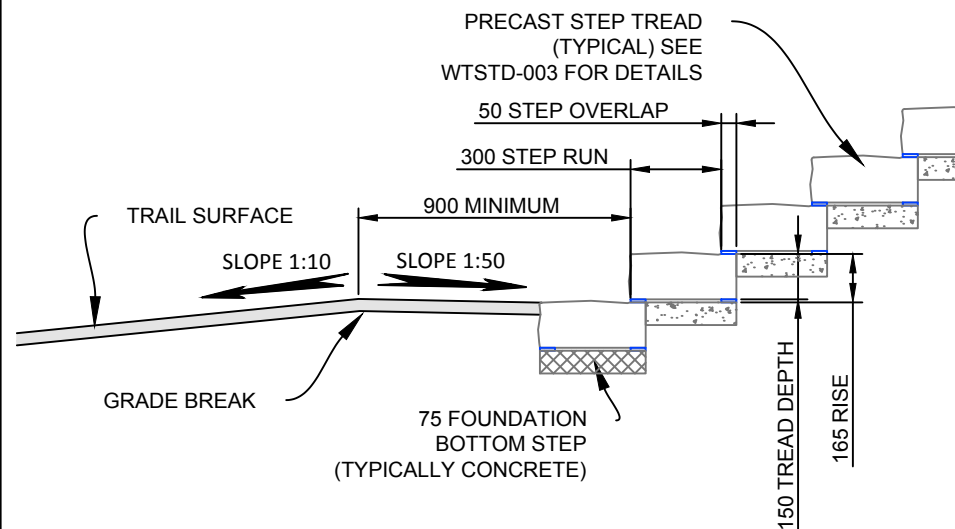
TYPICAL PLAN VIEW - TRAIL BELOW PRECAST STEPS



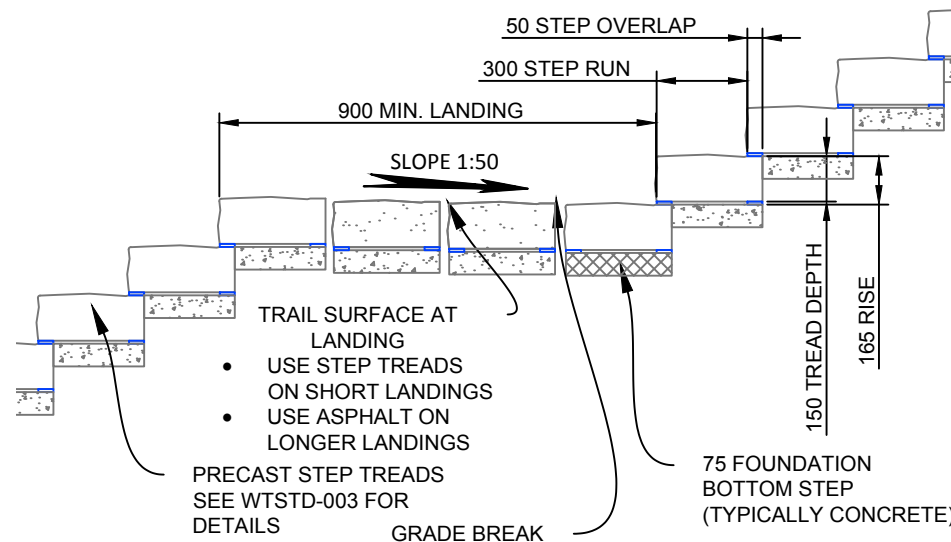
TYPICAL PLAN VIEW - PRECAST STEPS WITH LANDING



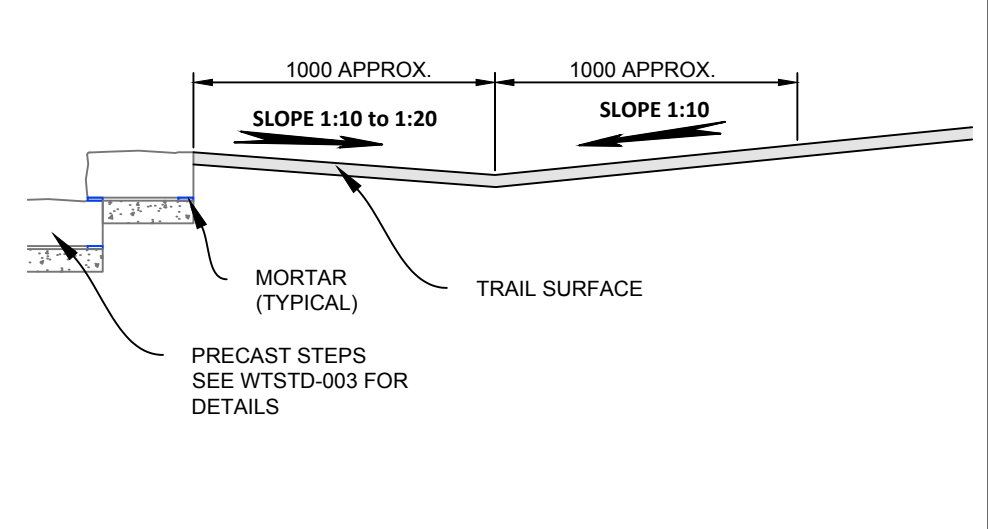
TYPICAL PLAN VIEW - TRAIL ABOVE PRECAST STEPS



TYPICAL SECTION - TRAIL BELOW PRECAST STEPS



TYPICAL SECTION - PRECAST STEPS WITH LANDING



TYPICAL SECTION - TRAIL ABOVE PRECAST STEPS

NOTES:

GENERAL:

- The main objective of the grading guidelines depicted is to provide solutions to minimise linear stormwater flows cascading down the steps and along the trail alignment.
- The main principle in avoiding this is to shed small amounts away from the trail alignment before they can concentrate into large volume flows.
- By shedding water above, between and below stairs, the flows down the stairways will be minimised.
- Details of placement of the precast step units depicted can be found in WTSTD-003-WG2.
- The dimensions and slopes depicted in this drawing may need to

- be modified to suit the particular topography and natural water flows identified at the specific location of the structure.
- On landings less than 1400mm long, step treads or concrete infill may be used instead of asphalt.
- Any major deviations from these layouts must be approved by the project principle or their relevant responsible officer.

EROSION PROTECTION

- The locations where water flows are shedded from the trail alignment need to be protected by rock and constructed in such a way as to disperse the discharging stormwater in a way that will not cause scouring in the receiving environment.
- Careful consideration needs to be given to assessing the type of material at the discharge location for its likelihood of scouring.
- Additional consideration must also be given to ensure the flow of

- water is not causing scouring, erosion or flooding further down the flowpath from the trail outfall point.
- Where the material in the discharge path has a high potential to scour, additional measures such as rock chutes, reinforcement or dispersion channels may be required.
- The need for additional protection may be identified and requested by the project principle or their relevant responsible officer.
- Any additional protection measures must be approved by the project principle or their relevant responsible officer.

GENERAL
ARRANGEMENT
SCALE 1:25

Scale 1:25 @ A3

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APPROVED	<input type="checkbox"/>
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SIGNED.....	DATE.....

Rev.	Date	Revision Details	Drn.	Ver.	App.
A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS



Project:
**WANGETTI TRAIL
DETAILED DESIGN**

Drawn JR	Signed	Date 07/04/20
Designed DS	Signed	Date 07/04/20
Verified DS	Signed	Date 07/04/20
Approved	Signed	Date

Drawing Title:
**PRECAST CONCRETE STEPS
TRAIL GRADING GUIDELINES
STANDARD DRAWING**

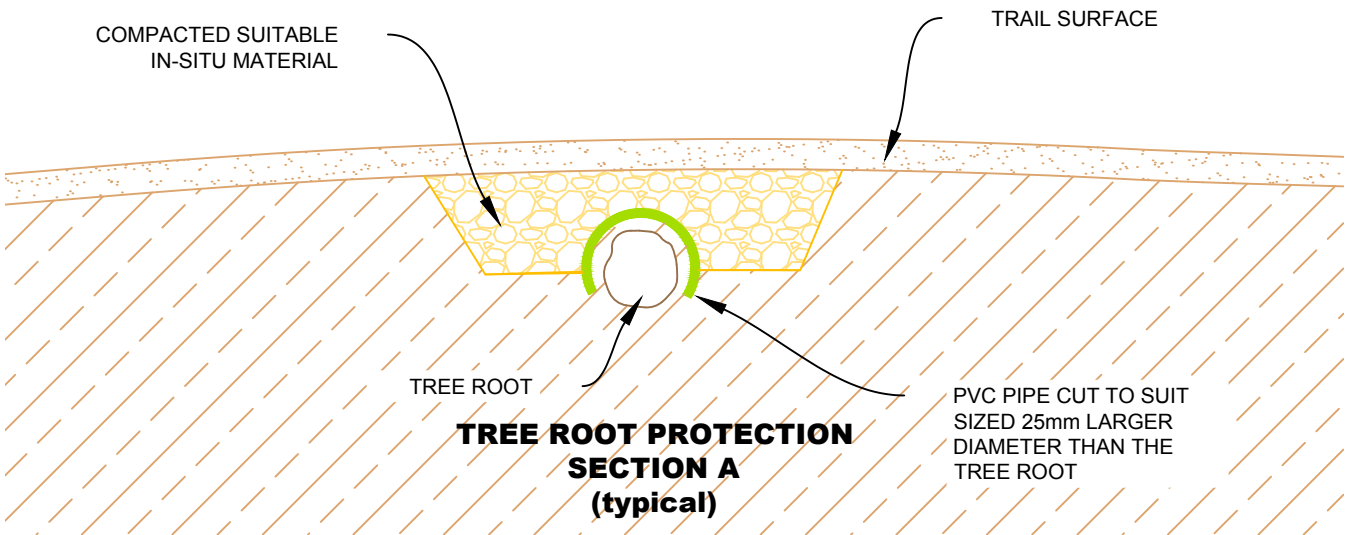
FOR INFORMATION	
Project No. WT20-Wangetti-001	Sheet Size A3
Scale 1:25	Rev. A
Drawing No. WTSTD-030-WG2	

NOTES:

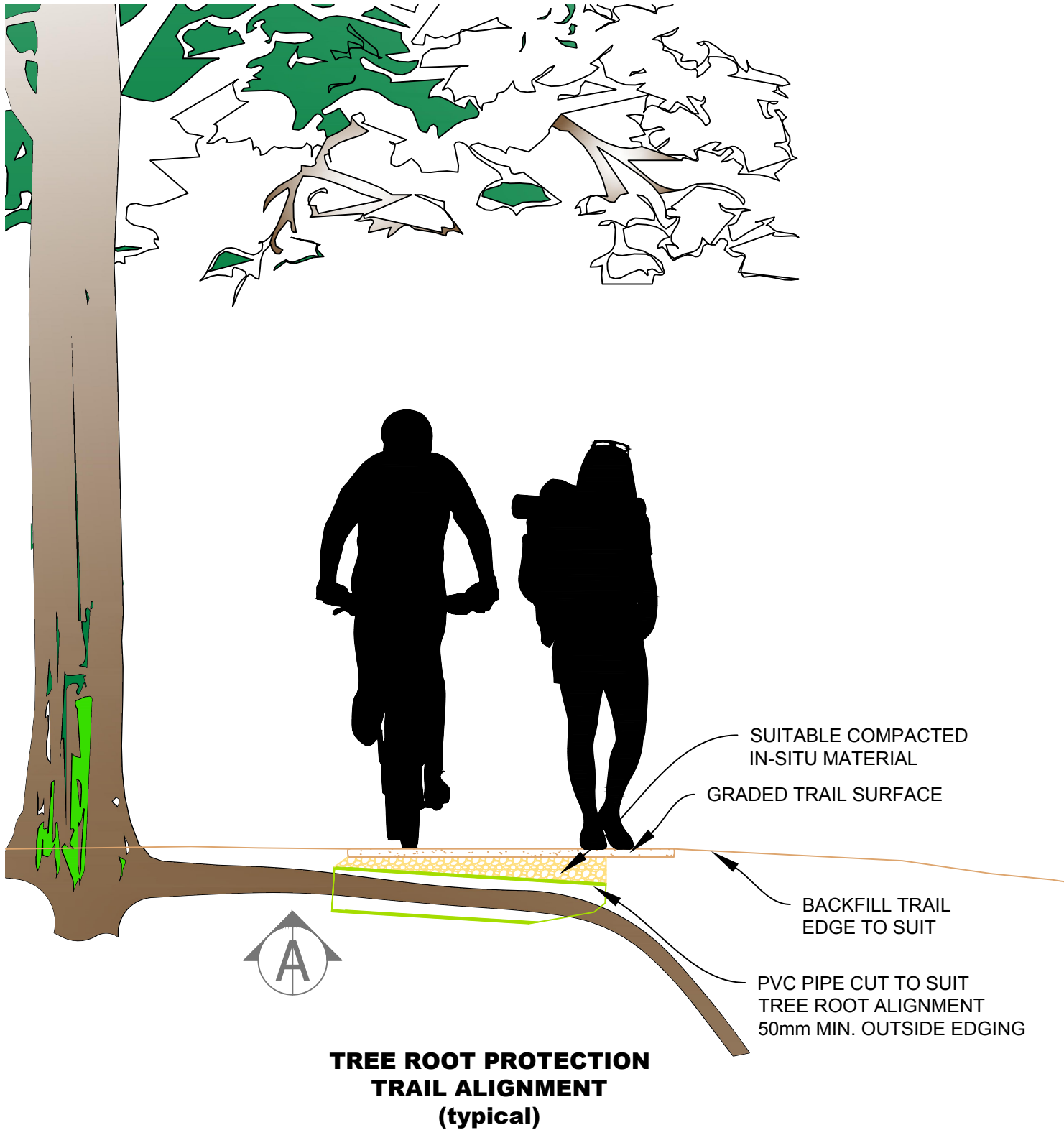
- GENERAL:
- Tree Root Protection is to be used in locations where the trail alignment cannot be redirected to avoid tree roots.
 - The tree root is to be encased in a "cut to suit" section of PVC pipe that has an internal diameter that provides a 25mm minimum clearance from the tree root.
 - The PVC pipe is to extend at least 50mm outside the edge or the trail ride line.
 - The PVC pipe must extend to a location where there can be a minimum of 30mm cover of in-situ material over the top of the pipe and where there can be no contact between trail ride line and the tree root.
 - The in-situ material used around the PVC pipe must be free of stones or vegetative matter and must be suitably graded material to provide a hard compacted surround to the pipe.
 - The in-situ material must be well compacted at the sides of the PVC sleeve to ensure there are no voids that could cause the PVC sleeve to move and wear against the tree root.
 - While this standard drawing provides information on the normal methodology for dealing with unavoidable tree roots, variations may be required for specific plant species or unusual root systems.
 - Dimensions in millimetres unless otherwise notated.

LEGEND:

- GRADED TRAIL SURFACE
- IN-SITU MATERIAL
- NATURAL GROUND



0 0.1 0.2 Meters Scale 1:7.5 @ A3



0 0.5 1 Meters Scale 1:20 @ A3

GENERAL ARRANGEMENT SCALE AS SHOWN

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FOR INFORMATION	
Project No.	WT20-Wangetti-001
Scale	as shown
Sheet Size	A3
Drawing No.	WTSTD-031-WG2
Rev.	A

Rev.	Date	Revision Details	Drn.	Ver.	App.
A	24/03/20	ISSUED FOR INFORMATION	JR	DS	DS



Client: **Queensland Government**

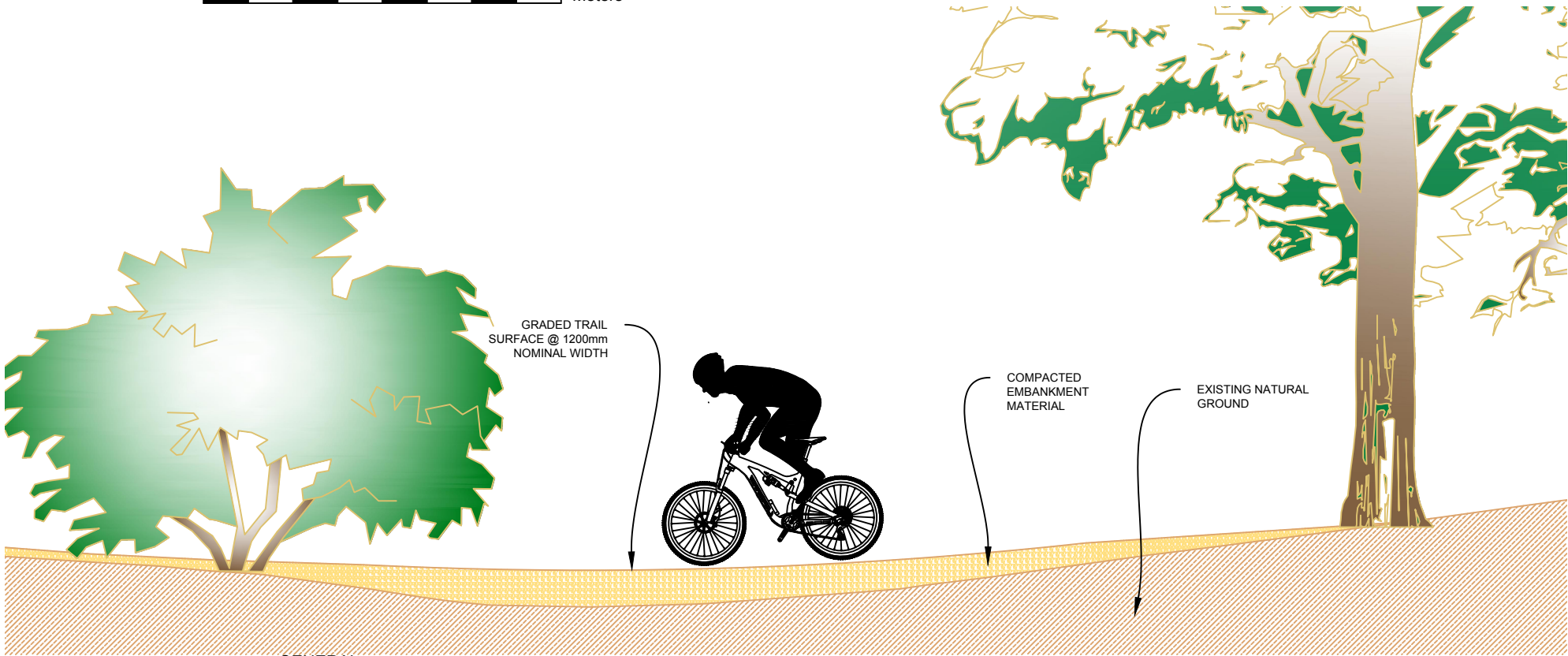
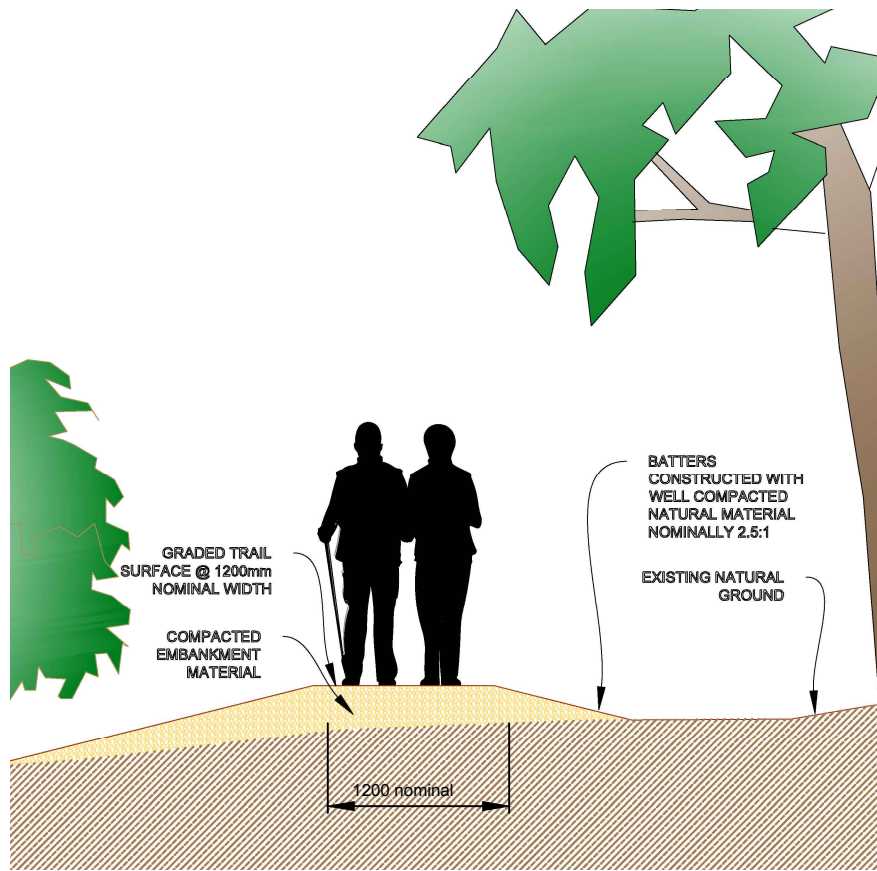
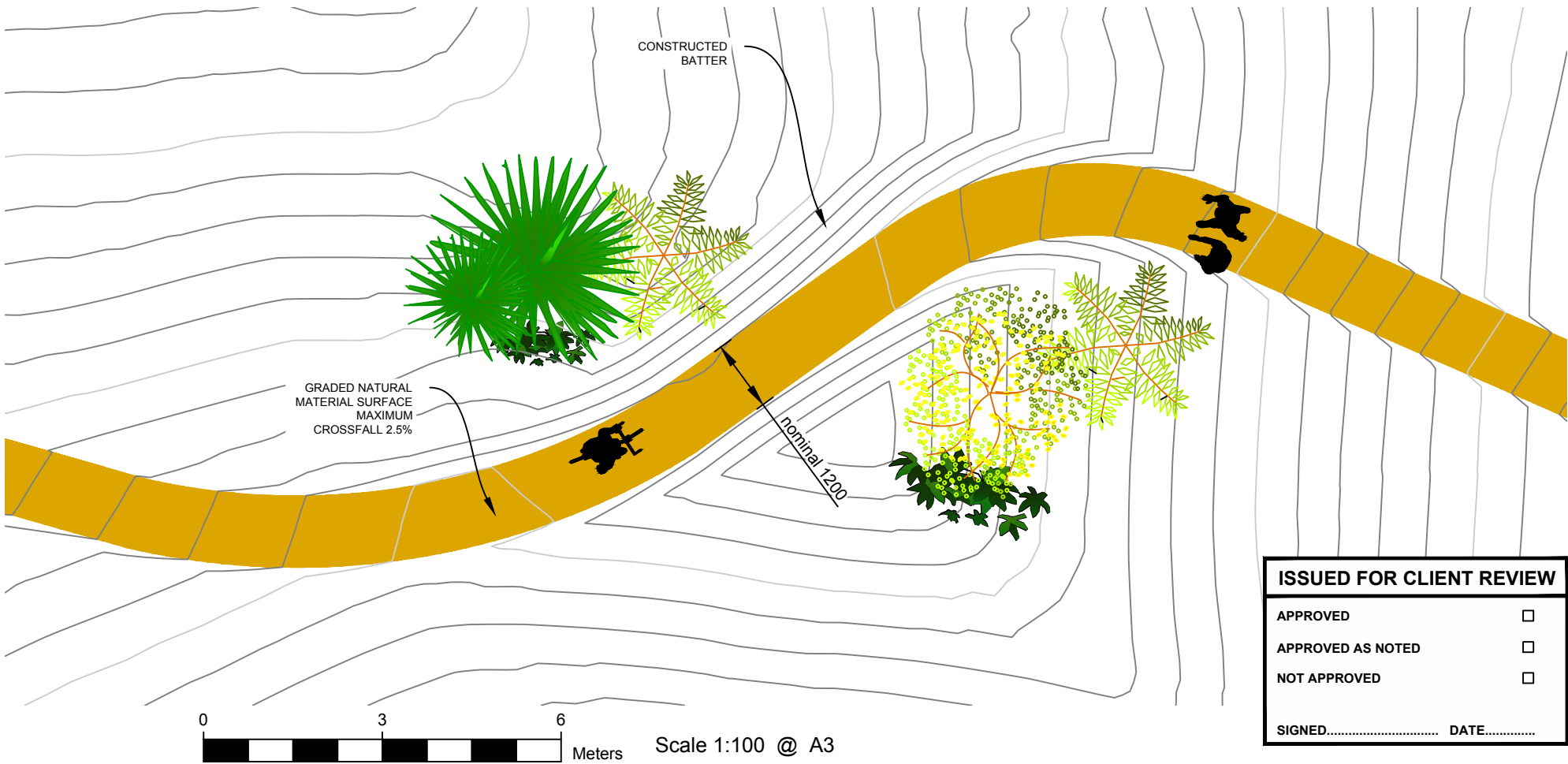
Project: **WANGETTI TRAIL DETAILED DESIGN**

Drawn	Signed	Date
JR		24/03/20
Designed	Signed	Date
DS		24/03/20
Verified	Signed	Date
DS		24/03/20
Approved	Signed	Date

Drawing Title: **TRAIL - TREE ROOT PROTECTION PLACEMENT AND DIMENSIONS STANDARD DRAWING**

NOTES:

- Raised Embankments may be necessary in trail sections that are often wet and boggy or to improve rideability through changing the vertical alignment.
- Raised Embankments will only be appropriate in areas where spare embankment material is available and can be utilised economically.
- The height and length of the raised embankment will vary considerably depending on the location where it is required. It will vary from a slight elevation of a few hundred millimeters to around a meter as depicted on this plan.
- Embankment material should be free of large rocks and should not contain large amounts of vegetation matter.
- Embankments are to be compacted in layers of less than 200mm and to 90% of maximum dry density.
- Batter slopes should be nominally 2.5:1 but may vary considerably depending on the type and availability of fill material and the local topography of the trail location.
- Raised Embankments should be constructed so that they do not impede the flow of stormwater or they should have suitable drainage structures (eg pipes) placed at the bottom of the fill material.
- Rocks can be placed at the toe of the embankment to stabilise the batters and protect the bottom section of the embankment from erosion.
- Where there is sufficient room, rocks can also be placed at the top of the embankment to direct riders & hikers away from the embankment edges.



GENERAL
ARRANGEMENT
VARIES

A	24/03/20	ISSUED FOR INFORMATION	JR	DS	DS
Rev.	Date	Revision Details	Drn.	Ver.	App.

Client:



Project:

WANGETTI TRAIL
DETAILED DESIGN

Drawn

Signed

Date

Designed

Signed

Date

Verified

DS

Signed

Date

Approved

Signed

Date

Drawing Title:

RAISED EMBANKMENT - DUAL USE
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

FOR INFORMATION

Project No.

WT20-Wangetti-001

Scale

as shown

Sheet Size

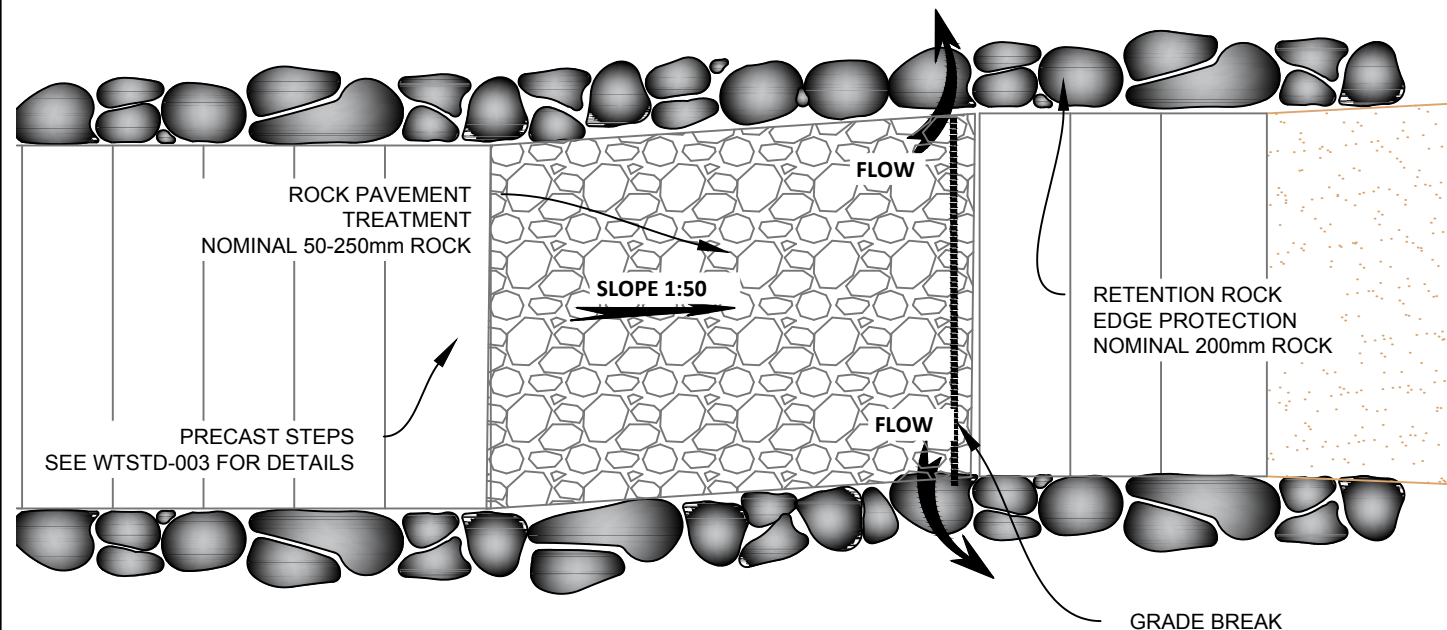
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Drawing No.

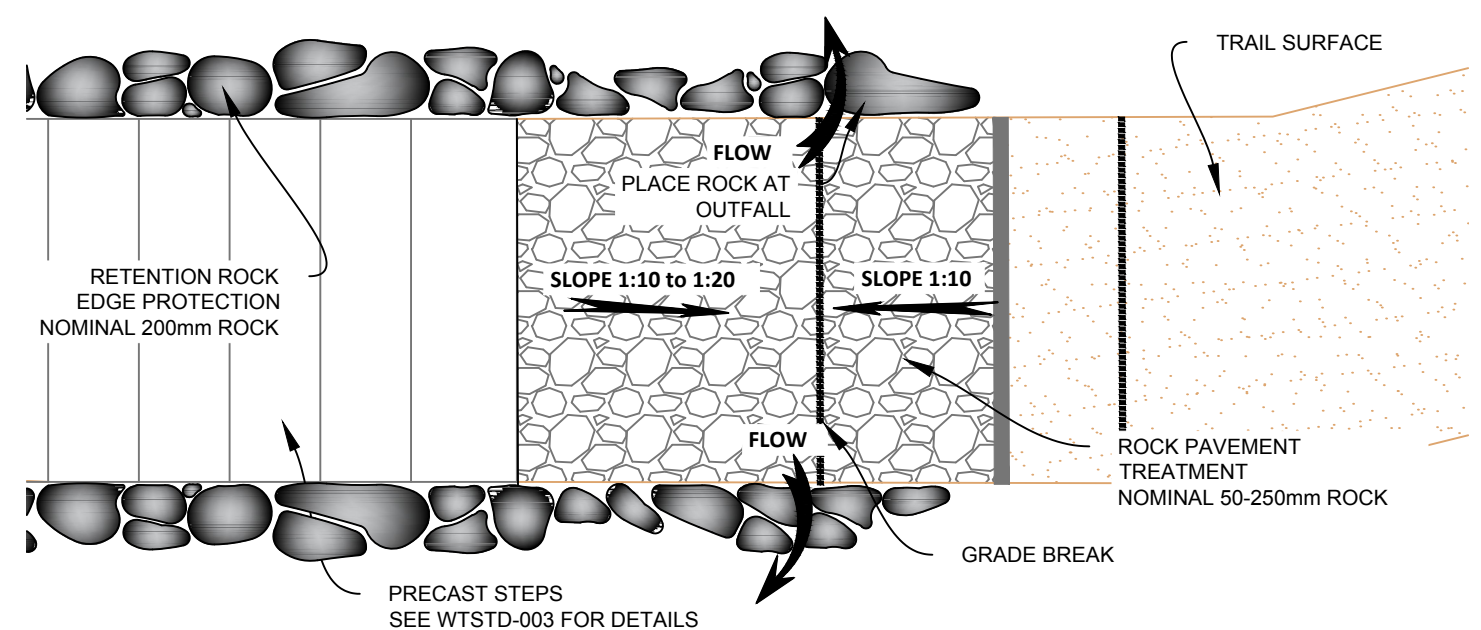
WTSTD-029-WG2

Rev.

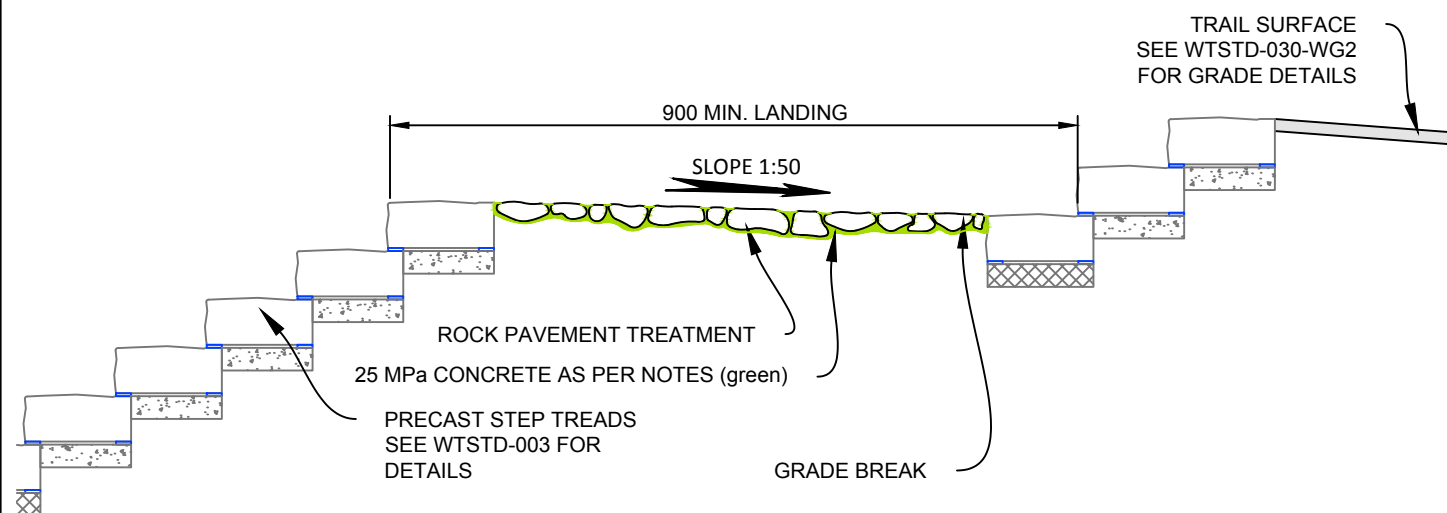
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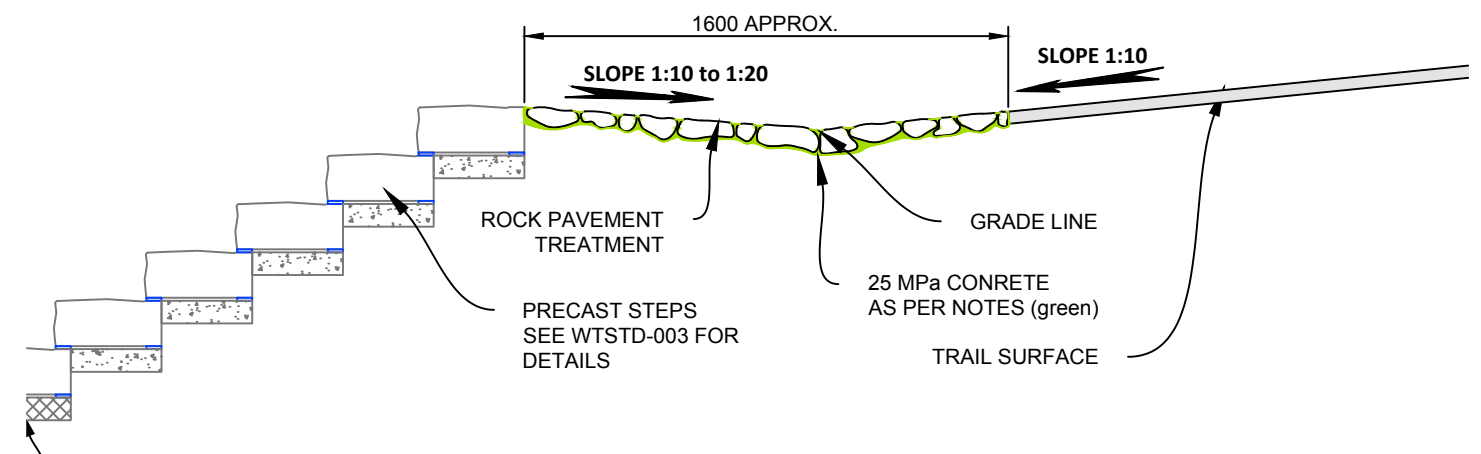
TYPICAL PLAN VIEW - ROCK PAVEMENT TREATMENT AT LANDING



TYPICAL PLAN VIEW - TREATMENT ABOVE PRECAST STEPS



TYPICAL SECTION - ROCK PAVEMENT TREATMENT AT LANDING



TYPICAL SECTION - TREATMENT ABOVE PRECAST STEPS

NOTES:

GENERAL:

- The main objective of the rock pavement treatment is to minimise linear stormwater flows cascading down steps and along the trail alignment.
- The main principle in avoiding this is to provide a protected surface near grade changes where water flows may concentrate.
- While this treatment is mainly to be used above or between precast steps, it may be appropriate to other grade change or susceptible sections of a trail.
- While rock armouring, see WTSTD-007-WG2, is similar, it is proposed for use in areas where water transversely crosses the trail. It would require larger rock due to the higher flow velocities expected at those locations.
- Rock Pavement Treatment is the use of smaller, preferably flat, rocks

to provide a walkable, hardened trail surface that will not erode through smaller localised stormwater flows.

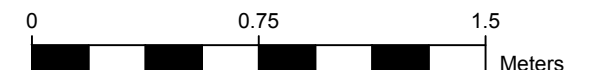
- The dimensions and slopes depicted in this drawing may need to be modified to suit the particular topography and natural water flows identified at the specific location of the treatment.
- Rock Pavement Treatment can be used in landings.
- The rock pavement treatment should interlink and mesh into the rock treatment along the edges of staircases as depicted in WTSTD-030-WG2.
- The rock treatment should follow the Grading Guidelines depicted in WTSTD-030-WG2.
- While not depicted in this drawing, the rock pavement treatment may be appropriate at the bottom of staircases where the ground is prone to softness and muddiness.
- Any major deviations from these layouts must be approved by the project principle or their relevant responsible officer.

PLACEMENT:

- Rock is to be nominally 100mm to 250mm in size with at least one reasonable flat face to enable a finished, walkable surface.
- Rocks are to be placed in such a way that they are interlocked and well bedded into a 25 MPa concrete bed poured onto the spoon drain foundation.
- 25 MPa Concrete to be poured into the gaps between the rocks and along the edges to form a neat transition to the trail surface.
- All exposed concrete should be finished to a rough texture to minimise slipping and provide further roughage to impede water flows.
- The tops of the rocks should be cleaned of concrete to provide a natural finish.
- Concrete should be tamped to ensure there is no air entrapment and that the concrete is placed firmly against the foundation material.

ISSUED FOR CLIENT REVIEW

APPROVED	<input type="checkbox"/>
APPROVED AS NOTED	<input type="checkbox"/>
NOT APPROVED	<input type="checkbox"/>
SIGNED.....	DATE.....



Scale 1:25 @ A3

GENERAL
ARRANGEMENT
SCALE 1:25

FOR INFORMATION

Project No. WT20-Wangetti-001	Sheet Size A3
Scale 1:25	Rev. A
Drawing No. WTSTD-043- WG2	

Rev.	Date	Revision Details	Drn.	Ver.	App.
A	07/04/20	ISSUED FOR INFORMATION	JR	DS	DS



Client:
Project:
**WANGETTI TRAIL
DETAILED DESIGN**

Drawn JR	Signed	Date 07/04/20
Designed DS	Signed	Date 07/04/20
Verified DS	Signed	Date 07/04/20
Approved	Signed	Date

Drawing Title:
**ROCK PAVEMENT TREATMENT
TRAIL CONSTRUCTION
STANDARD DRAWING**

NOTES:

INSTALLATION:

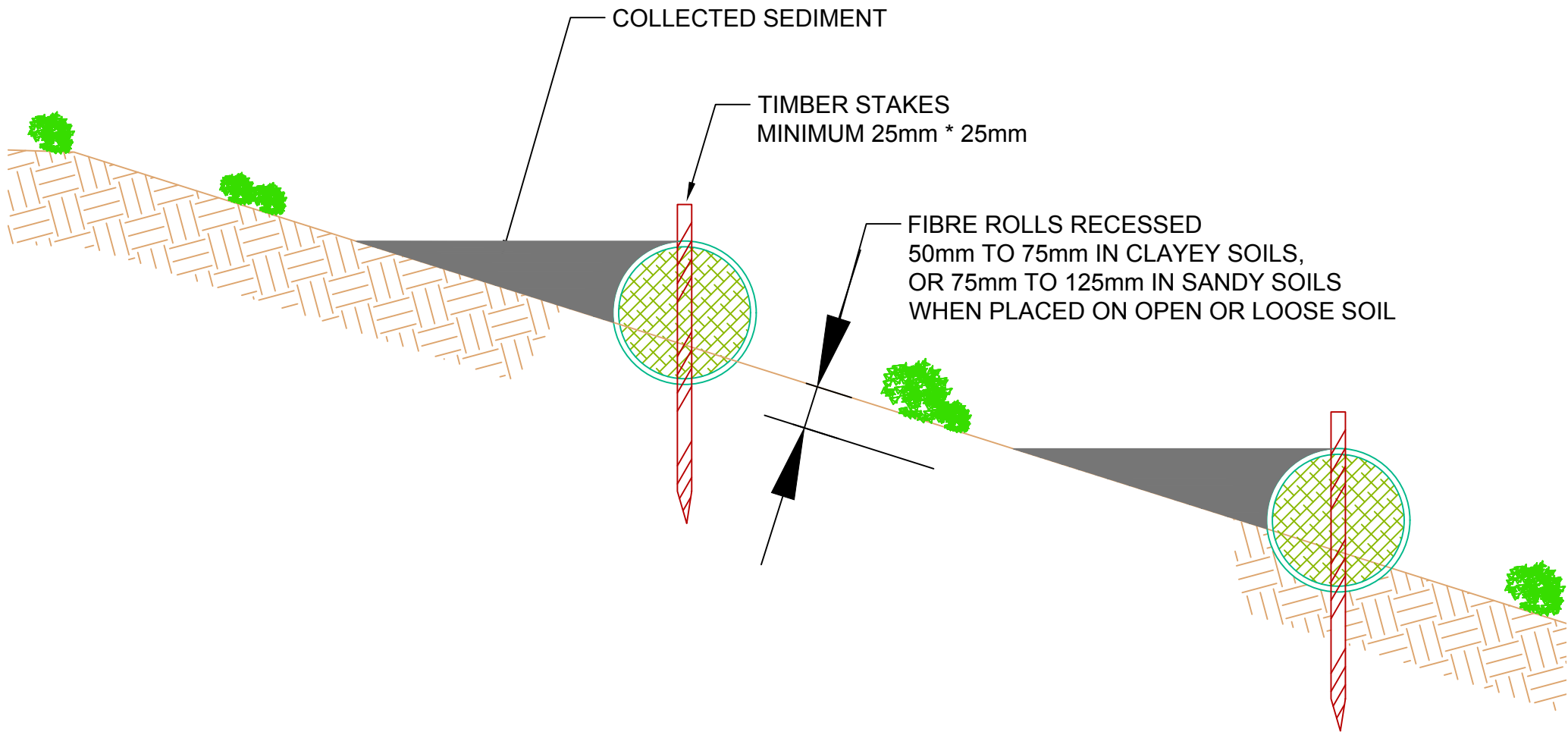
- Fibre Rolls are typically 200mm to 250mm Jute, Coir or Straw roll tied with synthetic biodegradable mesh.
- Fibre Rolls are to be installed as described in any project specific, approved plans. Any queries or alterations need to be provided by or approved by the clients engineer or on site representative.
- The rolls must be placed along the contour when placed across bare or newly seeded slopes.
- Ensure the outermost ends of a line of Fibre Rolls are turned up the slope to ensure ponding and minimise bypassing.
- When placed across the invert of minor drains ensure the rolls are spaced such that the crest of a downstream roll is level with or above the invert at the immediately upstream roll.
- When placed across the invert of minor drains ensure that each roll extends far enough up the banks on each side such that the crest of the roll in the center is lower than the ground height at the ends of the roll.
- Ensure the anchoring stakes are driven through the end of each roll and at a minimum spacing along the roll of the lesser of 1.2m spacings or 6 times the roll diameter.
- Stakes must be driven at a minimum spacing of 300mm when the rolls are being used to form a check dam.
- Adjoining rolls must be overlapped at least 450mm.

MAINTENANCE:

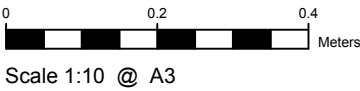
- All Fibre Rolls must be inspected at a minimum of once per week, always prior to a forecast rainfall event and at daily intervals during extended periods of rainfall.
- Any damaged or displaced Fibre Rolls must be replaced, relocated or repaired to ensure compliance with installation requirements.
- Collected sediment should be removed and disposed of in a suitable manner that will not cause erosion or detriment to water quality.

REMOVAL:

- Fibre Rolls are to be removed from site once they are no longer needed to provide their drainage or sediment control function.
- All excessive sediment must be removed from behind the rolls and disposed of as above, if it is likely to be washed away.
- Any biodegradable components of the Fibre Rolls may be suitable to remain on site as mulch.
- All materials that are not readily biodegradable must be removed from the site.



SECTION VIEW - TYPICAL INSTALLATION OF FIBRE ROLLS

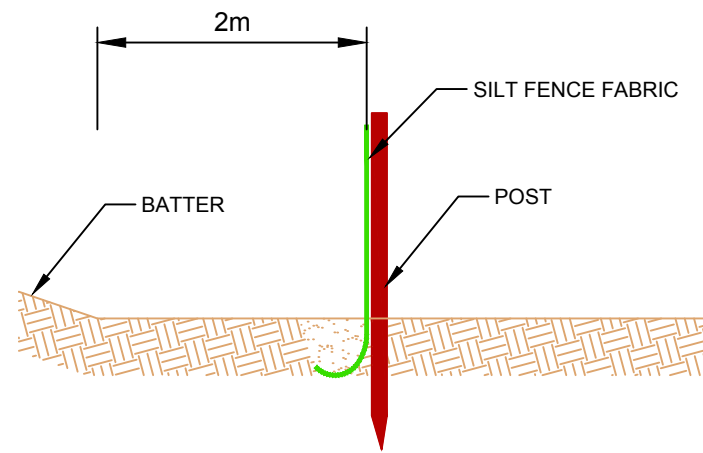


NOTE: Sections of this plan have been derived from the Catchments and Creeks Standard Drawing - Plan FR-01

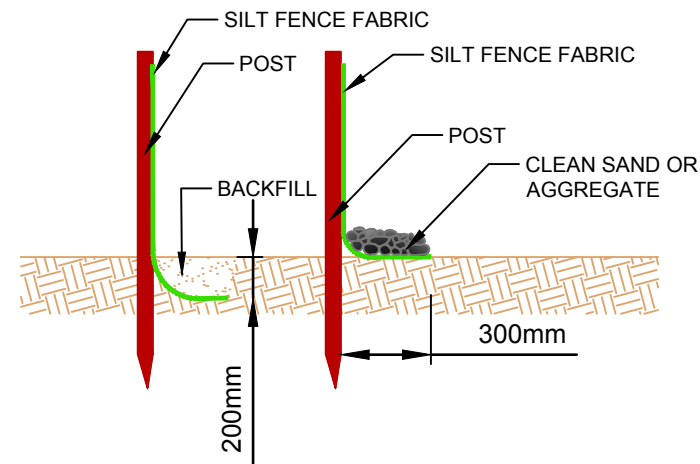
GENERAL
ARRANGEMENT
SCALE 1:25

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SIGNED..... DATE.....	

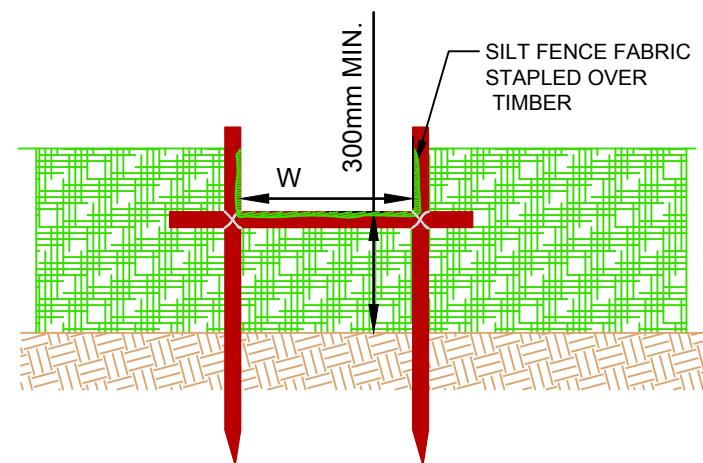
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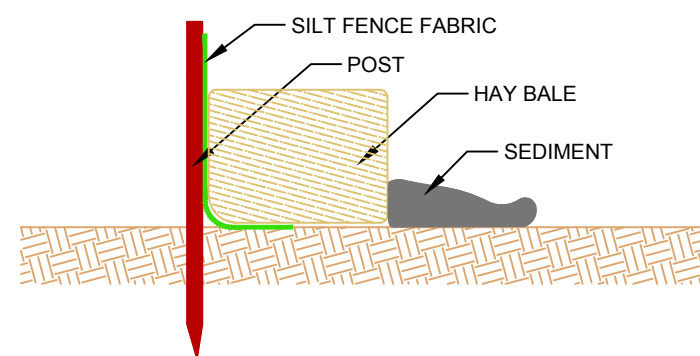
(a) LOCATION OF FENCE RELATIVE TO BASE OF SLOPE



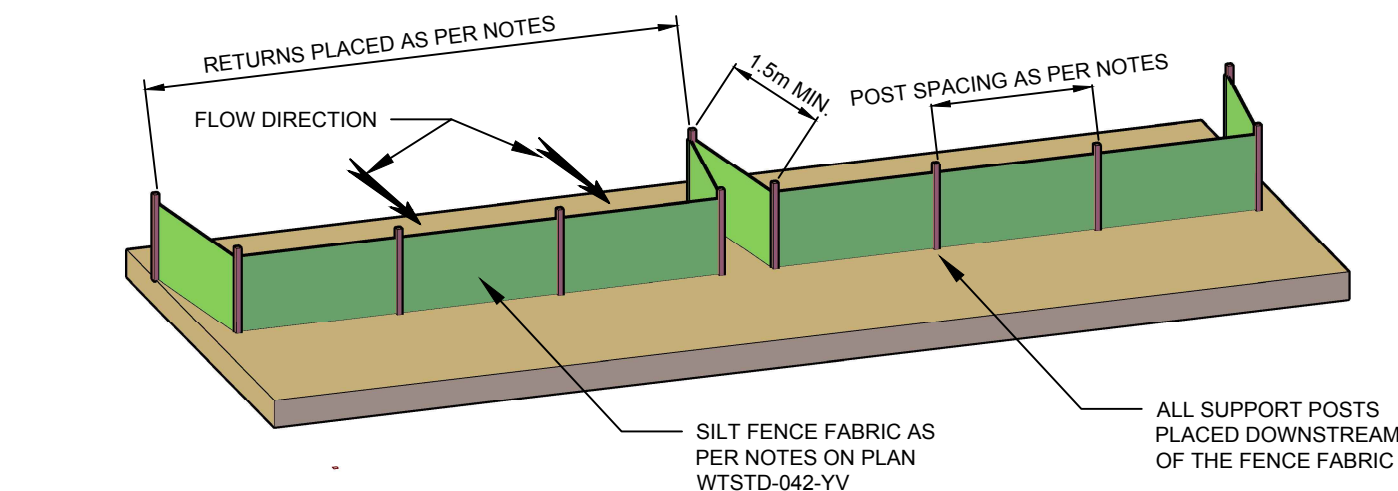
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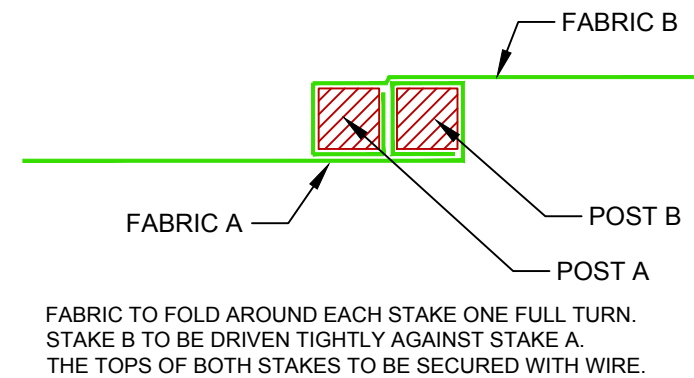
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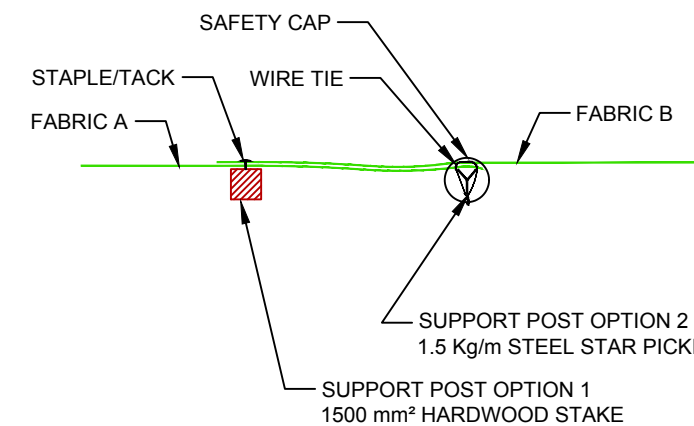
(f) PLACEMENT OF UP-SLOPE STRAW BALE



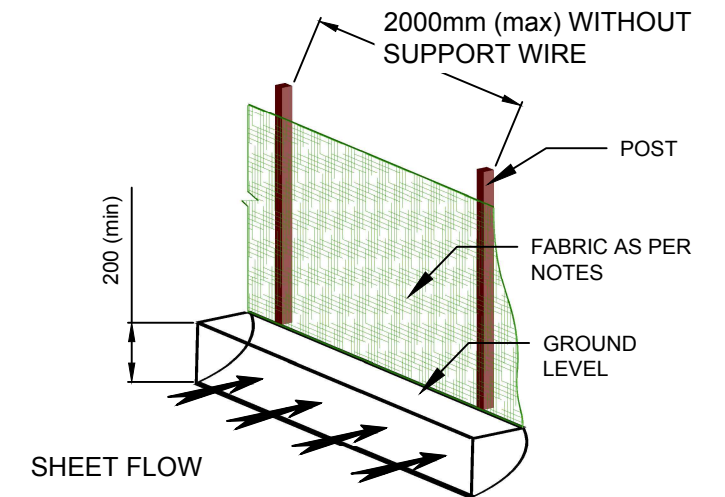
(i) INSTALLATION OF SEDIMENT FENCE



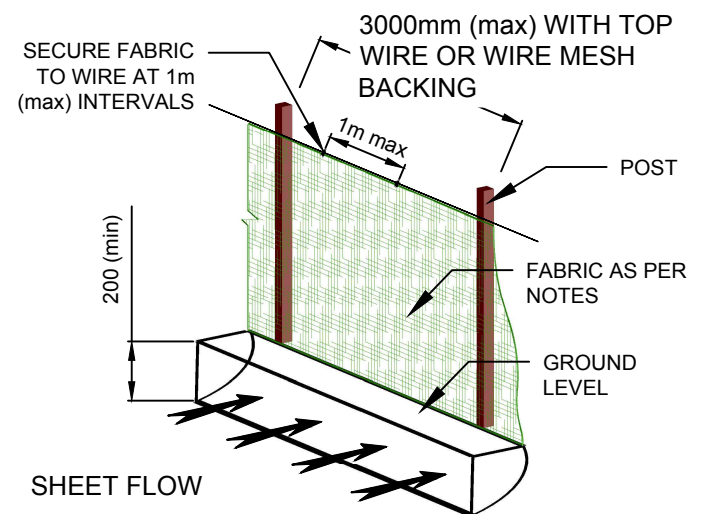
(c) JOINING FABRIC - METHOD 1



(g) JOINING FABRIC - METHOD 2



(d) INSTALLATION WITHOUT BACKING SUPPORT



(h) INSTALLATION WITH TOP WIRE SUPPORT

NOTES:

- Sediment Fence to be installed along the contour where ever practical.
- Both ends of the Sediment Fence are to extend up the slope for at least 1m to avoid flow bypassing.
- Support posts to be placed at a minimum spacing of 2m or 3m if a top wire or mesh backing have been installed.
- Fence "returns" shall be installed at a maximum spacing of 20m when the fence is installed along the contour or 5m to 10m when installed on sloping ground.
- Silt Fence fabric is to be connected to the posts with a minimum of 4 staples or tie wires per post.
- This plan is to be read in conjunction with Plan WTSTD-042-YV and must not be interpreted by itself.

NOTE: Sections of this plan have been derived from the Catchments and Creeks Standard Drawing - Plan SF-01

ISSUED FOR CLIENT REVIEW	
APPROVED	<input type="checkbox"/>
APPROVED AS NOTED	<input type="checkbox"/>
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SIGNED.....	DATE.....

FOR INFORMATION

Project No.	WT20-Wangetti-001
Scale	NTS
Sheet Size	A3
Drawing No.	WTSTD-041-WG2
Rev.	A

Rev.	Date	Revision Details	Drn.	Ver.	App.
A	24/03/20	ISSUED FOR INFORMATION	JR	DS	DS



Project: WANGETTI TRAIL
DETAILED DESIGN

Drawn	JR	Signed	Date
Designed	DS	Signed	Date
Verified	DS	Signed	Date
Approved		Signed	Date

Drawing Title: SEDIMENT CONTROL - SILT FENCE
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

[illegible]

NOTES:

GENERAL:

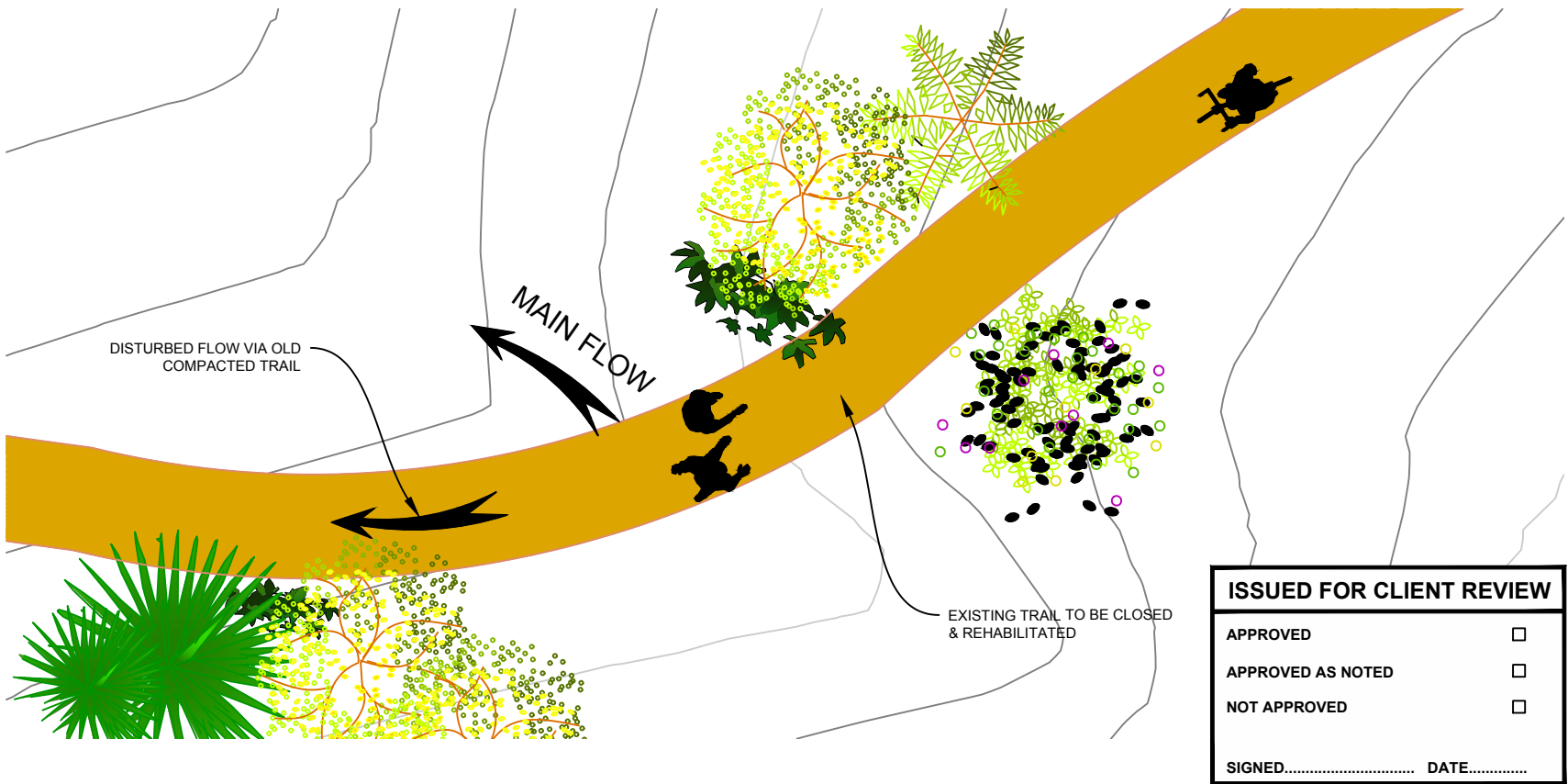
- The example depicted below is one of many trail closure and rehabilitation layouts that might be found when closing an old trail.
- The examples and methodologies depicted in this drawing may be applicable to a wide range of other layouts and trail closure instances.
- Old trails often cause compacted laneways that attract water flows and can redirect natural flows away from their original alignment.
- Closure & Rehabilitation should include a decompaction of the surface, reinstatement of suitable vegetation and the realignment of any water flow paths back to their natural alignments.

CONSTRUCTION:

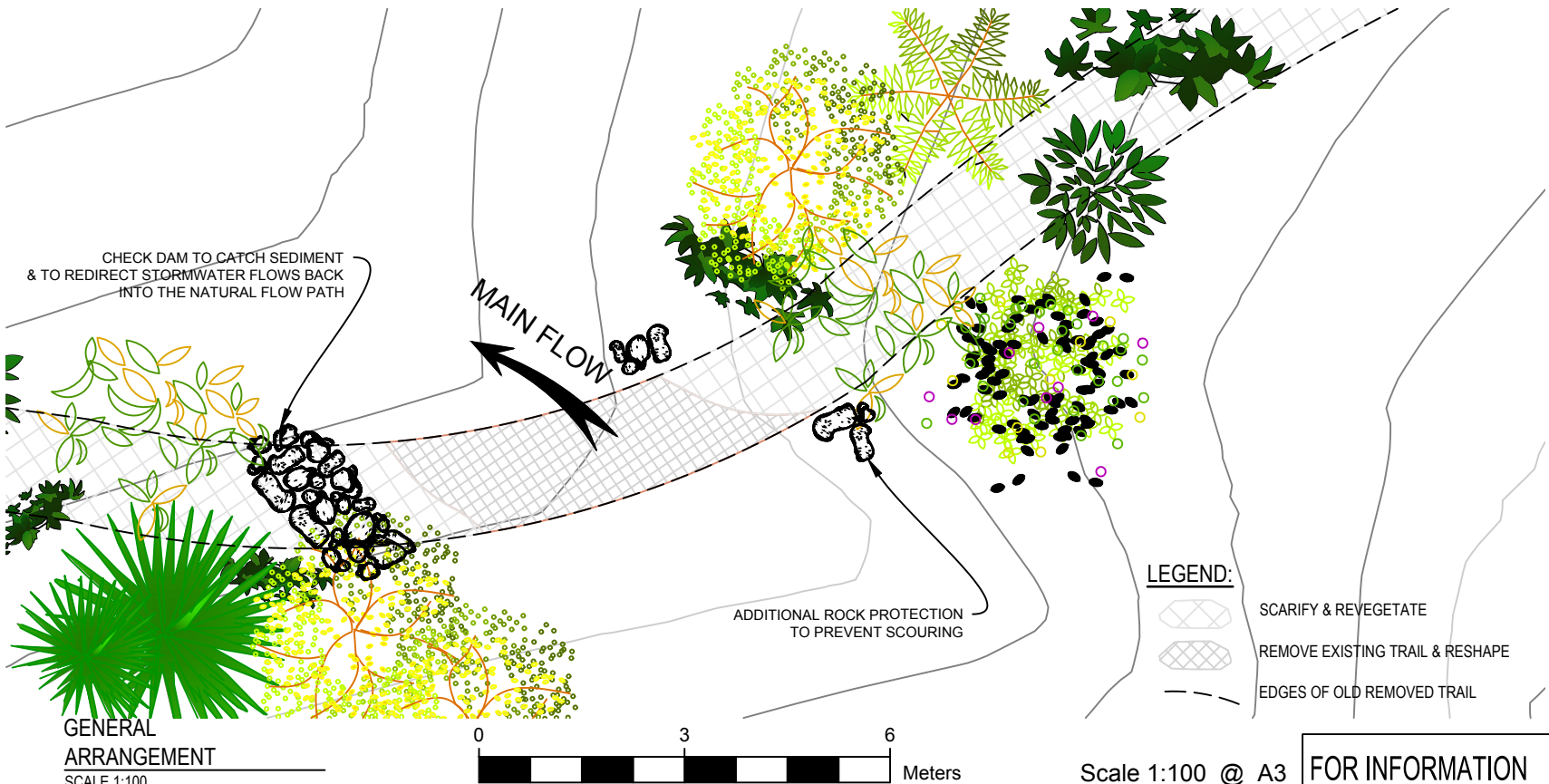
- The original trail material should be removed and spread in such away to enhance a natural shape and to allow a water flow path that follows the original natural alignment and that resembles the cross sectional shape that would have existed prior to initial trail establishment.
- Where applicable, check dams should be placed to stop sediment transport down the old trail pathway and to assist in redirecting flows back to the original alignment.
- Check dams can be constructed from rocks (as depicted), earthen mounds or logs with rock anchoring to improve stability.
- The upstream section of the old trail should be filled in to recreate a natural shape that ties in with the surrounding ground surface.
- Similarly the downstream stream section of the old trail behind any check dams or diversion structures, should be filled in to recreate a natural shape that ties in with the surrounding ground surface.
- All soil surface areas that are not exposed to concentrated water flows should be scarified by machine and revegetated.
- Additional rocks should be placed, where appropriate, at the sides of the flow path to minimise erosion or the flow path banks.

REVEGETATION:

- All areas outside the main creek flow path should be revegetated including any rock or earthen check dams or check dam anchors.
- Revegation should be undertaken using transplanted local species where possible.
- Plants used for transplantation should be selected from approved areas adjacent to the site and selected in such a way as to leave the source areas with an appropriate amount of remaining stock for natural replenishment.
- Revegetated areas should be maintained through watering and weed management as required until they are established.
- Where plant materials are needed to be sourced from external sources all diversity, botanical, health and plant security requirements applicable to the area or the clients requirements must be complied with.
- In the case where relocation or importation of plant species for revegetation is not possible, a similar result can be achieved over time through natural germination of existing endemic vegetation. Please note all other trail closure techniques must be followed to achieve a best practice rehabilitation result.



ISSUED FOR CLIENT REVIEW	
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NOT APPROVED	<input type="checkbox"/>
SIGNED.....	DATE.....



GENERAL
ARRANGEMENT
SCALE 1:100



Scale 1:100 @ A3

FOR INFORMATION

A	25/03/20	ISSUED FOR INFORMATION	JR		
Rev.	Date	Revision Details	Drn.	Ver.	App.



Project:

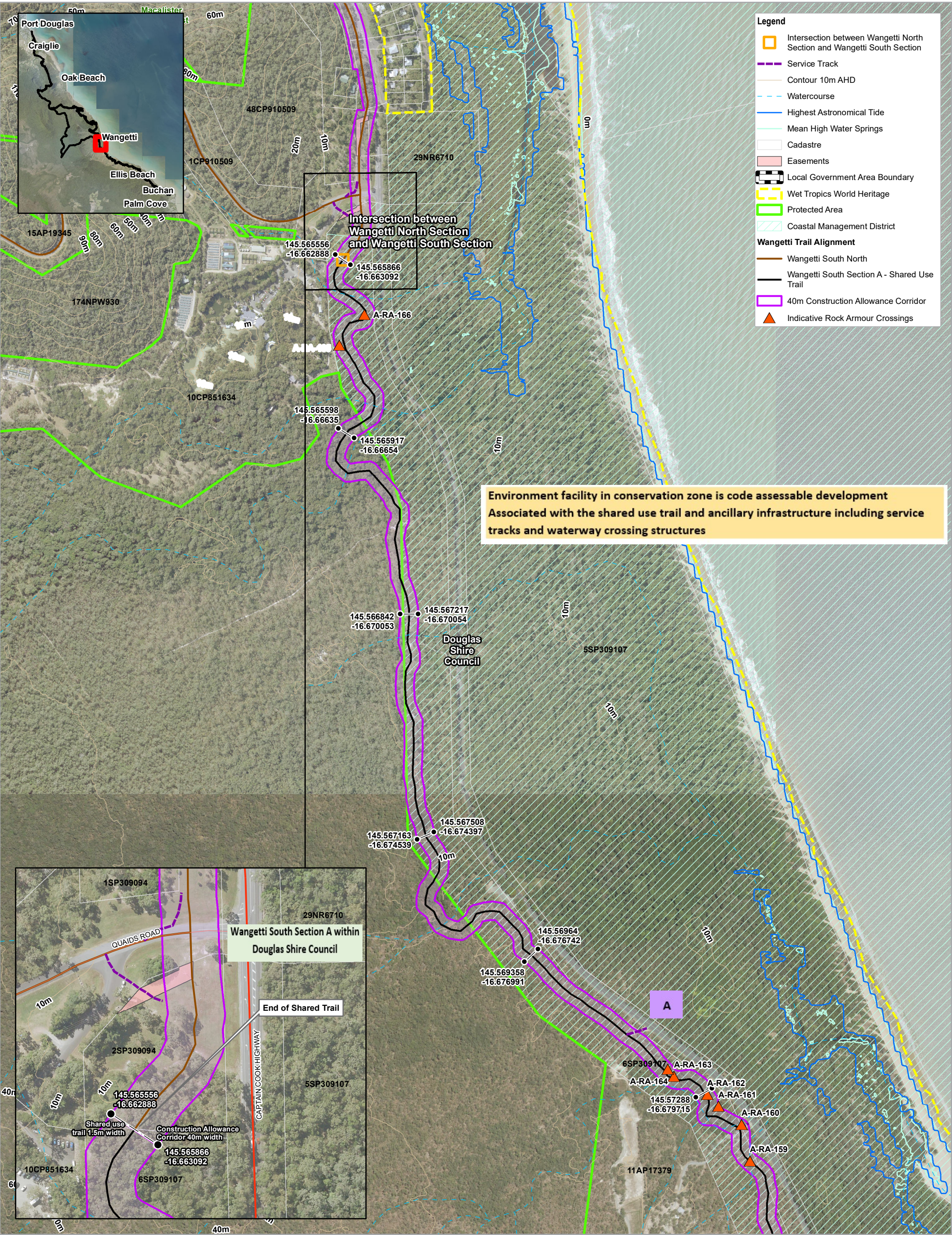
WANGETTI TRAIL
DETAILED DESIGN

Drawn	Signed	Date
JR		25/03/20
Designed	Signed	Date
DS		25/03/20
Verified	Signed	Date
DS		25/03/20
Approved	Signed	Date

Drawing Title:

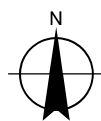
TRAIL CLOSURE & REHABILITATION
PLACEMENT AND DIMENSIONS
STANDARD DRAWING

Project No.	WT20-Wangetti-001
Scale	1:100
Sheet Size	A3
Drawing No.	WTSTD-021-WG2
Rev.	A



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Metres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

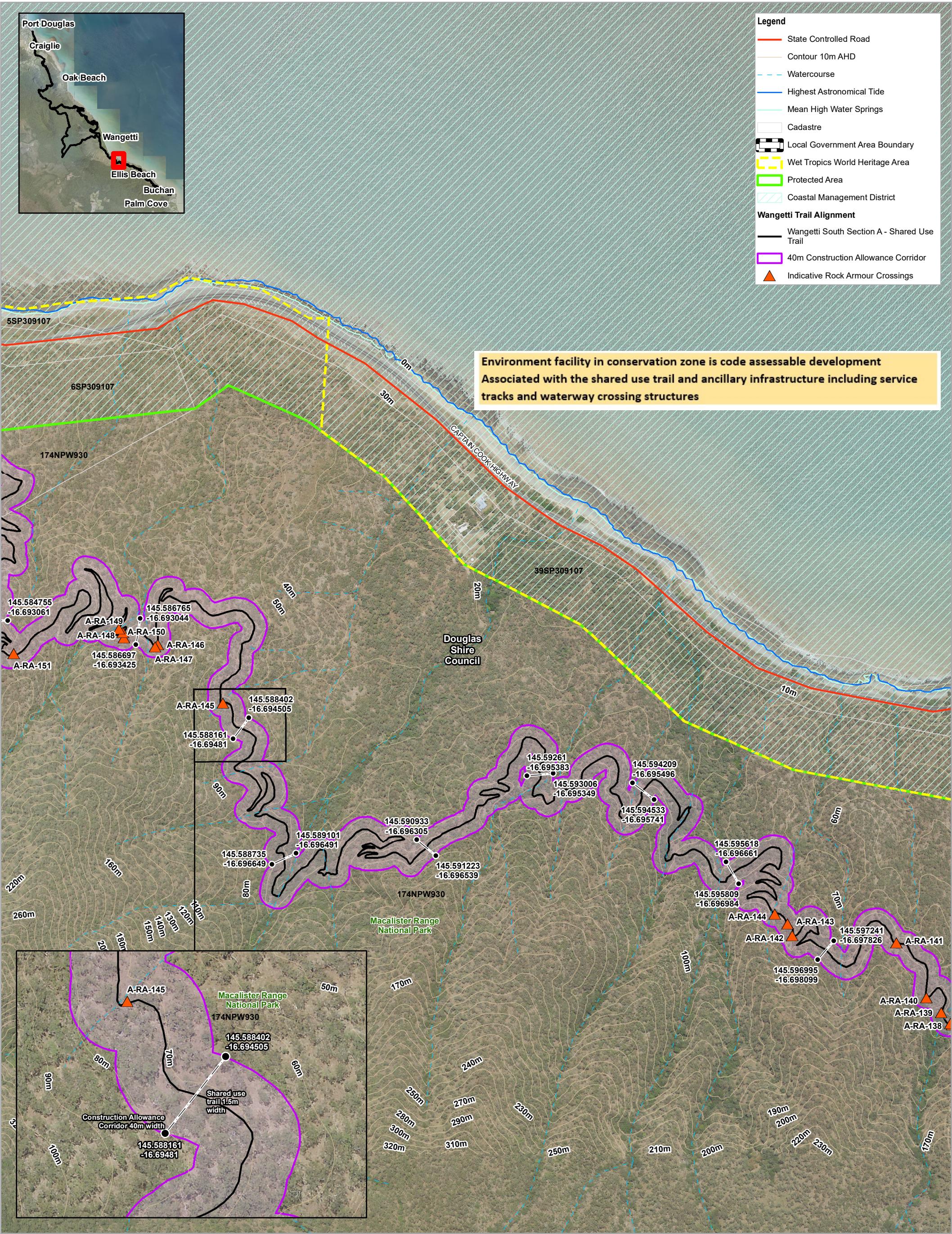


DITID
Environment Assessment Stage 2 Wangetti Trail

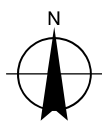
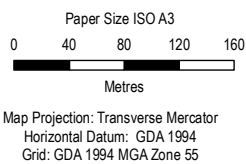
**Wangetti Trail South Section A
Locality Plan - shared use trail, waterway
crossings, service tracks and trail head**

Project No. 41-32458
Revision No. B
Date 23/03/2021

Plan - 1 of 5



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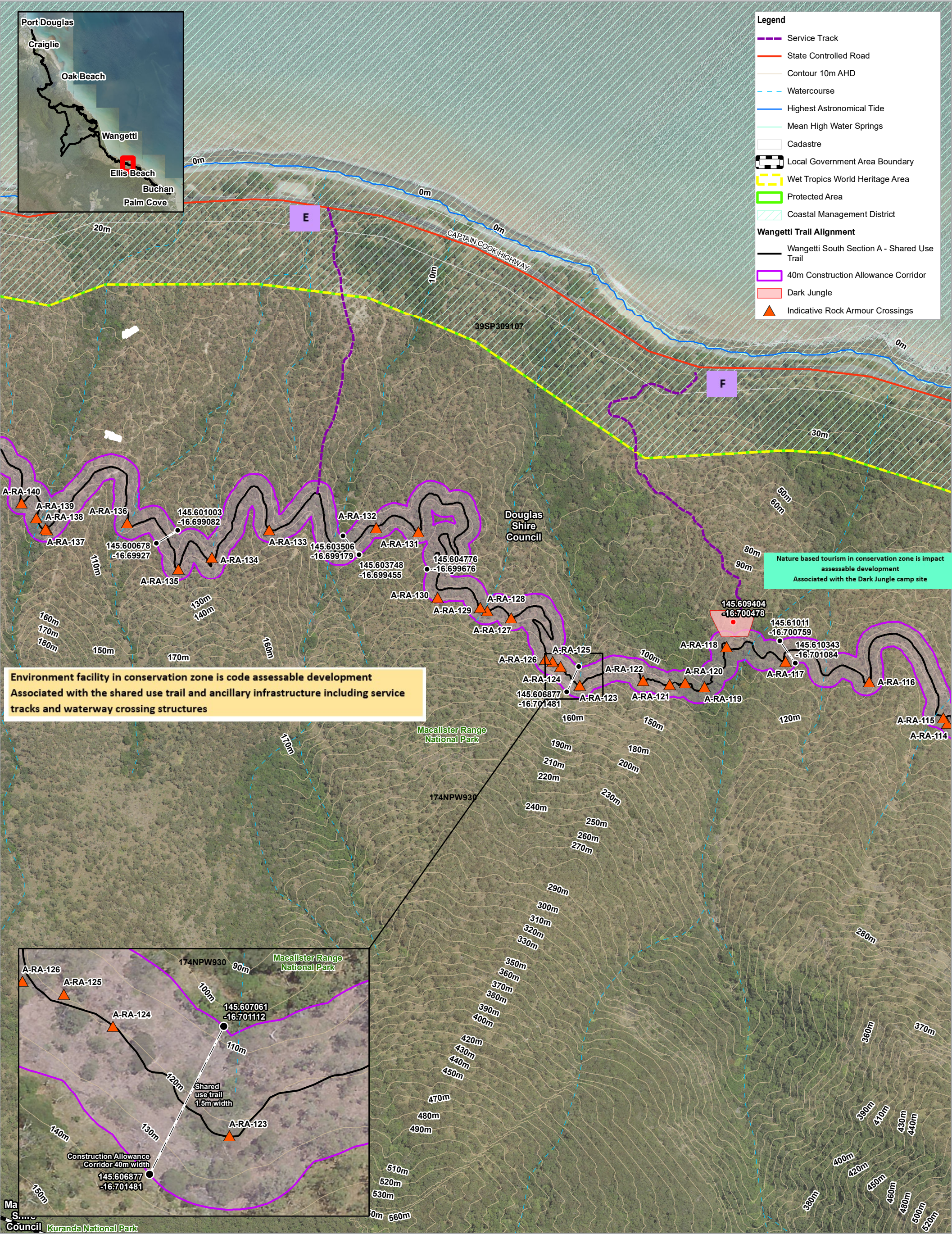


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Environment Assessment Stage 2 Wangetti Trail

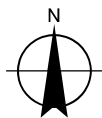
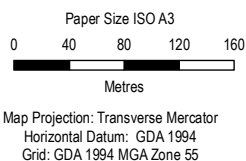
Wangetti Trail South Section A
Locality Plan - shared use trail, waterway
crossings, service tracks and trail head

Project No. 41-32458
Revision No. B
Date 23/03/2021

Plan - 3 of 5



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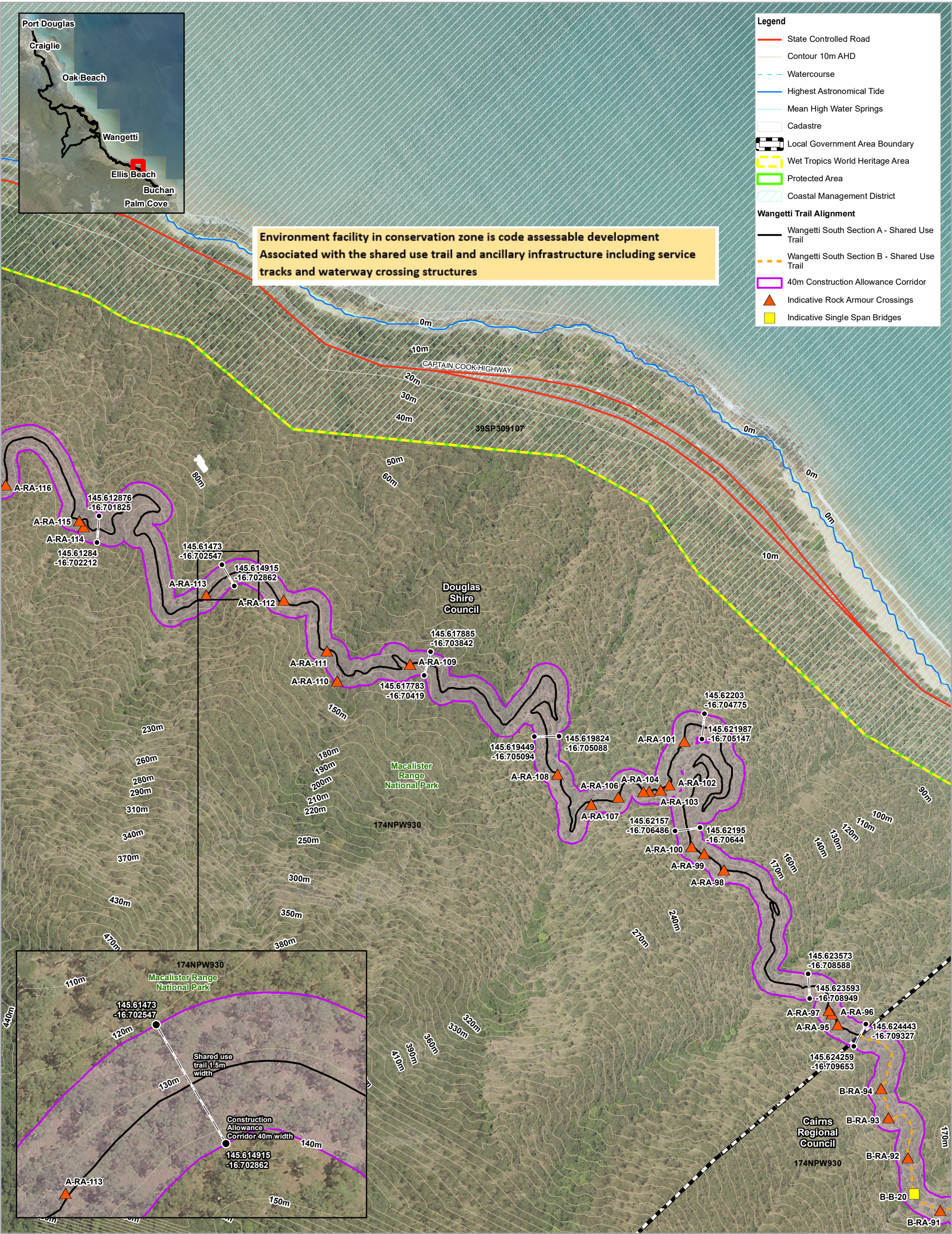


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Environment Assessment Stage 2 Wangetti Trail

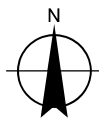
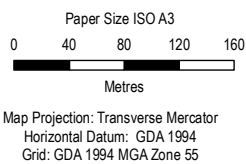
**Wangetti Trail South Section A
Locality Plan - shared use trail, waterway
crossings, service tracks and trail head**

Project No. 41-32458
Revision No. B
Date 23/03/2021

Plan - 4 of 5



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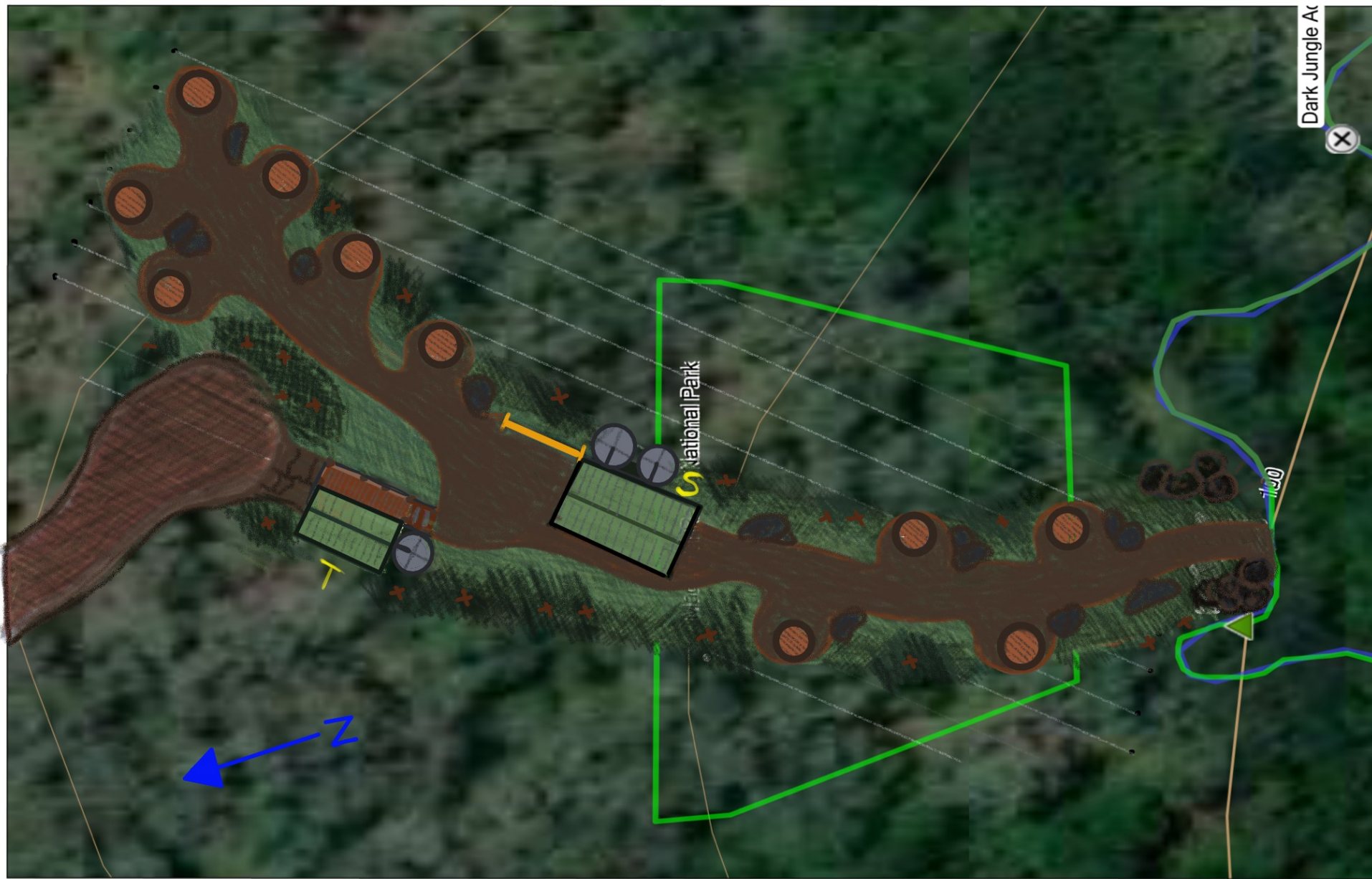


DITID
Environment Assessment Stage 2 Wangetti Trail

Wangetti Trail South Section A
Locality Plan - shared use trail, waterway
crossings, service tracks and trail head

Project No. 41-32458
Revision No. B
Date 23/03/2021


Plan - 5 of 5



 **CAMP DECK**

 **# TOILET BLOCK**
SHELTER

 **# BIKE RACK**

 **# WATER TANK**
SEWAGE TANK

 **# Site Boulders** **x** **# Trees**

 **# SERVICE TRACK**

Client: DTIS / DES

Date:
13/04/21

Drawings By:
Timothy Payne



Item: DARK JUNGLE CAMP CONCEPTUAL GENERAL LAYOUT

Appendix K – Environmental Management Plan

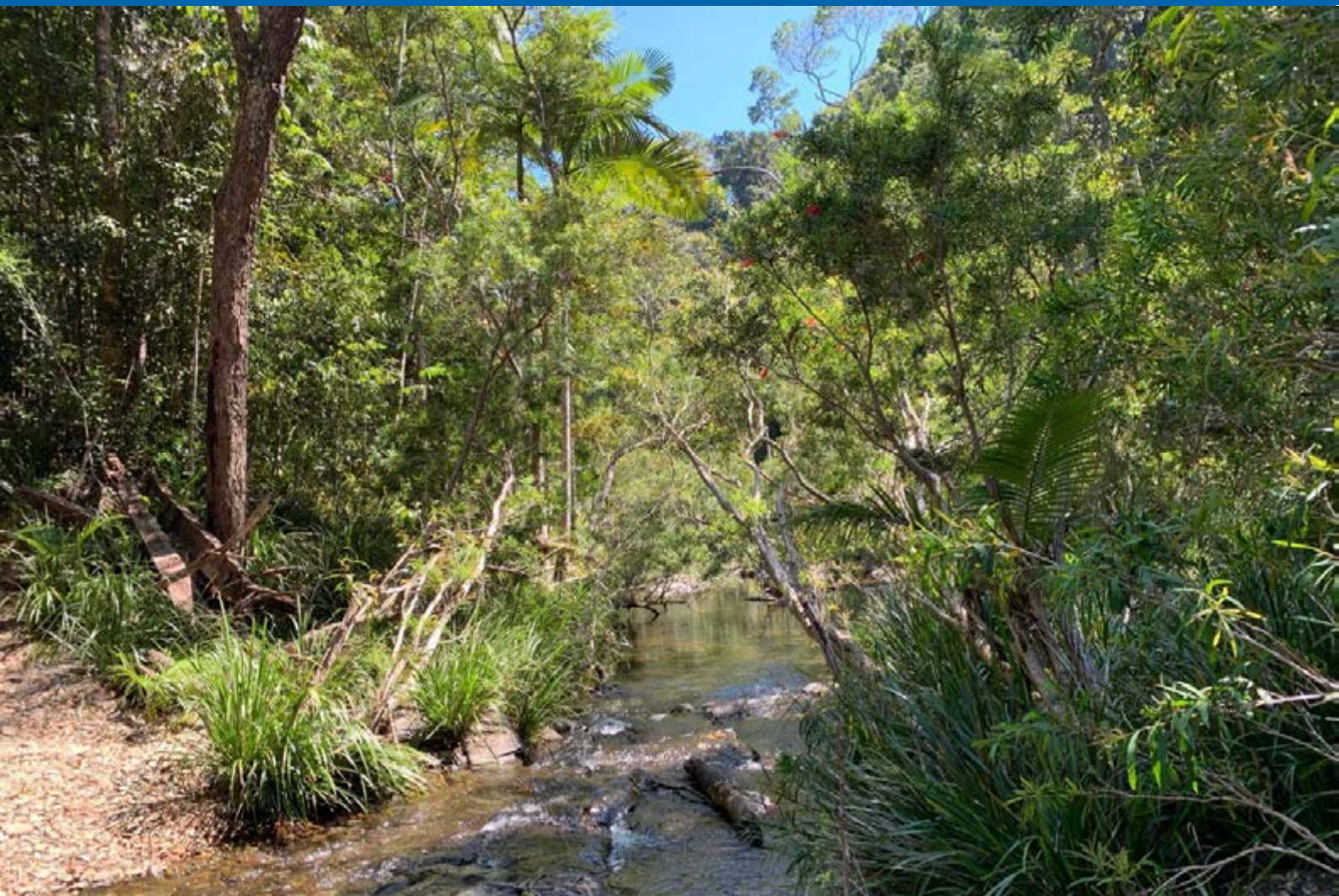


Department of State Development, Tourism, and Innovation

Wangetti Trail South Section (Wangetti to Palm Cove)

Preliminary Environmental Management Plan

July 2021



Abbreviation and acronyms

Abbreviation/acronym	Definition
ACH Act	<i>Aboriginal Cultural Heritage Act 2003</i>
AHD	Australian height datum
AS	Australian Standard
AWTGS	Australian Walking Track Grading System
CEMP	Preliminary Construction Environmental Management Plan
CESCP	Concept Erosion and Sediment Control Plan
CHMA	Cultural Heritage Management Agreement
CMP	Cassowary Management Plan
DAF	Department of Agriculture and Fisheries
DATSIP	The Department of Aboriginal and Torres Strait Islander Partnerships'
DAWE	Department of Agriculture, Water and the Environment
DEMP	Department of the Environment – Environmental Management Plan
DES	Department of Environment and Science
DR	Department of Resources (previously referred to as Department of Natural Resources Energy and Mines)
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning (previously referred to as Department of State Development, Manufacturing, Infrastructure and Planning)
DSDTI	Department of State Development, Tourism and Innovation
DTMR	Department of Transport and Main Roads
EMP	Environmental Management Plan
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
EP Act	<i>Environmental Protection Act 1994</i>
ESCP	Erosion and Sediment Control Plan
GBO	General Biosecurity Obligation
GED	General Environmental Duty
GHD	GHD Pty Ltd
ILUA	Indigenous Land Use Agreement
km	Kilometre
m	Metre
MNES	Matters of national environmental significance
MOU	Memorandum of understanding
MSES	Matters of state environmental significance
MTBA TRDS	the Australian Mountain Bike Trail Guidelines Trail Difficulty Rating System
NC Act	<i>Nature Conservation Act 1992</i>

Abbreviation/acronym	Definition
QPWS	Queensland Parks and Wildlife Service
RPP	Riverine protection permit
SMP	Species Management Plan
TDPD	Tourism Development Projects Division
TI Act	<i>Transport Infrastructure Act 1994</i>
TMP	Preliminary Traffic Management Plan
WPDMP	Preliminary Weed, Pest and Disease Management Plan
WTWHA	Wet Tropics World Heritage Area
YGAC	Yirrganydji Aboriginal Corporation

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1.2	Purpose of this report.....	1
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Appendix B – Cassowary Management Plan
Appendix C – Preliminary Weed, Pest, and Disease Management Plan
Appendix D – Preliminary Traffic Management Plan
Appendix E – Preliminary Construction Environmental Management Plan
Appendix F – Matters of national environmental significance flora pre-clearance survey methodology
Appendix G – Wangetti Trail Construction Methodology Manual April 2020

1. Introduction

1.1 Background

The Department of State Development, Tourism and Innovation (DSDTI) – Tourism Development Projects Division (TDPD) is proposing to establish the Wangetti Trail – Wangetti South (Project) Section, a 29.7 kilometre (km) shared use trail to accommodate both mountain bike users and hikers from the southern boundary Lot 2 SP309094 in the township of Wangetti, to Palm Cove (refer to Figure 2-1).

The Wangetti South Section will comprise of the following components:

- 29.7 km shared use trail to accommodate both mountain bike users and hikers, consisting of natural ground and surface treatments, which will be a maximum of 1.5 m wide. The 1.5 m wide trail will be located within a 40 metre (m) survey corridor, referred to as the construction allowance corridor, to allow flexibility for the placement of infrastructure during the construction phase. The trail has been designed to be a 'Mountain Biking – intermediate (blue square with blue outline) as defined in the Australian Mountain Bike Trail Guidelines Trail Difficulty Rating System (MTBA TDRS) and grade 3 for hikers, as defined in the Australian Walking Track Grading System (AWTGS), which also equates to Class 3 in the Australian Standard (AS) for Walking Tracks, Part 1: Classification and Signage (AS 2156.1-2001). The trail will have an average gradient of <10% and a maximum gradient no greater than 15% (for short distances only). Built structures proposed as part of the trail include gully crossings, bridges, staircases, platforms, rock armouring and signage, where appropriate and required.
- A number of waterway crossings along the shared use trail that will comprise of the following: rock armouring, boulder crossings and low-level bridge (minor water crossing).
- Dark Jungle (public camping node and amenities block)
- The formalisation of existing access tracks into service tracks to provide restricted access to the shared use trail and Dark Jungle for construction purposes, operational purposes, maintenance purpose and for emergency purposes.

The Wangetti South Section is being proposed over four properties located within the Douglas Shire Council and Cairns Regional Council local government areas. The project area intersects both the Macalister Range National Park and the Wet Tropics World Heritage Area (WTWHA).

The project is being delivered by TDPD as part of an adventure-based ecotourism development in north Queensland. The shared use trail will provide walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including the Wet Tropics of Queensland (Wet Tropics), and national parks.

Development of an Environmental Management Plan (EMP) to detail the performance objectives, actions and procedures to be carried out to minimise potential environmental impacts during construction phase and operational phase of the Wangetti South Section.

1.2 Purpose of this report

GHD Pty Ltd (GHD) has prepared this EMP as a means to guide responsible environmental management during the construction and operation phases of the Wangetti Trail – Wangetti South section. Conformance to this EMP will ensure that the Project meets the general environmental duty of Section 319 of the *Environmental Protection Act 1994*:

“A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.”

The EMP is a stand-alone, dynamic, document which will be reviewed and updated as required to reflect changes in processes, controls and procedures. This EMP has been developed with information that was available at the time of compilation and has considered the requirements in the Department of the Environment – Environmental Management Plan (DEMP) Guidelines 2014. This EMP is the key reference document which identifies actions and commitments to be followed during the Project. This EMP will serve as a benchmark for measuring the effectiveness of environmental protection and management. This will be achieved by specifying monitoring and reporting requirements, with nominated responsibilities and timing to ensure necessary performance objectives are met.

The contractors assigned to the Project will use the information in this document to develop environmental management system and documentation for the construction and operational phase of the Project.

This EMP is structured according to an overarching framework EMP (this document) supported by the following sub-plans:

- Preliminary Construction Environmental Management Plan (CEMP)
- Concept Erosion and Sediment Control Plan (CESCP)
- Preliminary Weed, Pest and Disease Management Plan (WPDMP) for the construction and operational phases of the Project.
- Matters of National Environmental Significance flora pre-clearance survey methodology
- Preliminary Traffic Management Plan (TMP) for the construction and operational phases of the Project.
- Cassowary Management Plan (CMP) for the construction and operational phases of the Project.

This is a continuously evolving document that should take into account changes in construction techniques and statutory requirements. This EMP has also been prepared in response to Chapter 5 of the Request for Information from Department of Agriculture, Water and the Environment (DAWE). The EMP provides a summary of measures to be adopted for the Project to avoid, mitigate, and manage impacts from the construction and operational phases of the project on matters of national environmental significance (MNES) and matters of state environmental significance (MSES).

1.3 Scope of works

This EMP covers the construction and operation of the Wangetti Trail – Wangetti South Section, from the southern boundary Lot 2 SP309094 in the township of Wangetti, to Palm Cove and includes all activities such as:

- Preclearance surveys for protected fauna and flora
- Construction of the 1.5m wide shared use trail within a 40m wide construction allowance corridor and ancillary infrastructure including vegetation clearance along the trail (1.5m wide permanent with 0.5m on either side for temporary disturbance.). Including the trail head at the intersection of the shared use trail and the Captain Cook Highway at Ellis Beach.
- Operation of the shared use trail

- Construction of Dark Jungle public camp site
- The operation of Dark Jungle public camp site.
- Formalisation and maintenance of service tracks.

1.4 Assumptions and limitations

This report: has been prepared by GHD for The Department of State Development, Tourism and Innovation and may only be used and relied on by The Department of State Development, Tourism and Innovation for the purpose agreed between GHD and theThe Department of State Development, Tourism and Innovation as set out in section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than The Department of State Development, Tourism and Innovation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by The Department of State Development, Tourism and Innovation and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Site Description

2.1 Location

The South Section of Wangetti Trail is located between Wangetti Township and Palm Cove in Far North Queensland. The land parcels that Wangetti South Section intersects are outlined in Table 2-1.

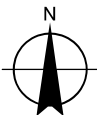
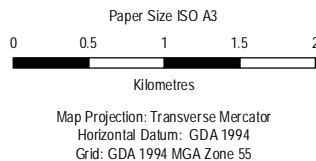
Table 2-1 Wangetti South Section land parcels details

Affected property	Address / Coordinates	Owner Details	Tenure	Locality	Proposed works
Reserves					
31SP129117	Captain Cook Highway, Ellis Beach, South Reserve	State of QLD (Department of Resources (DR))	Reserve	Ellis Beach	Trail
6SP309107	Captain Cook Highway Wangetti	State of QLD (DR)	Reserve	Wangetti	Service track Trail
Lot 39 on SP309107	Captain Cook Highway, Wangetti	State of QLD (DR)	Reserve	Wangetti	Service track
State Land					
2SP309094	Captain Cook Highway Wangetti	State of QLD (DR)	Unallocated state land Proposed to be declared as transferable land under the <i>Aboriginal Land Act 1992</i>	Wangetti	Trail
National Park					
174NPW930	Macalister Range National Park	State of QLD (DR)	National Park	Macalister Range	Trail Service track Dark Jungle
Road Reserves					
Road Reserve	Captain Cook Highway	DTMR	Road Reserve	Palm Cove – Port Douglas	Trail
Leasehold					
13NR5512	Captain Cook Highway Ellis Beach	Lessee – Bellbird Park Developments Pty Ltd	State Leasehold Land Non-competitive lease 9/2568 – Tourism purposes namely tourist accommodation and ancillary facilities	Ellis Beach	Service track

The Wangetti South Section is located within Douglas Shire Council local government area and Cairns Regional Council local government area. The shared use trail within Wangetti South Section extends 29.7 km and is constrained by the Coral Sea to the east and the Macalister Ranges to the west and is almost entirely located within the Macalister Range National Parks and the WTWHA (refer to Figure 2-1 for a locality plan of the trail).



Based on or contains data provided by the State of QLD (DNRME) 2020. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.



DITID
Environment Assessment Stage 2 Wangetti Trail

Project No. 41-32458
Revision No. 5
Date 1/12/2020

Wangetti South Section
Project Locality Plan

FIGURE 2-1

2.2 Existing Environment

The Wangetti Trail is to be developed partly within Macalister Range National Park which consists of rugged, forested range along the far northern coastline of Queensland and forms part of the WTWHA. This area is intersected by a number of waterways including ephemeral waterways which some providing fish passage for protected species. The area contains regional ecosystems supporting threatened and protected species. Given the sensitivity of the environment it is imperative that appropriate environmental management processes are implemented on site to minimise impact to the immediate and surrounding environment.

The project has been assessed and approved under the Wet Tropics Management Plan 1998 (Wet Tropics Permit No: WTMA20001a). Under the 1998 Plan, the project area is located within Zones B and C.

Zone B generally has a high degree of ecological integrity and it is in a natural state but is not necessarily remote from disturbance. Lands in zone B are less than 500 metres from all roads, cableways, power lines, pipelines, towers, mines, quarries and other structure; or, less than 700 metres from clearings; or include an area of up to 150 hectares of undisturbed habitat and have some obvious signs of disturbance in the last 40 years (WTMA, 2019).

Zone C contains disturbances and is generally associated with existing community infrastructure. Zone C includes areas where there are clearings, roads, power lines, pipelines, dams and cableways and also includes quarries, gravel scrapes, paddocks, building or home sites, orchards and plantations, forestry camps and parking areas (WTMA, 2019).

For the Wangetti trail construction to be compliant with the management of these areas, the environmental practices outlined in this document require implementation.

2.3 Key Environmental Issues

2.3.1 Soil and land management

The Wangetti South Section alignment is comprised of coastal floodplains, volcanic mountain ranges and estuarine mudflats. The alignment intersects coastal plains of 5 m – 30 m AHD at Buchan Point before traversing the eastern edges of the Macalister Ranges. The highest point of the alignment is approximately 570 m AHD at Mt Charlie. Largely, the alignment follows the eastern edge of the Macalister Ranges, at a topography of 250 – 300 m AHD.

The location of the trail on the slopes of the Macalister range, has a high probability of erosion and sedimentation. Works are to comply with the Concept Erosion and Sediment Control Plan (refer to Appendix A).

2.3.2 Biodiversity – Fauna

Nine distinct fauna habitat types have been recorded within the Wangetti South survey area during the field surveys completed by GHD in 2019. These include the following:

- *Acacia* woodland
- Disturbed rainforest
- Ephemeral waterways
- Eucalypt woodland on steep rocky slopes
- *Melaleuca* swamp

- Mixed *Melaleuca viridiflora* woodlands on inundated plains
- Open woodland over grasses on undulating plains
- Permanent streams
- Vine forest
- Modified landscapes.

These fauna habitats can support a wide variety of terrestrial and aquatic fauna species. The MNES and MSES fauna species that are known, likely or may occur within the Wangetti South Section are outlined below in Table 2-2.

Table 2-2 MNES and MSES fauna species that are known, likely or may occur within Wangetti South Section

MNES and MSES bird species	MNES and MSES amphibian species	MNES and MSES mammal species	MNES and MSES aquatic species
<p>MNES and MSES bird species that are known, likely or may occur:</p> <ul style="list-style-type: none"> • <i>Casuarus casuarus</i> (Southern cassowary) • Migratory birds (e.g. eastern curlew, great sand plover) • Non-migratory species (e.g. masked owl) 	<p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Litoria dayi</i> (Australian lace lid) • <i>Litoria nannotis</i> (Waterfall frog) • <i>Litoria nyakalensis</i> (Mountain mistfrog) • <i>Litoria rheocola</i> (Common mistfrog) • <i>Litoria serrata</i> (Tapping green eyed frog) 	<p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll) • <i>Dasyurus hallucatus</i> (Northern quoll) • <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo) • <i>Hipposideros semoni</i> (Semon's leaf-nosed bat) • <i>Phascolarctos cinereus</i> (Koala) • <i>Pteropus conspicillatus</i> (Spectacled flying-fox) • <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat) • <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat) 	<p>MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Stiphodon semoni</i> (Opal cling goby) • <i>Stiphodon rutilarueus</i> (Orange cling goby) • <i>Stiphodon pelewensis</i> (Emerald cling goby) • <i>Stiphodon surrufus</i> (Birdsong cling goby)

MNES and MSES bird species	MNES and MSES amphibian species	MNES and MSES mammal species	MNES and MSES aquatic species
		<ul style="list-style-type: none"> <i>Xeromys myoides</i> (Water mouse) 	

To minimise impacts to protected fauna species, pre-clearance surveys will be undertaken during the construction phase prior to any vegetation clearing and will involve an appropriately qualified ecologist/botanists. Trail routing will take place along the alignment of least disturbance and trail watercourse crossing points should be sited where there is minimal disturbance to stream banks and riparian vegetation and preferably over exposed bedrock. Manual construction methods will be encouraged over mechanised methods and only existing access roads are to be utilised, with no new access roads constructed.

Of the above mentioned fauna species, two *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed species were considered to 'likely to occur' within Wangetti South Section based on the presence of potentially suitable habitat and previous records and they include the southern cassowary and opal cling goby (GHD, 2020).

The Southern cassowary is listed as endangered under the EPBC Act has the potential to be impacted by the Wangetti trail development by habitat reduction and a possible increase in interactions with people. The impact to the Southern Cassowary has been assessed and details can be found in the Cassowary Management Plan (Appendix B).

Opal cling gobies are listed as critically endangered under the EPBC Act and therefore steps need to be taken to protect their highly favourable habitat located along short, steep coastal streams in the Wet Tropics. Several of these streams will be crossed as part of the shared use trail and management of the sediment and limiting impact to these waterways is required to ensure the gobies habitat is maintained. Eliminating waterway barrier works will reduce the impact on the opal cling goby as waterway passages used by this fish will therefore not be interrupted. The impact to the Opal Cling Goby has been assessed and details can be found in Section 2 of the Wangetti South Preliminary Documentation.

2.3.3 Biodiversity – Flora

No EPBC Act listed flora species, threatened ecological communities and/or Queensland State listed flora species have been confirmed present within the construction allowance corridor during field surveys for Wangetti South Section completed by GHD in 2019 (GHD, 2020). However, the following EPBC listed and Queensland State listed flora species were considered likely to occur within Wangetti South Section based on the presence of potentially suitable habitat and previous records:

- Ant Plant (*Myrmecodia beccarii*) - Vulnerable
- Dwarf butterfly orchid (*Vappodes lithocola*¹) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*) – Endangered
- Orange Tamarind (*Toechima pterocarpum*) - Endangered
- Velvet jewel orchid (*Zeuxine polygonoides*²) (also known as *Rhomboda polygonoides*) – Vulnerable
- *Randia audasii* – Likely to occur

- *Rhomboda polygonoides* – Likely to occur

Other MNES and MSES flora species that may occur in the Wangetti South Section are outlined below:

- *Phaius pictus* – May occur
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid) – May occur
- *Polyscias bellendenkerensis* – May occur
- *Archontophoenix myolensis* (Myola palm) – May occur
- *Anoectochilus yatesiae* (Marbled jewel orchid) – May occur
- *Canarium acutifolium* – May occur
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid) – May occur
- *Diplazium cordifolium* – May occur

To minimise impacts to protected flora species, pre-clearance surveys will be undertaken during the construction phase prior to any vegetation clearing and will involve an appropriately qualified ecologist/botanists. Trail routing will take place along the alignment of least disturbance and trail watercourse crossing points should be sited where there is minimal disturbance to stream banks and riparian vegetation and preferably over exposed bedrock. Manual construction methods will be encouraged over mechanised methods and only existing access roads are to be utilised, with no new access roads constructed.

In addition, the Wangetti South Matters of National Environmental Significance flora pre-clearance survey methodology has been developed and outlines the pre-clearance survey methodology to be adopted before starting construction works. It also outlines how protected flora species will be identified and managed as part of the project (refer to Appendix F).

2.3.4 Biosecurity

Invasive plants and pest species considered to be present or have the potential to occur within the Wangetti South Section project area have been identified in the Wangetti South Section Preliminary Weed, Pest and Disease Management Plan which has been developed for Wangetti South Section (refer to Appendix C). In addition, there are three environmental diseases (pathogens) that pose a high risk to the Wangetti South project area

- Myrtle rust (*Puccinia psidii*) – fungal disease affecting plants in the Myrtaceae family. This pathogen is known to be threat to WTWHA (WTMA, 2020).
- Root rot fungus (*Phytophthora* fungus) – kills all plant species rooted in soil. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020).
- *Chytridiomycosis* disease – frog disease caused by the chytrid fungus. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020) Frog chytrid fungus has been identified as a primary cause of massive mortality of stream-dwelling frogs in the Wet Tropics bioregion (WTMA, 2020).

There are also several Queensland Biosecurity Zones which are mapped over the Wangetti South Section according to the Queensland Government – Business Queensland Maps of Queensland biosecurity zones (2020) and they include the electric ant biosecurity zone, Asian honey bee infested area and Northern banana biosecurity zone.

Weed and pest species and pathogens identified onsite are to be managed in accordance with the WPDMP which is been prepared for the construction and operational phases of the project (refer to

Appendix C). Hygiene procedures and ongoing monitoring to detect incursions are to be carried out to minimise transfer of invasive species.

2.3.5 Waterways

Watercourses are to be protected where practically possible. Given the sensitive nature of the site, it is imperative that that erosion and sediment control measures are to be implemented in accordance with Appendix A.

The trail will intersect a number of waterways which are protected under the *Water Act 2000* and *Fisheries Act 1994* and are shown on the map in Appendix A. As a result, a number of structures over waterways will need to be constructed to provide safe passage for trail users. The exact locations and type of structure proposed at the waterways will be determined by the trail builder and will comprise of the following options:

- Rock armouring
- Boulder crossings
- Low level bridge (single span bridges).

Construction and operational activities that could potentially impact on waterways are outlined in Table 2-3. Environmental controls to reduce impacts to waterways are outlined in the CEMP in Appendix E and CESC in Appendix A.

2.3.6 Cultural heritage

Segments of the Wangetti South Section are considered to have high heritage and cultural heritage values. The Wangetti South Section is also located within the Wet Tropics World Heritage Area, which is recognised as a national heritage place for both natural and Indigenous values. The Wet Tropics rainforests contain an almost complete record of the major stages in the evolution of plant life on earth.

The Wangetti South Section was altered to avoid culturally sensitive areas based on advice from Traditional Owner Rangers (GHD, 2020). The location of the shared use trail, camp site and service tracks have been selected as they are considered to avoid the areas of cultural heritage values based on information collected during discussions with Traditional Owners and collected during cultural heritage surveys (GHD, 2020).

The Yirrganydji People are recognised Traditional Owners for the country on which the Wangetti Trail traverses (Yirrganydji Gurabana Aboriginal Corporation, 2018). Engagement with the Yirrganydji Aboriginal Corporation (YGAC) and their Land and Sea Rangers Corporation was formalised through a memorandum of understanding (MOU) that outlined the project vision, objectives, governance framework, business case activities and responsibilities and commercial compensation (GHD, 2021). This agreement and the working relationship developed with the Yirrganydji People has established a strong relationship of trust and productivity, which has continued throughout the project phases as part of a process to agree and register an Indigenous Land Use Agreement for the Wangetti Trail (GHD, 2021).

To date, the following activities have been undertaken/are in development with the Yirrganydji people relating to the assessment and delivery of the Wangetti Trail Project (GHD, 2021):

- Execution of an MOU with the YGAC to participate in the business case development process including definition of overall aspirations for business opportunities for the trail as a precursor to an Indigenous Land Use Agreement (ILUA) and the engagement of Yirrganydji Land and Sea Rangers to provide cultural heritage advice during ground-truthing activities.
- Development of a statutory structure plan for the Wangetti Land Trust Aboriginal Land Act freehold land to be developed as a trail hub for the Wangetti Trail. Establishment of Traditional

Owner owned and operated auxiliary trail infrastructure in this location is strongly supported by the Project Team and Douglas Shire Council by way of formal Council resolution.

Execution of a Cultural Heritage Agreement protocol and engagement of cultural heritage monitors for the construction of the Mowbray River pedestrian bridge

- Drafting of an ILUA for the Wangetti Trail to be agreed and finalised before works commence in early 2021.

Engagement with the Traditional Owner Groups is ongoing and paramount to the successful delivery of the Wangetti Trail. Traditional Owners will be involved throughout all stages of the project – particularly during the procurement process for the eco-accommodation operator.

2.3.7 Public amenity and health

Sensitive receptors (e.g. existing residences, places of work, schools, agricultural or ecologically significant areas/species that could be impacted) within and surrounding the Project that may be potentially affected by the proposed works associated with Wangetti South Section include:

- Wet Tropics World Heritage Area
- National Parks
- Residential communities within Palm Cove and Wangetti.

The Project is predominantly within an area which has been subjected to very limited disturbance. Wangetti South Section is also characterised by steep terrain, is home to dangerous animals and plants and there is the potential for extreme weather events to occur in the area. All of these matters could have adverse impacts on construction personnel working within Wangetti South Section during the construction phase.

Construction and operational activities that could potentially impact on public amenity are outlined in Table 2-3.

2.4 Key environmental factors

Eight preliminary key environment factors have been identified in the referral for Wangetti South Section and they include:

- Biodiversity – Flora
- Biodiversity – Fauna
- Waterways
- Soil and land management
- Public amenity and health
- Waste management
- Biosecurity
- Cultural heritage.

Table 2-3 presents the eight preliminary key environmental factors relevant to construction and operation, the proposal activities that would affect the factors and the site-specific environmental values, uses and sensitive components that will be affected. Table 2-3 also identifies MNES and MSES that could be potentially impacted by construction and operational activities.

Table 2-3 Key environmental factors relevant to construction and operation

Key environmental factor	Activities that could affect the factor	Applicable MNES and MSES
Biodiversity – Flora	<ul style="list-style-type: none"> • Vegetation clearing - permanent and temporary loss of vegetation and habitat (direct impact) • Construction and operational vehicle movements • Construction and maintenance plant operation • Soil erosion and sediment generated from earthworks • Illegal collection of flora species by construction crew and/or trail users • Introduction and spread of invasive species from material brought into the project area • Damage to flora species by trail users not using designated routes. 	<p>MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:</p> <ul style="list-style-type: none"> • <i>Archontophoenix myolensis</i> (Myola palm) • <i>Anoectochilus yatesiae</i> (Marbled jewel orchid) • <i>Canarium acutifolium</i> • <i>Dendrobium fellowsii</i> • <i>Dendrobium mirbelianum</i> (Dark-stemmed antler orchid) • <i>Diplazium cordifolium</i> • <i>Diplazium pallidum</i> • <i>Myrmecodia beccarii</i> (Ant plant) • <i>Phaius pictus</i> • <i>Phalaenopsis amabilis</i> subsp. <i>rosenstromii</i> (Native moth orchid) • <i>Polyscias bellendenkerensis</i> • <i>Randia audasii</i> • <i>Rhomboda polygonoides</i> • <i>Toeckia pterocarpum</i> (Orange tamarind) • <i>Vappodes lithocola</i> (Dwarf butterfly orchid) (also known as <i>Dendrobium lithocola</i>, and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>) • <i>Vappodes phalaenopsis</i> (Cooktown orchid) (Also known as <i>Dendrobium phalaenopsis</i> and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>) • <i>Zeuxine polygonoides</i> (Velvet jewel orchid) (also known as <i>Rhomboda polygonoides</i>)
Biodiversity – Fauna	<ul style="list-style-type: none"> • Vegetation clearance resulting in injury and mortality to the local fauna • Vegetation clearance has the potential to impact on breeding areas for local fauna • Construction and operational vehicle movements in the project area, outside of nominated areas 	<p>MNES and MSES bird species that are known, likely or may occur:</p> <ul style="list-style-type: none"> • <i>Casuaris casuaris</i> (Southern cassowary) • Migratory birds (e.g. eastern curlew, great sand plover) • Non-migratory species (e.g. masked owl)

Key environmental factor	Activities that could affect the factor	Applicable MNES and MSES
	<ul style="list-style-type: none"> • Soil erosion and sediment generated from earthworks • Storage and management of waste from construction crew • Injury and mortality of wildlife resulting from direct collision with mountain bike riders • Illegal taking of wildlife • Disturbance of wildlife behaviour by increased noise from hikers and mountain bike riders • Introduction and spread of invasive species by the movement of hikers, cyclists and maintenance vehicles • Barrier effects and reduced movement to wildlife. 	<p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Litoria dayi</i> (Australian lace lid) • <i>Litoria nannotis</i> (Waterfall frog) • <i>Litoria nyakalensis</i> (Mountain mistfrog) • <i>Litoria rheocola</i> (Common mistfrog) • <i>Litoria serrata</i> (Tapping green eyed frog) <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll) • <i>Dasyurus hallucatus</i> (Northern quoll) • <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo) • <i>Hipposideros semoni</i> (Semon's leaf-nosed bat) • <i>Phascolarctos cinereus</i> (Koala) • <i>Pteropus conspicillatus</i> (Spectacled flying-fox) • <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat) • <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat) • <i>Xeromys myoides</i> (Water mouse) <p>MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Stiphodon semoni</i> (Opal cling goby) • <i>Stiphodon rutilarueus</i> (Orange cling goby) • <i>Stiphodon pelewensis</i> (Emerald cling goby) • <i>Stiphodon surrufus</i> (Birdsong cling goby)
Waterways	<ul style="list-style-type: none"> • Earthworks - Soil erosion and sediment • Installation of waterway crossings 	WTWHA

Key environmental factor	Activities that could affect the factor	Applicable MNES and MSES
	<ul style="list-style-type: none"> Earthworks and other construction activities have the potential to cause indirect degradation of aquatic habitats, particularly to opal cling goby habitat Use of construction machinery in and around aquatic habitat The shared use trail has potential to contribute to sedimentation to the environment. The movement of hikers and mountain bike riders have the potential to cause localised habitat degradation through exposure to run-off and sedimentation, and trail widening to avoid muddy or puddled areas Disturbance to surface waterways by hikers and cyclists the shared use trail and the operation of the public camp have the potential to cause indirect degradation of aquatic habitats. 	<p>Amphibian and aquatic species as outlined in Biodiversity – Fauna row above.</p> <p>Waterways protected under the <i>Fisheries Act 1994</i> and <i>Water Act 2000</i> and coastal management districts protected under the <i>Coastal Protection and Management Act 1995</i>.</p>
Soil and land management	<ul style="list-style-type: none"> Earthworks - Soil erosion and sediment Soil compaction as a result of construction equipment moving in the area Construction and operational equipment causing displacement of soils and/or rocks Trail users causing displacement of soils and/or rocks by not following designated routes. Chemicals and fuel used on-site during construction/operational phase impacting on the natural environment. 	<p>Wet Tropics World Heritage Area</p> <p>As per amphibian and aquatic species in Biodiversity – Fauna</p> <p>Waterways protected under the <i>Fisheries Act 1994</i> and <i>Water Act 2000</i> and coastal management districts protected under the <i>Coastal Protection and Management Act 1995</i>.</p>
Public amenity and heath	<ul style="list-style-type: none"> Vegetation clearance Construction/operational vehicle movements. Construction plant operation Soil erosion and earthworks Storage and management of waste from construction crew Storage and management of waste from campsite. Construction activities may be visible to varying degrees by 	<p>Wet Tropics World and National Heritage Area</p> <p>Waterways protected under the <i>Fisheries Act 1994</i> and <i>Water Act 2000</i></p> <p>Coastal management districts protected under the <i>Coastal Protection and Management Act 1995</i>.</p>

Key environmental factor	Activities that could affect the factor	Applicable MNES and MSES
	<p>people living, working, and travelling through the surrounding areas</p> <ul style="list-style-type: none"> Noise and vibration generated by trail users using the trail and impacting on sensitive receptors including wildlife Noise and vibration generated by construction plant, vehicles and equipment impacting on sensitive receptors including wildlife Noise generated by members of the public using vehicles illegally within the project area Potential air and dust impacts to sensitive receptors because of construction activities, attributable to exhaust emissions and fugitive dust During construction, construction activities have the potential to increase bushfire hazard. The use of construction machinery within the project area have the potential to ignite fires and include, but not limited to mini excavators; chainsaws, compactors, general construction tools and equipment such as drills, saws, sanders, etc. During operation trail users illegally starting fires Bushfires occurring within the project area impacting threatened flora and fauna species Steep terrain, remote location, the presence of dangerous animals and plants and potential of extreme weather events are associated with Wangetti South Section and could adversely impact on construction personnel and/or trail users in the following ways: <ul style="list-style-type: none"> Bites from snakes, spiders, and insects Allergic reactions to plant species along the trail Heat/cold exposure, falls and sprains, etc. 	<p>MNES and MSES species as outlined in the Biodiversity – Fauna row above.</p> <p>Heritage Area National Heritage Site</p> <p>Protected Areas - estates protected under the <i>Nature Conservation Act 1992</i> (NC Act).</p>

Key environmental factor	Activities that could affect the factor	Applicable MNES and MSES
	<ul style="list-style-type: none"> ○ Another hazard is the operation of a helicopter to transport construction material to the project area ○ Potential hostile intersection with fauna species ○ Extreme weather events requiring evacuation • Disruption to traffic along Captain Cook Highway from construction vehicles • Interference with wildlife by construction vehicles/operational vehicles • Impacts to sensitive environmental areas because of vehicles not using designated service tracks and/or members of the public using vehicles illegally within the project area • Congestion of vehicles at existing parking areas. 	
Biosecurity	<ul style="list-style-type: none"> • Introduction or spread of weeds/pests/pathogens from construction/ operation activities or materials within Wangetti South Section • Introduction or spread of weeds/pests/pathogens from trail user within Wangetti South Section. 	<p>MNES and MSES species as outlined in the Biodiversity – Fauna and Flora rows above.</p> <p>Wet Tropics World and National Heritage Area.</p> <p>Protected Areas - estates protected under the NC Act.</p>
Waste management	<ul style="list-style-type: none"> • Clearing of vegetation and cut and fill activities will be required to allow for the construction of the trail, camp sites and access tracks resulting in vegetation waste and excess spoil • Construction camps will produce general waste • Inappropriate waste management by construction personnel • Inappropriate waste management by operational staff • Generation of waste from trail users. 	<p>MNES and MSES species as outlined in the Biodiversity – Fauna and Flora rows above.</p> <p>Wet Tropics World and National Heritage Area.</p> <p>Protected Areas - estates protected under the NC Act.</p> <p>Waterways protected under the <i>Fisheries Act 1994</i> and <i>Water Act 2000</i></p>
Cultural heritage	<ul style="list-style-type: none"> • Potential to find unrecorded cultural heritage and to disturb identified cultural heritage 	<p>Wet Tropics World and National Heritage Area</p> <p>Protected Areas - estates protected under the NC Act.</p>

Key environmental factor	Activities that could affect the factor	Applicable MNES and MSES
	<ul style="list-style-type: none"> Additional access to sensitive and restricts sites that may impact on Traditional Owner cultural values. 	

3. Legislative Requirements

Wangetti South Section is to comply with all legislative requirements with respect to Commonwealth, State (Queensland) and Local legislation and a summary of the statutory approvals associated with the project is outlined in Table 3-1 below.

Table 3-1 Statutory approvals associated with Wangetti South

Legislation and Approval Type	Relevance to the project area
<i>Environment Protection and Biodiversity Conservation Act 1999</i> DAWE Referral	Wangetti South is considered to involve undertaking an action which has, will have, or is likely to have, an impact on a MNES. Therefore, project has been referred and is a controlled action that requires approval (reference EPBC 2020/8722).
Wet Tropics Management Plan 1998 <i>Wet Tropics Permit</i> Wet Tropics Management Authority (WTMA)	Wangetti South Section is located within the Wet Tropics World Heritage Area. The project has been approved (Wet Tropics Permit No: WTMA20001a) and a permit issued under Part 4, Division 1, Section 45 of the Wet Tropics Management Plan 1998 (<i>Wet Tropics World Heritage Protection Management Act 1993</i>) to allow for the proposed works to occur within the Wet Tropics Management Zone.
<i>Nature Conservation Act 1992</i> Authority required to construct trail and public camping areas under s34 of the NC Act.	Subject to s34 of the NC Act, a lease, agreement, license, permit or other authority over, or in relation to land in a protected area may be granted if the activity is consistent with the management principles for the areal and, if a management plan has been approved for the area, the management plan. The grant of an authority will be considered by the Chief Executive of the Department of Environment and Science (DES) for the construction of Wangetti Trail and public camping areas in the protected area estate.
<i>Nature Conservation Act 1992</i> Protected plant clearing permit	Where the alignment intersects a flora survey trigger area, a protected plant clearing permit or exemption notice will be required.
Species management program (SMP) under the <i>Nature Conservation Act 1992</i>	Given the number of protected fauna species located within the project area, a SMP may be required to allow for tampering in breeding areas. Breeding habitat is to be avoided for endangered, vulnerable species.
<i>Native Title Act 1993</i> ILUA or notification procedures	TDPD has been conducting meaningful engagement with Traditional Owners who have a native title claim or assert a native title interest in relation to trail area as outlined in Section 1.7 to address native title requirements for the project. ILUAs will be negotiated between native title parties and the State accordingly.

Legislation and Approval Type	Relevance to the project area
Under the <i>Aboriginal Cultural Heritage Act 2003</i> (ACH Act) a Cultural Heritage Management Agreement (CHMA) or similar may need to be established with the relevant Aboriginal parties	<p>TDPD has been conducting meaningful engagement with Traditional Owners who have interests in relation to trail area to address cultural heritage requirements under the ACH Act for the project.</p> <p>Archaeological reporting, including a Cultural Heritage Management Plan between the proponent and the Traditional Owners outlining how the project will be managed to avoid or minimise harm to Aboriginal cultural heritage (to the extent that harm cannot reasonably be avoided) will be negotiated before works commence</p> <p>The Department of Aboriginal and Torres Strait Islander Partnerships' (DATSIP) Duty of Care Guidelines are required to be followed to assist in conducting due diligence.</p>
Under the <i>Planning Act 2016</i> and Planning Regulation 2017 a Material Change of Use development permit assessable under the Douglas Shire Council planning scheme and a Material Change of Use development permit assessable under the Cairns Regional Council Planning Scheme	<p>A material change of use development permit application will be required for Wangetti South to establish the use within the project area.</p> <p>Pre-lodgement meetings have been undertaken with the former Department of State Development, Manufacturing, Infrastructure and Planning (referred to now as Department of State Development, Infrastructure, Local Government and Planning (DSDILGP), Douglas Shire Council, Cairns Regional Council, DES, former Department of Natural Resources Energy and Mines (referred now as DR), Department of Agriculture and Fisheries (DAF) and Department of Transport and Main Roads (DTMR).</p>
Under the Planning Regulation 2017 and <i>Vegetation Management Act 1999</i> (VM Act) an Operational works development approval for clearing of native vegetation	<p>Wangetti South does not trigger operational work involving clearing native vegetation under Schedule 10, Part 3, Division 4, Table 1, Item 1 under the <i>Planning Regulation 2017</i>, as the proposed works is considered to meet the definition of government supported transport infrastructure and is therefore exempt from the clearing of remnant Category B, Category C and Category R vegetation.</p>
Under the Planning Regulation 2017 and <i>Fisheries Act 1994</i> Development Permit for operational works for constructing/raising waterway barrier works Compliance with Accepted development requirements for operational work that is constructing or raising waterway barrier works and	<p>Boulder rock crossing will trigger a development permit for operational works waterway barrier works where the work does not comply with DAF's accepted development requirements.</p> <p>Bed level crossings associated with the project are considered to meet the accepted development requirements for operational work that is constructing or raising waterway barrier works' and riverine protection permit exemption requirements WSS/2013/726.</p>

Legislation and Approval Type	Relevance to the project area
<i>Water Act 2000</i> Riverine Protection Permit Exemption Requirements.	
Under the Planning Regulation and <i>Coastal Protection and Management Act 1995</i> . Development permit for operational works for interfering with quarry material on state coastal land above the high-water mark within a Coastal Management District	Parts of the project area are proposed within mapped coastal management district and therefore the proposed works would trigger a development permit for operational works for interfering with quarry material on state coastal land above the high-water mark within the coastal management district under Schedule 10 of the <i>Planning Regulation 2017</i> .
Under the <i>Land Act 1994</i> land owners consent for works on State Land	Land owner's consent is required from DR for work on state land to support material change of use development application.
Riverine protection permit (RPP) under the <i>Water Act 2000</i>	<p>There are a number of DR mapped watercourses along the proposed alignment. Bed level crossings are considered to meet the RPP exemption requirements WSS/2013/726.</p> <p>TDPD is an entity under schedule 2 of the RPP Exemption Requirements and therefore can follow the RPP exemption requirements WSS/2013/726 for any works proposed in a watercourse.</p> <p>Proposed works will be required to work within the vegetation clearing limit and excavation and placement of fill limit requirements.</p> <p>Where works result in the clearing of less than 0.5 ha of least concern regional ecosystem in a category B, C, R or X or carried out under an accepted development vegetation clearing code (other than if the vegetation is in a category A area), then the exemption requirements apply.</p> <p>Where works result in the excavation of 500 cubic metres or less, then the exemption requirements apply.</p> <p>Where works result in the placement of less than 150 cubic metres of fill, then the exemption requirements apply.</p>
Road corridor permit under the <i>Transport Infrastructure Act 1994</i> (TI Act)	Part of the project area is located within State controlled road reserve namely Captain Cook Highway which is managed by DTMR. Works within a state-controlled road reserve triggers a road corridor permit from DTMR.
Under the <i>Land Act 1994</i> Permanent closure or short-term occupation within road reserves	Permanent road closures or short-term occupation and construction within road reserves (excluding state-controlled roads) will be required during the construction phase of the project.

Legislation and Approval Type	Relevance to the project area
General Biosecurity Obligation (GBO) under the <i>Biosecurity Act 2014</i>	During the construction and operation phase of the project, activities are to be undertaken in accordance with the GBOs whereby all reasonable and practical measures are to be undertaken to prevent or minimise biosecurity risks. The Act identifies seven categories of restricted matters. Where activities are proposed contrary to the restriction for each category under the Act, a Restricted Matter Permit is required.
General Environmental Duty under the <i>Environmental Protection Act 1994</i> (EP Act)	Under the provisions of the EP Act, all persons, whether undertaking an activity authorised under the EP Act, are required to comply with the General Environmental Duty. The duty requires that <i>'A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.'</i> This is applicable to all phases of the project.
Environmental offset requirements under the <i>Environmental Offsets Act 2014</i> <i>Commonwealth offsets policy (DSEWPC, 2012)</i>	DES has advised that state environmental offsets will be triggered for the project which will be administered under s34 and s35 of the NC Act. EPBC Act offsets are proposed in relation to impacts on the southern cassowary.

3.1 Wet Tropics Management Plan 1998

The project has been approved (Wet Tropics Permit No: WTMA20001a) and a permit issued under Part 4, Division 1, Section 45 of the Wet Tropics Management Plan 1998 (3 July 2017) (*Wet Tropics World Heritage Protection Management Act 1993*) to allow for the proposed works to occur within the Wet Tropics Management Zone. While the project was assessed in accordance with the 1998 plan, the project is considered to comply with the intent of the Wet Tropics Management Plan 2020.

An assessment has been undertaken against the provisions of the Wet Tropics Management Plan 1998 and is presented in Table 3-2.

Table 3-2 Assessment against the provisions of the Wet Tropics Management Plan 1998 (3 July 2017 version)

Wet Tropics Management Plan 1998 (3 July 2017 version)	Response
<p>Zone B – Zone B is comprised of land that is mostly of high integrity but not necessarily remote from disturbance.</p> <p>It is intended that, in Zone B, land be undergoing recovery or rehabilitation towards its natural state or becoming remote from disturbance by activities associated with modern</p>	<p>The majority of the project is located within Zone B under the Wet Tropics Management Plan 1998.</p> <p>The proposed trail is considered to meet the intent of Zone B by providing opportunities to connect with nature and to be surrounded by nature along the trail. The trail will allow for winding around natural obstacles and integrating within the natural environment. Vegetation disruption, including canopy cover, is minimised.</p>

Wet Tropics Management Plan 1998 (3 July 2017 version)	Response
<p>technological society; and a visitor may expect opportunities for solitude in a natural area requiring a degree of self-reliance; and management presence be limited mainly to activities required for the recovery or rehabilitation of the area.</p>	<p>The Wangetti South Section has been designed to minimise built structures like bridges, boardwalks and viewing platforms. These built structures pose a number of challenges:</p> <ul style="list-style-type: none"> • They are normally constructed from imported materials and can be intrusive in the natural environment • They can burn during bushfires or prescribed burns
<p>The management purpose of Zone B is, to the greatest possible extent—</p> <ol style="list-style-type: none"> To protect and enhance the integrity of land in the zone If the land is disturbed— <ol style="list-style-type: none"> To restore land in the zone to its natural state, as opportunities arise To include the land in zone A once it is sufficiently recovered or rehabilitated. 	<ul style="list-style-type: none"> • They can be difficult to construct in remote areas, due to the challenges of importing the materials • They increase the maintenance burden. <p>Where built structures are required, the design and finish will prioritise the use of local timbers and other materials that will age gracefully with time. Above all, the materials must be durable enough to withstand the harsh tropical climate and natural environment. Any built structures must be designed and engineered to be fit-for-purpose, to have minimal impact to the surrounding environment, to have minimal maintenance requirements and will need to take a minimalistic approach to materials given the remote nature of the trail, resulting in a minimal impact on the scenic beauty of the Wet tropics.</p>
<p>Zone C – Zone C is comprised of land on which, or adjacent to which, there is disturbance associated with community services infrastructure.</p> <p>It is intended that, in Zone C—</p> <ol style="list-style-type: none"> Land be mostly natural, but with some disturbance associated with community services infrastructure (community services infrastructure means infrastructure for community services such as, for example, transport services, electricity supply, water supply and telecommunications services), other community facilities and visitor facilities A visitor may expect various low-key opportunities for nature appreciation and social interaction in a natural setting, but with some 	<p>Where the trail is located within Zone C land, it is considered to meet the intent of Zone C areas, being, land be mostly natural, but with some disturbance associated with community services infrastructure.</p> <p>The Wangetti South Section has been designed to minimise built structures like bridges, boardwalks and viewing platforms. These built structures pose a number of challenges:</p> <ul style="list-style-type: none"> • They are normally constructed from imported materials and can be intrusive in the natural environment • They can burn during bushfires or prescribed burns • They can be difficult to construct in remote areas, due to the challenges of importing the materials • They increase the maintenance burden. <p>Where built structures are required, the design and finish will prioritise the use of local timbers and other materials that will age gracefully with time. Above all, the materials must be durable enough to withstand the harsh tropical climate and natural environment. Any built structures must be designed and engineered to be fit-for-purpose, to have minimal impact to the surrounding environment, to have minimal maintenance requirements and will need to take a</p>

Wet Tropics Management Plan 1998 (3 July 2017 version)	Response
<p>disturbance by activities associated with modern technological society</p> <p>e. Management presence may be obvious.</p>	<p>minimalistic approach to materials given the remote nature of the trail, resulting in a minimal impact on the scenic beauty of the Wet tropics.</p>
<p>The management purpose of Zone C is—</p> <p>f. To accommodate community services infrastructure, other community facilities and visitor facilities; but (b) to the greatest possible extent—</p> <p>(i) To ensure any adverse impact of activities carried out in the zone on the area's integrity is minimal and acceptable under this plan</p> <p>(ii) To otherwise protect and enhance the integrity of land in the zone.</p>	

3.2 Wet Tropics Strategic Plan 2020 – 2030

The Wet Tropics Strategic Plan 2020 - 2030 provides a 10-year policy framework to guide decision-making under the *Wet Tropics World Heritage Protection and Management Act 1993*. The primary purpose of the Wet Tropics Strategic Plan 2020 - 2030 is to enable the identification, protection, and conservation of the Wet Tropics for future generations. It states the desired outcomes that will be delivered and outlines the actions that will achieve this. An assessment has been undertaken against the provisions of the Wet Tropics Strategic Plan 2020–2030 with respect to Wangetti South Section and is outlined in Table 3-3.

Table 3-3 Assessment against the provisions of the Wet Tropics Strategic Plan 2020 – 2030

Wet Tropics Strategic Plan 2020 – 2030	Response
<p>1. Climate change and other threats</p> <p>Respond to the impacts of climate change and priority cross-tenure threats to the area</p>	<p>With respect to the production of greenhouse gases as a result of machinery use, selection of machinery is to be fit-for-purpose and low emission, wherever possible.</p> <p>Construction mitigation measures will be required to be incorporated into the contractor's CEMP. The contractor is also required to comply with the general environmental duty under the EP Act and Environmental Protection (Air) Policy 2008, as well as appropriate provisions under the contract documentation.</p>
<p>2. Support Rainforest Aboriginal Peoples</p>	<p>During the development of the trail, cultural heritage representatives were engaged to provide advice regarding the</p>

Wet Tropics Strategic Plan 2020 – 2030	Response
Promote and incorporate the rights, interests and aspirations of Rainforest Aboriginal Peoples in the management of the area.	<p>significant Aboriginal areas, significant Aboriginal objects and or evidence, of archaeological or historic significance along the trail.</p> <p>As part of the Project, TDPD has been engaging with Traditional Owners regarding the proposed works and to avoid impacts on cultural heritage values.</p>
<p>3. Involve the community</p> <p>Optimise community participation and connection with the area through innovative interpretation, with a focus on education, volunteering and social inclusion.</p>	<p>The Wangetti South Section experience will be uniquely Australian, emphasising the culture, history and way of life of the Traditional Owners, the Yirrganydji people. It will encourage a sense of exploration and a spirit of adventure. It will foster an appreciation of the natural environment and the diversity of flora and fauna within it.</p> <p>The Project will provide economic, cultural and educational benefits to the community, as summarised below.</p> <p><i>Economic</i></p>
<p>4. World-class tourism and recreation</p> <p>Enhance the World Heritage presentation and support opportunities for natural and cultural tourism and recreation</p>	<p>Wangetti South Section has the potential to diversify the tourism product offering in North Queensland, involve Traditional Owners and increase jobs by utilising Queensland's natural assets. The construction phase of the Project will provide an opportunity for the creation of local jobs and employment through the sourcing of material and equipment or through manual labour, while the operational phase of the Project will increase visitors to the area, supporting the local economies of Cairns, Wangetti and Port Douglas.</p> <p>The Wangetti South Section will provide access to a World Heritage listed assets –the WTWHA, which will create value for money experiences for tourists and provide opportunities for tourism operators to extend their offerings and capture markets that are seeking access to unique nature-based experiences (PWC, 2018).</p> <p><i>Cultural and spiritual</i></p> <p>The Wangetti South Section supports a healthy wellbeing and lifestyle by encouraging the physical, mental, and spiritual activity of participants. Contact with nature can enhance spiritual health, which underpins all other aspects of health (PWC, 2018).</p> <p><i>Educational</i></p> <p>The Wangetti South Section will create several educational opportunities, including the community, schools and universities to increase their knowledge and understanding around wildlife and conservation in WTWHA, with the opportunity to develop education programs to help teach and upskill students (PWC, 2018).</p>
<p>5. Minimise impacts</p> <p>Manage activities that may have been an impact on the area appropriately</p>	<p>Wangetti South Section has received a WTMA permit and therefore will be undertaken in accordance with Strategy 5 of the Wet Tropics Strategic Plan 2020 - 2030.</p>

Wet Tropics Strategic Plan 2020 – 2030	Response
through permit and zoning system.	

4. Roles and Responsibilities

To achieve the overall objective of sound environmental management throughout construction and operation of Wangetti South Section, with the least possible impact on the environment, a clear implementation and management structure is required.

The following section provides an overview of the minimum implementation structure for the project relating to environmental responsibilities. Specific roles and responsibilities shall be included in duty statements.

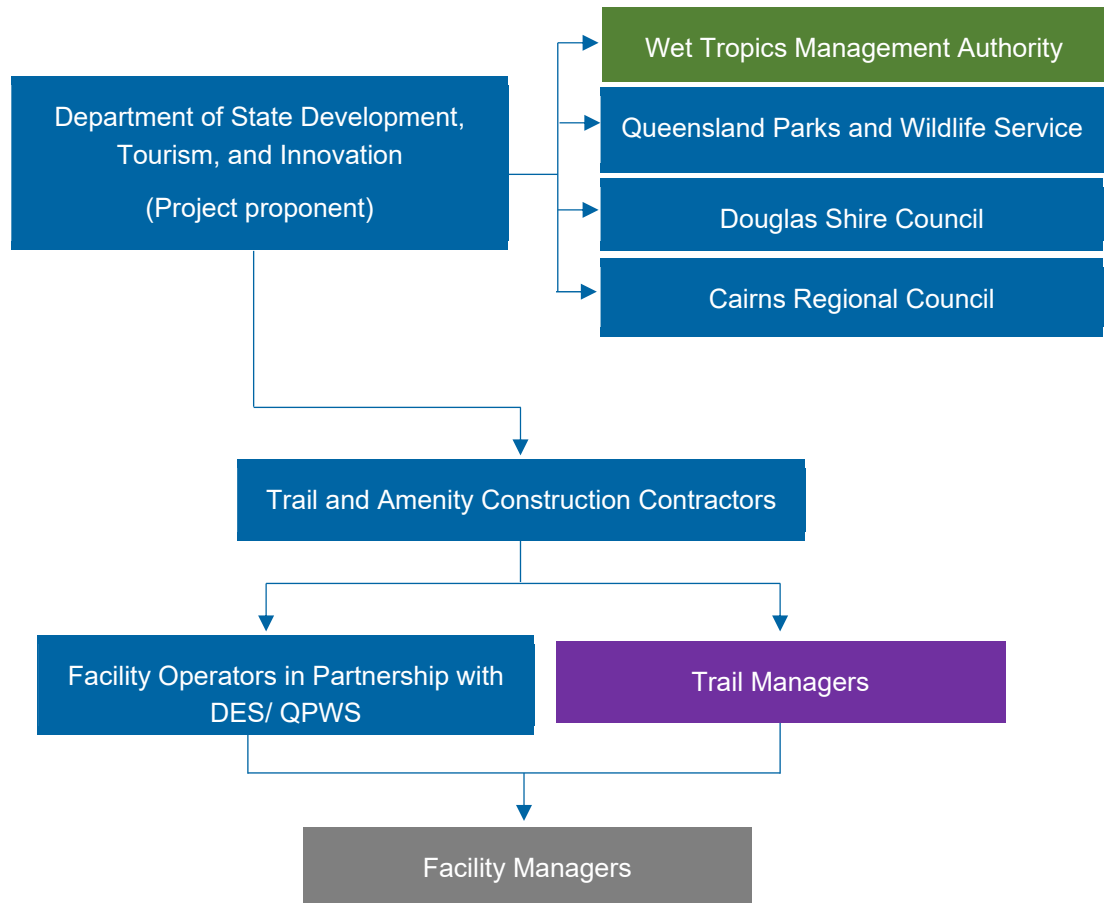


Figure 4-1 Project organisation chart

4.1.1 Site responsibilities

4.1.1.1 All personnel

All personnel associated with the planning, design, construction and operation of the trail are responsible for ensuring that they comply with this EMP, the General Environmental Duty (GED) and Duty to Notify in accordance with the EP Act (as detailed below).

General Environmental Duty

Section 319 of the EP Act states that every person has a GED. This GED requires that a person must not carry out an activity that causes or is likely to cause environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm. In deciding measures to be undertaken to fulfil the GED the following must be considered:

- The nature of the harm or potential harm
- The sensitivity of the receiving environment

- The current state of technical knowledge for the activity
- The likelihood of successful application of the different measures that might be taken
- The financial implications of the different measures as they would relate to the type of activity.

Compliance with the GED is a defence to offences related to causing unlawful environmental harm. If defendants can show that the harm happened while a lawful activity apart from the EP Act was being carried out and they fulfilled their GED, then they cannot be found guilty of causing unlawful environmental harm.

Duty to Notify

Section 320 of the EP Act requires that on becoming aware of serious or material environmental harm being caused by an activity that they are involved in, a person has a duty to report that harm, unless the harm is authorised by the Administering Authority (i.e. is undertaken in accordance with an approval or condition of a permit/licence). This is the duty to notify environmental harm. Failure to fulfil this duty is an offence and can lead to prosecution.

4.1.1.2 Department of State Development, Tourism and Innovation

Responsibilities of DSDTI as project proponent are as follows:

- Ensuring sufficient resources are available to implement EMP
- Ensure that all relevant licenses/permits/approvals are in place prior to any works being undertaken (if required)
- Ensure that key personnel are familiar with the EMP and are aware of their environmental responsibilities
- Ensure that all personnel operate in accordance with the EMP, statutory approvals and legislative requirements
- Ensure that the EMP is updated with conditions of approvals, permits and licences
- Communicating with all role players in the interests of a co-ordinated effort to protect the environment
- Ensure all preconstruction activities such as preclearance surveys are complete prior to construction (clearing commencing)
- Monitor and review (where required) environmental performance during construction of the project.

4.1.1.3 Construction contractor and trail builder

Contractor responsibilities are as follows:

- Implementation of the CEMP
- Implement the Weed, Pest and Disease Management Plan during construction (as per procedures outlined in Appendix E)
- Implementation of the Erosion and Sediment Control Plan during construction (ESCP)
- Implementation of the rehabilitation plan
- Implementation of the Pre-clearance Survey Methodology
- Implementation of the Cassowary Management Plan.

4.1.1.4 Trail Manager

Trail Manager responsibilities are as follows:

- Trail maintenance
- Repairs to damaged infrastructure (bridges, watercourse crossings, etc.) following adverse weather events
- Litter control along the trail
- Weed and pest management along the trail in the operation phase
- Erosion and sediment control during the operation phase.

4.1.1.5 Facility Operator in Partnership with DES/ QPWS/Local councils

Facility operators' responsibilities are as follows:

- Management of camp site facilities
- Management of trail head facilities
- Management of service tracks
- Ensure necessary guidance and advice is provided to all personnel with regard to environmental management requirements
- Ensure staff are appropriately qualified and trained regarding the requirements and responsibilities of the EMP.

5. Project Phases

5.1 Planning and Design Phase

Upon appointment of a contractor onsite they will be responsible for the Planning and Design Phase. This phase includes pre-clearance surveys, trail routing but does not include site clearance.

In keeping with the low impact, ecofriendly, ecotourism nature of the development activity the following principles have been considered during the planning and design phase of the project:

- Minimal vegetation clearance is to be encouraged across the entire development footprint
- Pre-clearance surveys are to be undertaken prior to any vegetation clearing
- The construction contractor's appropriately qualified person (ecologist/botanists) to undertake the preclearance survey and fauna spotter catcher activities
- Trail routing must take place along the alignment of least disturbance
- Trail watercourse crossing points should be sited where there is minimal disturbance to stream banks and riparian vegetation and preferably over exposed bedrock
- Manual construction methods are to be encouraged over mechanised methods
- Only existing access roads are to be utilised, with no new access roads constructed
- Where feasible, amenities are to be designed with energy efficiency measures such as solar lighting, natural cooling, rainwater harvesting, etc.
- The use of flood lighting will be avoided
- An emphasis should be given to the use of locally available building materials, recycled material
- Colour tones matching the surrounding natural environment should be utilised on new infrastructure (eco-accommodation) to limit visual impacts
- Informative signage will be established to provide education around the heritage values of the WHA and encourage minimal impact behaviours from visitors.

5.2 Construction Phase

The Construction Phase includes all activities from site establishment by a contractor, site clearance, to practical completion of all built facilities and activities and typically ends when the final payment certificate has been processed.

The general construction methodology to be adopted by the contractor during the construction phase is discussed in Wangetti Trail Construction Methodology Manual April 2020 in Appendix G.

A detailed CEMP has been developed for Wangetti South Section and is provided in Appendix E. The contractor will be required to update and amend the CEMP based on adopted construction approaches and the outcomes of approvals and permits associated with Wangetti South Section.

5.2.1 Access arrangements

Access to the shared use trail can be achieved through a number of different options, depending on the location.

During the construction phase the project area can be accessed via the existing service tracks that connect to the Captain Cook Highway, as nominated in the Wangetti Trail Construction Methodology Manual April 2020 and shown in Appendix G. The service tracks will be closed to the public at all times during construction. Access will be blocked by regulatory signage will be provided. It is the contractor's responsibility to ensure the day-to-day maintenance of these barriers.

During the operational phase the project area operational staff can access via the service tracks that connect to the Captain Cook Highway, as shown in Appendix D. The service tracks will be closed to the public at all times. Access will be blocked by gates and signage will be provided.

Trail users including hikers and cyclists can access the shared use trail via the trail head at Ellis Beach.

5.3 Operation Phase

The operational phase commences once the project area has been handed over by the contractor to the proponent. It should be noted that should there be further construction activities taking place, post the construction phase, then the specifications of the construction phase will still apply.

During the operational phase, the shared use trail, service tracks and public camping node will be managed in accordance with the Queensland Parks and Wildlife Service (QPWS) Asset and Infrastructure Management Business Rules (AIM business rules), QPWS operational policies, procedural guides, guidelines, information sheets, technical manuals and checklists. These documents set out standards that Wangetti South Section will need to comply with and provide a structured approach to ensure appropriate environmental management measures and controls are implemented as part of the project.

The anticipated activities associated with the operational phase include:

- Shared use trail and Dark Jungle used by cyclists and hikers
- Trail head will be open to all, no bookings required
- Maintenance of the shared use trail including the trail head and associated infrastructure by maintenance staff
- Maintenance of Dark Jungle by maintenance staff
- Maintenance of service tracks by maintenance staff.

6. Training

6.1 Training, awareness and competence

All personnel involved in the construction and operational phases shall be required to attend a compulsory induction before commencing any work on site. This education requirement will be the responsibility of the contractor. The environmental component of the induction shall include (but not be limited to) the following items:

- Guidance on the significance and sensitivity of environmental features along the Wangetti Trail
- Individual's and organisation's environmental obligations under relevant environmental legislation
- The potential environmental impacts of construction (where relevant)
- Controls and procedures to prevent impacts
- All staff shall be made aware of their GED and Duty to Notify responsibilities as per the EP Act and the implications of failing to fulfil these duties
- All staff shall be made aware of their environmental responsibilities under the CEMP and EMP in relation to implementing mitigation measures, reporting environmental incidents and complaints and implementing corrective actions
- All staff shall be made aware of their environmental responsibilities under the CEMP and EMP in relation to contaminated land, including identification of potentially contaminated land and procedures for working with potentially contaminated land
- All staff shall be given instructions on environmental emergency response procedures (i.e. firefighting, snake bite, spill kit locations and usage).

The environmental induction training should be developed prior to construction commencing and operational activities occurring.

6.1.1 Training register

A register of all environmental training delivered during the course of the construction and operation phases of the Project, (including inductions and toolbox talks), will be maintained for the duration specified by any environmental approvals. The register will be maintained to record training attendance and currency of training for each staff, contractor and visitor.

7. Monitoring and environmental inspections

7.1 Construction phase

The contractor will be required to develop an environment monitoring plan and schedule to be approved by the proponent for the construction phase of Wangetti South Section and to include the monitoring requirements as outlined in the EMP, CEMP, TMP, CESSCP, WPDMP and CMP.

7.2 Operational phase

The contractor will be required to develop an environment monitoring plan and schedule to be approved by TDPD for the operational phase of Wangetti South Section. Monitoring plan and schedule to consider the following environmental matters:

- Biodiversity (fauna)
- Biodiversity (flora)
- Biosecurity
- Soil and land management:
 - erosion and sediment control; and
 - chemical and fuel management)
- Public amenity and health:
 - bushfire
 - noise and vibration
 - air quality
 - hazards, health, safety and
 - roads and traffic
- Cultural heritage
- Water management
- Waste management.

It is the responsibility of TDPD to continually monitor the performance of the Contractor in accordance with the specifications contained in this Environmental Management Plan (EMP).

8. Documentation, document control and records

The contractor and the TDPD will ensure that an adequate document control system is in place to ensure that only current documentation is in use.

Records collected as part of environmental management activities will be retained by the Contractor and the TDPD for the legally required period of time. Environmental records include but may not be limited to:

- Site inspection checklists
- Environmental audit reports
- Training records
- Monitoring data
- Complaints and associated records of communication
- Meeting minutes.

During construction phase the Contractor will make these records available to the TDPD or any relevant authorities and their representatives on request. During the operational phase, the Proponent will make these records available to any relevant authorities and their representatives on request and where justified and in accordance with legislation.

9. Audit

9.1 Construction Phase

During construction activities, the Contractor will be responsible for complying with the relevant provisions as set out in this EMP and sub-plans.

All inspection and compliance reports of environmental performance will be stored in an electronic database that is used to enable corrective actions identified during the inspection/auditing process to be recorded, tracked and closed out. The information will be made available to the relevant regulatory authorities as required.

9.2 Operational Phase

During the operational phase, monitoring and maintenance of the trail and camping site will be managed in accordance with each land management agencies policies and procedures.

10. Review

During the construction phase and operational phase TDPD will regularly review and (if necessary) update the EMP and associated sub-plans. The review will take into account the following:

- Changes in legislative requirements (including conditions of approvals)
- Environmental performance, findings of environmental audits and inspections
- Outcomes of agency consultation
- Outcomes of consultation with communities and resolution of complaints
- Changes in external and internal policies, standards and guidelines.

The review will ensure the continuing suitability, adequacy, and effectiveness of the EMP. The review will include assessing opportunities for improvement.

11. Emergency, incidents and complaints

Emergency and incident responses will vary depending on the nature of the incident.

TDPD will be verbally notified of an incident on the day it occurs and as soon as practicable of the responsible person becoming aware of the incident, and in writing within 24 hours.

All notifications to authorities including but not limited to WTMA, DES, QPWS, State emergency services (police/fire/ambulance) and DTMR will be undertaken by TDPD.

The Contractor will be required to provide an Emergency Response Plan and for this plan to be thoroughly communicated to all staff members in the Construction Induction. The Emergency Response Plan should identify evacuation routes, mustering points, communication protocols and provide key contact details for local authorities and services. It should be compatible with the internal emergency response protocols of the various land managers.

When reporting environmental incidents to TDPD, the following information is to be provided:

- The name and contact details of the reporting person
- The date and time the environmental incident occurred
- The activity that was being undertaken when the incident occurred
- How the incident occurred
- Any containment measures put in place to reduce or contain environmental harm
- An assessment of the amount of environmental harm that occurred
- If any other stakeholders are aware of the incident.

Environmental incidents and corrective actions have been identified in the following subplans:

Sections 6.2 and 6.3 of the CЕССР (refer to Appendix A).

Section 5.2 of the CMP (refer to Appendix B).

Section 5.3.5 of WPDMP (refer to Appendix C).

Section 4 of the TMP (refer to Appendix D).

Section 4 of the CEMP (refer to Appendix E).

However, pro-active environmental risk management measures should be undertaken wherever possible, if events such as extreme rainfall or flooding are forecast. Some examples of environmental risk responses are provided in Table 11-1 below.

Table 11-1 Example environmental incidents and mitigation and reporting requirements

Incident	Mitigation Measures	Report
Failure of erosion and sediment control devices following rainfall event or flooding	Re-instatement of ESC devices	Report to TDPD
Identification of cultural heritage aspects during excavation	Cease operations and follow cultural heritage reporting procedure	Report to TDPD
Injury to fauna during site works	Following notification procedure.	Report to TDPD

Incident	Mitigation Measures	Report
Damage to vegetation	Cease operations in the vicinity of impacted vegetation. Attempt to stabilise area and engage project botanist.	Report to TDPD

The contractor during the construction phase to develop an emergencies, incidents and complaints protocols and reporting documentation to be agreed by TDPD.

The contractor during the operational phase to develop an emergencies, incidents and complaints protocols and reporting documentation to be agreed by TDPD.

12. Environmental Management Subplans

The following documents outlines the avoidance, mitigation and management measures that must be abided by during and after the project.

12.1 Concept Erosion and Sediment Control Plan

Refer to Appendix A.

12.2 Cassowary Management Plan

Refer to Appendix B.

12.3 Preliminary Weed, Pest and Disease Management Plan

Refer to Appendix C.

12.4 Preliminary Traffic Management Plan

Refer to Appendix D.

12.5 Preliminary Construction Environmental Management Plan

Refer to Appendix E.

12.6 Matters of National Environmental Significance flora pre-clearance survey methodology

Refer to Appendix F.

13. References

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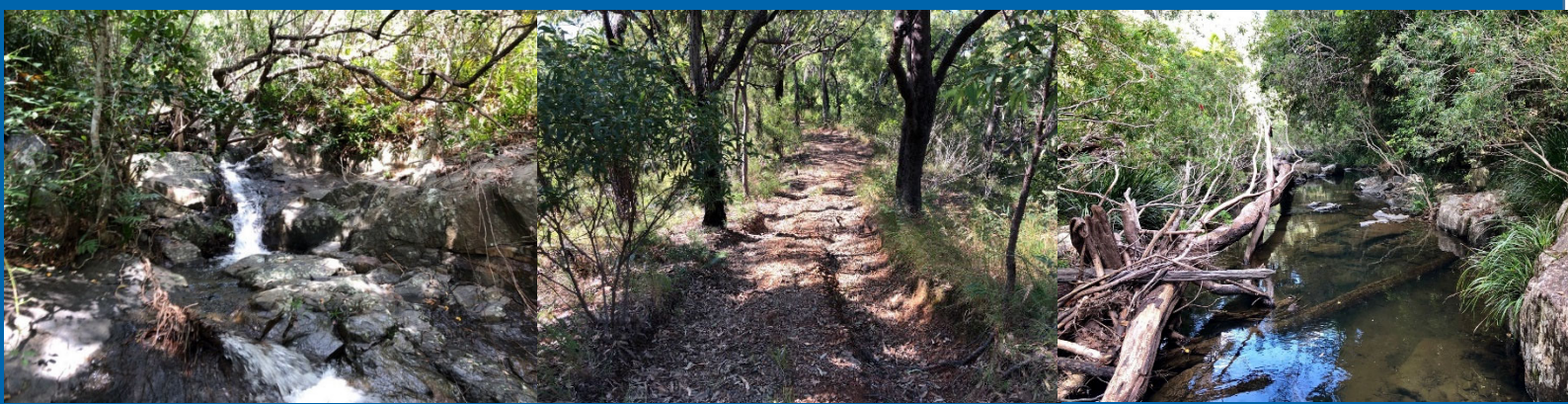
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Appendices

Appendix A – Concept Erosion and Sediment Control Plan



Department of State Development, Tourism and Innovation

Wangetti Trail South Section (Wangetti to Palm Cove)

Concept Erosion and Sediment Control Plan

December 2020

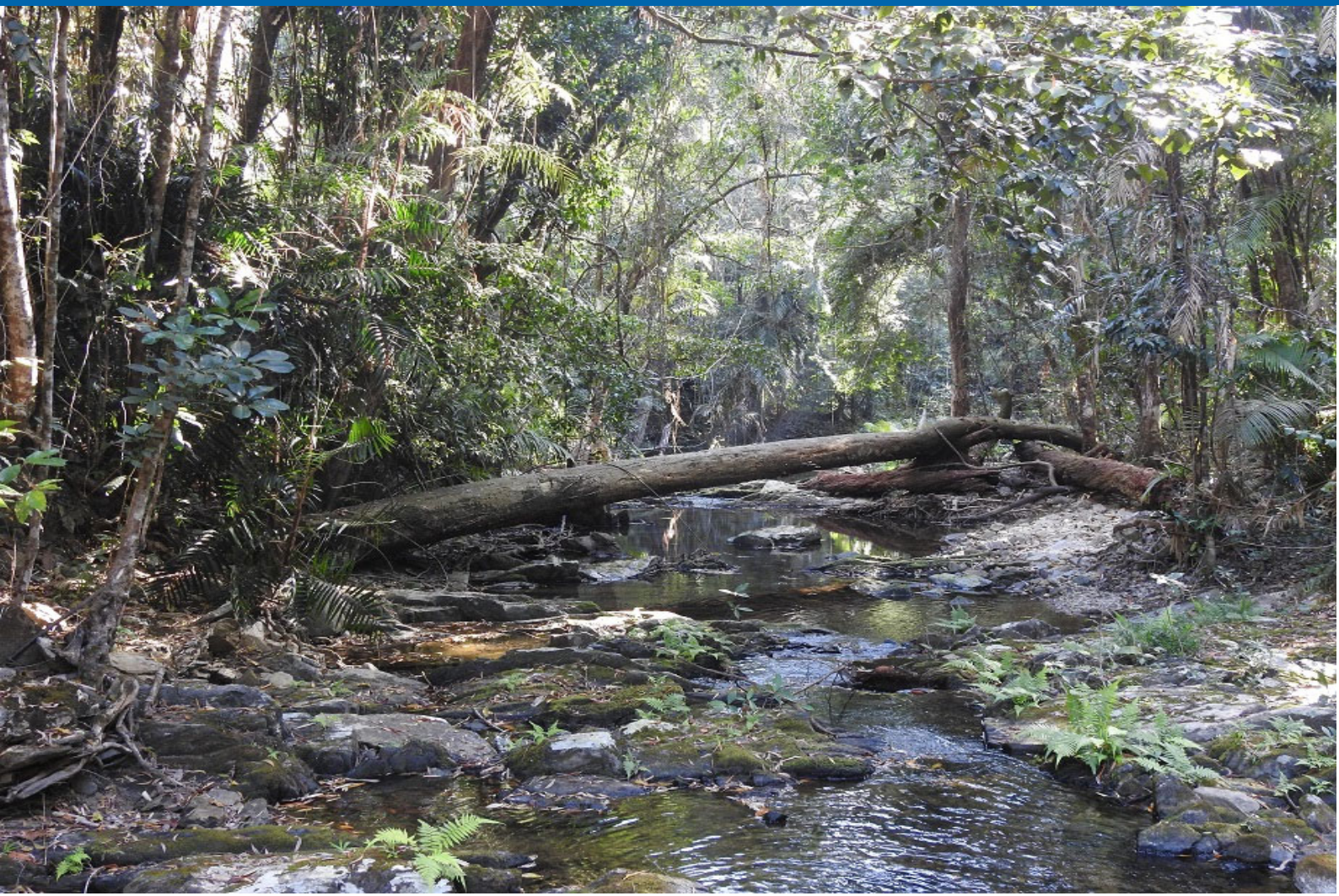


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- Appendix A – Erosion hazard assessment
- Appendix B – Sediment and drainage control standard drawings
- Appendix C – Inspection checklist template

1. Introduction

1.1 Project background

The Department of State Development, Tourism and Innovation (DSDTI) – Tourism Development Projects Division (TDPD) is proposing to establish the Wangetti Trail – Wangetti South ('Project') Section, a 29.7 kilometre (km) shared use trail to accommodate both mountain bike users and hikers from the southern boundary Lot 2 SP309094 in the township of Wangetti, to Palm Cove.

Development of a Concept Erosion and Sediment Control Plan ('CESCP' or 'Report') is required to support environmental approval applications for proposed works associated with the Project and to demonstrate to the regulatory authorities how erosion and sediment will be managed during the construction phase of the project.

This CESCP has been developed in general accordance with International Erosion Control Association's (IECA) Best Practice Erosion and Sediment Control Guidelines (2008), and the scope of services described below in Section 1.3.

1.2 Purpose of this report

This CESCP provides preliminary guidance to establish appropriate site erosion and sediment control (ESC) management measures to reduce potential adverse impacts during the construction phase of the Project. It is expected that prior to any construction activity for the Project, a detailed work specific Erosion and Sediment Control Plan (ESCP) will be developed by the Contractor as part of the Construction Environmental Management Plan (CEMP). The Contractor will review the preliminary guidance provided in this Report and provide greater detail based on construction methodology, geotechnical conditions, and timing of works.

This CESCP does not prescribe or locate any permanent or temporary erosion or sediment control measures in detail, but provides indicative locations for erosion and sediment control devices as one measure of meeting the Contractor's responsibilities.

During preparation of the ESCP, as a minimum, the Contractor will comply with the IECA guideline as outlined below:

- Ensure appropriate soil data is collected and site constraints identified
- Ensure appropriate consideration of erosion and sediment control requirements, site constraints and environmental issues occurs before, during and following the construction phase
- Identify and manage erosion hazards associated with any on-site land disturbance activity

1.3 Scope

As part of the scope of services for this Report, GHD provides preliminary ESC strategies in accordance with the standards outlined in the IECA 2008 guidelines. The following outcomes will be delivered in this Report:

- Identification of disturbed areas throughout the project site, where applicable
- Identification, and indicative location, of a range of suitable control types that could be adopted for each disturbed area
- Preliminary guidance on erosion and sediment control measures.

1.4 Relevant guidelines and legislation

Erosion and sediment controls will be established to comply with the relevant legislative requirements outlined below, as well as the *Best Practice Erosion and Sediment Control*, International Erosion Control Association (Australasia) (IECA 2008).

1.4.1 Environmental Protection Act 1994

All persons have a legal duty under the *Environmental Protection Act 1994* section 319 to take all reasonable and practicable measures to minimise or prevent environmental harm. Such harm can be caused if sediment from construction sites enters (washes, blows, falls or otherwise) into stormwater drains, roadside gutters or waterways. Under section 443 of the *Environmental Protection Act 1994* a person must not cause or allow a contaminant to be placed in a position where it could reasonably be expected to cause serious or material environmental harm or environmental nuisance (e.g. placing a stockpile adjacent to a waterway).

In addition, people who are in positions of management in a corporation have an additional duty under the *Environmental Protection Act 1994* to ensure that their corporation complies with the Act. This means supervisors need to take reasonable and practicable steps to ensure that the people under their control do not breach environmental laws.

People who become aware of environmental harm in association with their work (e.g. significant loss of sediment from their site works into a watercourse) have a legal duty under the *Environmental Protection Act 1994* to notify the Department of Environment and Science (DES).

1.4.2 Environmental Protection Policy (Water and Wetland Biodiversity) 2019

This policy sits under the *Environmental Protection Act 1994*. The *Environmental Protection Policy (Water and Wetland Biodiversity) 2019* provides environmental values and water quality objectives for Queensland waters. These are utilised when determining environmental harm and to inform other statutory and non-statutory decisions. The water quality objectives assist in identifying whether the environmental values are protected. These values and objectives will be utilised when determining risk of environmental harm from water releases or runoff, and appropriate erosion and sediment controls implemented.

1.4.3 Planning Act 2016

The *Planning Act 2016* is the mechanism for assessing all developments within Queensland. This act establishes the process for sustainable planning and development assessment in an ecologically sustainable way.

1.5 Limitations

This Report has been prepared by GHD for Department of State Development, Tourism and Innovation and may only be used and relied on by Department of State Development, Tourism and Innovation for the purpose agreed between GHD and the Department of State Development, Tourism and Innovation as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Department of State Development, Tourism and Innovation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Department of State Development, Tourism and Innovation and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Site description

2.1 Location

The Project is located between Wangetti Township and Palm Cove in North Queensland. The Project is located within the Douglas Shire Council and Cairns Regional Council local government areas.

The shared use trail within the Project extends 29.7 km and is constrained by the Coral Sea to the east and the Macalister Ranges to the West, and is almost entirely located within the Macalister Range National Parks and the Wet Tropics World Heritage Area (WTWHA), as identified on Figure 2-1 below.

2.2 Proposed works

The Project will comprise of the following components, which are discussed in further detail in the following sections:

- Construction of a shared use trail and formalisation of existing access tracks into service tracks, including various design features
- Construction of waterway crossings
- Construction of a public camping node and amenities block.

2.2.1 Trail and service track alignment

The Project will comprise of a 29.7 km shared use trail to accommodate both mountain bike users and hikers, consisting of natural ground and surface treatments, which will be a maximum of 1.5 m wide. The 1.5 m wide trail will be located within a 40 m survey corridor, referred to as the construction allowance corridor, to allow flexibility for the placement of infrastructure during the construction phase. The temporary disturbance area for the trail is defined as 2.5 m (0.5 m either side of the 1.5 m permanent trail width). Trail benching will be the main construction technique to be used to construct the vast majority of the trail. The majority of earthworks will be undertaken by a mini excavator to construct the bench which becomes the tread of the trail. It is generally a balanced cut and fill process.

Vegetation clearing is anticipated to generally occur simultaneously with the construction of the trail, but around 50 to 100 m ahead of the bulk earthworks. Care will be taken to ensure no windrows or stockpiles of cleared vegetation are created. Cleared vegetation will be scattered into the surrounding environment, without smothering existing vegetation.

Existing access tracks will be formalised into service tracks to provide restricted access to the shared use trail and public camping node for construction, operational, maintenance and emergency purposes.

2.2.2 Waterway crossings

The proposed trail is anticipated to cross a number of waterways. Based on the specific waterway size, structure and other conditions, various waterway crossing designs are anticipated along the shared use trail, including:

- Rock armouring – used to prevent soil erosion and compaction, to provide traction for users, or to harden the trail surface in boggy areas. Rock armouring to be used in ephemeral waterways only, where habitat for protected aquatic fauna species is not present.

- Boulder crossings – used when the trail crosses a small ephemeral waterways and there are suitable large rocks or boulders available locally to construct a boulder waterway crossing. Boulder waterway crossings are used to facilitate safe crossing of small watercourses, keeping riders and hikers largely above the water. They are long lasting, relatively inexpensive, impervious to bushfire and maintain a natural appearance relative to their location and setting. Boulder crossings are to be used in ephemeral waterways only, where habitat for protected aquatic fauna species is not present.
- Low level bridges (minor water crossing) – used when the trail crosses a small permanent waterway and/or supports habitat for protected aquatic fauna species. The Project includes 53 single span bridges ranging from upwards of 8 metres in length. These bridges are not classified as waterway barrier works as they meet the requirements for accepted development including:
 - The abutments do not extend into the waterway beyond the high bank
 - The bank revetment works do not extend beyond the toe of the bank
 - No scour protection is placed on the bed of the waterway upstream, downstream or under the structure
 - The proposed bridges will span the full width of the waterway with no structures being proposed within the waterway.

The Contractor will be responsible for ultimately determining the appropriate location for rock armouring and boulder crossings, based on the findings collected as part of the pre-clearance survey during the Pre-Start Trail Review.

2.2.3 Public camping node and amenities block

A public camping node and amenities block (called the 'Dark Jungle'), encompassing a footprint of 0.25 hectares, will be established and comprised of:

- 10 x 4 m diameter elevated camping decks
- 1 x 2.5 m x 2.5 m toilet block
- One communal gathering area including bike racks, table and seating, cooking and bench area and shelter
- Interconnecting pathways, boardwalks and access tracks.

2.2.4 Design features

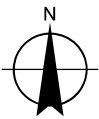
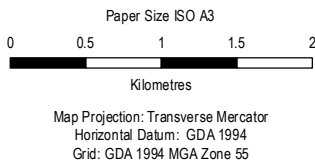
As part of the construction of the shared use trail, as outlined in the Wangetti Trail Construction Methodology (World Trail 2020), where appropriate and required various design features are proposed, which include the following:

- Grade reversals – points at which trail gradient changes from up to down (or down to up) as the trail moves across a side slope. Grade reversals push water off the trail at the low point of the grade reversal, preventing erosion. Grade reversals effectively divide the trail into short, individual watersheds, so the drainage characteristics of one section of trail won't affect any other section.
- Switchbacks – a 180° turn on a hillside, engineered for drainage. The upper approach is usually insloped and the lower approach is usually outsloped. The switchback turn reverses the direction of a trail, and is located on a relatively level, constructed landing.
- Rock walling – (up to 500 mm) smaller structures designed to restrain soil to a slope that it would not naturally keep to (typically a steep, near-vertical or vertical slope).

- Retaining walls – larger structures designed to restrain soil to a slope that it would not naturally keep to (typically a steep, near-vertical or vertical slope).
- Ballast surfacing – a two course surfacing treatment, used to raise and/or harden the surface of the trail. Ballast surfacing is used in high traffic areas, sunken or low-lying areas, wet or boggy areas, or areas requiring the passage of vehicles. Due to the high bulk material requirements, it is usually only used in areas where vehicle access is available nearby to import materials. For the Wangetti Trail, this treatment is proposed to treat sections of existing, eroded, sunken four-wheel drive tracks in the flat terrain immediately south of Wangetti. In this area, the trail comes very close to the Captain Cook Highway to skirt around a military firing range. This proximity to the highway provides good access for trucks.
- Pre-Cast concrete steps – used to climb up/down steep sections of trail on hikers only sections.
- Natural rock seats – used at rest locations to provide seating. Locally found rocks are used.



Based on or contains data provided by the State of QLD (DNRME) 2020. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.



DITID
Environment Assessment Stage 2 Wangetti Trail

Wangetti South Section
Project Locality Plan

Project No. 41-32458
Revision No. 5
Date 1/12/2020

FIGURE 2-1

2.3 Site topography

Largely, the Project alignment traverses the eastern slopes of the Macalister Ranges and intersects an array of different vegetation types, including rainforests and open woodland ecosystems. The landscape contains volcanic mountain ranges and a mix of permanent and semi-permanent waterways, with topography ranging from sea level to 250 m AHD. The trail is anticipated to have an average gradient of <10% and a maximum gradient no greater than 15% (for short distances only).

2.4 Regional geology

Geology of the Project consists primarily of mudrock and granitoid from the early to late Devonian age. Portions of alluvium geology is present in the north towards the township of Wangetti. Sand is also present in some coastal portions of the Project.

2.5 Soils

2.5.1 Soil type

The location of the trail on the slopes of the Macalister range, has a high probability of erosion and sedimentation. According to the Australian Atlas of Soils, the project area consists of three major soil groups:

- **Dermosols** – these soils generally have a well-structured surface and are usually non-dispersive due to the low sodium content, therefore erosion risk is reduced. These soils are present in the northern section of the trail alignment.
- **Ferrosols** – are typically well-drained and have good ability to produce vegetation. This soil type is present in the southern portion of the trail alignment.
- **Kurosols** – these soils typically have poor infiltration due to their hard-setting surface. This results in a large proportion of water running off and causing erosion. These soils can be dispersive in the subsoil and contain high salt levels which can lead to erosion. These soils are present in the central portion of the trail alignment.

Figure 2-2 details soil types in the north Queensland region, with the project area outlined in red.

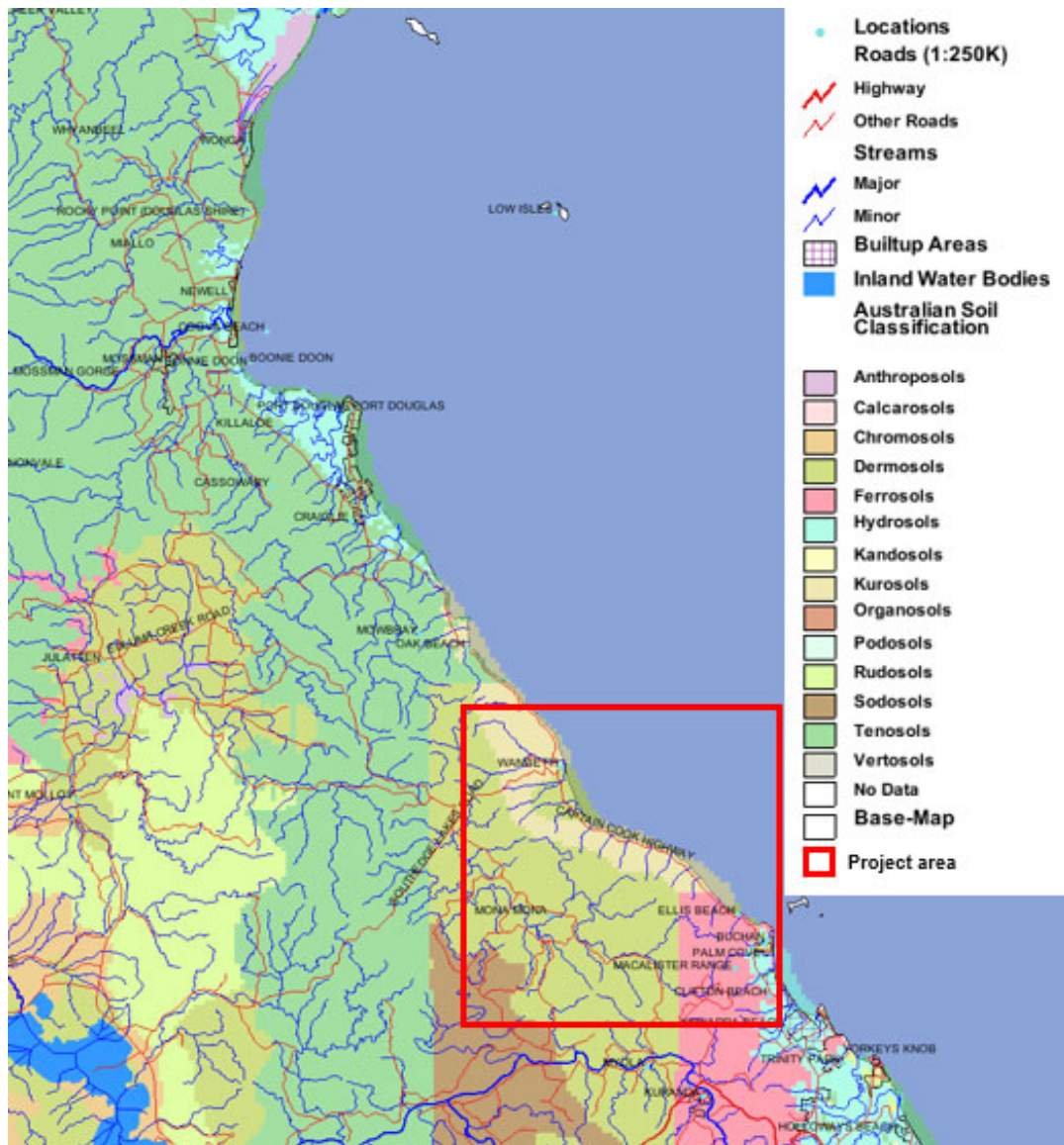


Figure 2-2 Soil types and distribution across the Project (ASRIS)

2.5.2 Soil sodicity

Sodic (dispersive) soils are soils that have a high proportion of sodium ions, relative to the amount of other cations within their chemical composition. They are considered 'sodic' when the amount of sodium impacts and degrades the soil properties through weakening the bonds between the soil particles. Soil sodicity is a natural feature of many Queensland soil types, with approximately 45% considered sodic in nature.

Sodic soils are structurally unstable in water and tend to break down into their basic particles. These soils are highly susceptible to 'chemical erosion' processes on sloped areas, or where soils are exposed or disturbed.

Site specific testing is to be undertaken as part of the site specific ESCP by the Contractor, to ensure adequate treatment of sodic soils is undertaken by implementing appropriate erosion and sediment controls, as well as soil treatments.

2.5.3 Soil erodibility

Soil erodibility is a function of the rate of infiltration at the surface, permeability of the soil and the coherence of the soil particles. To assist with the determination of soil erodibility, a number of field and/or laboratory tests can be undertaken including tests for dispersion, pH and sodicity.

Three major soil groups are located within the Project: dermosols, ferrosols and kurosols. Dermosols and ferrosols have moderate resistance to erodibility while kurosols are likely highly erosive.

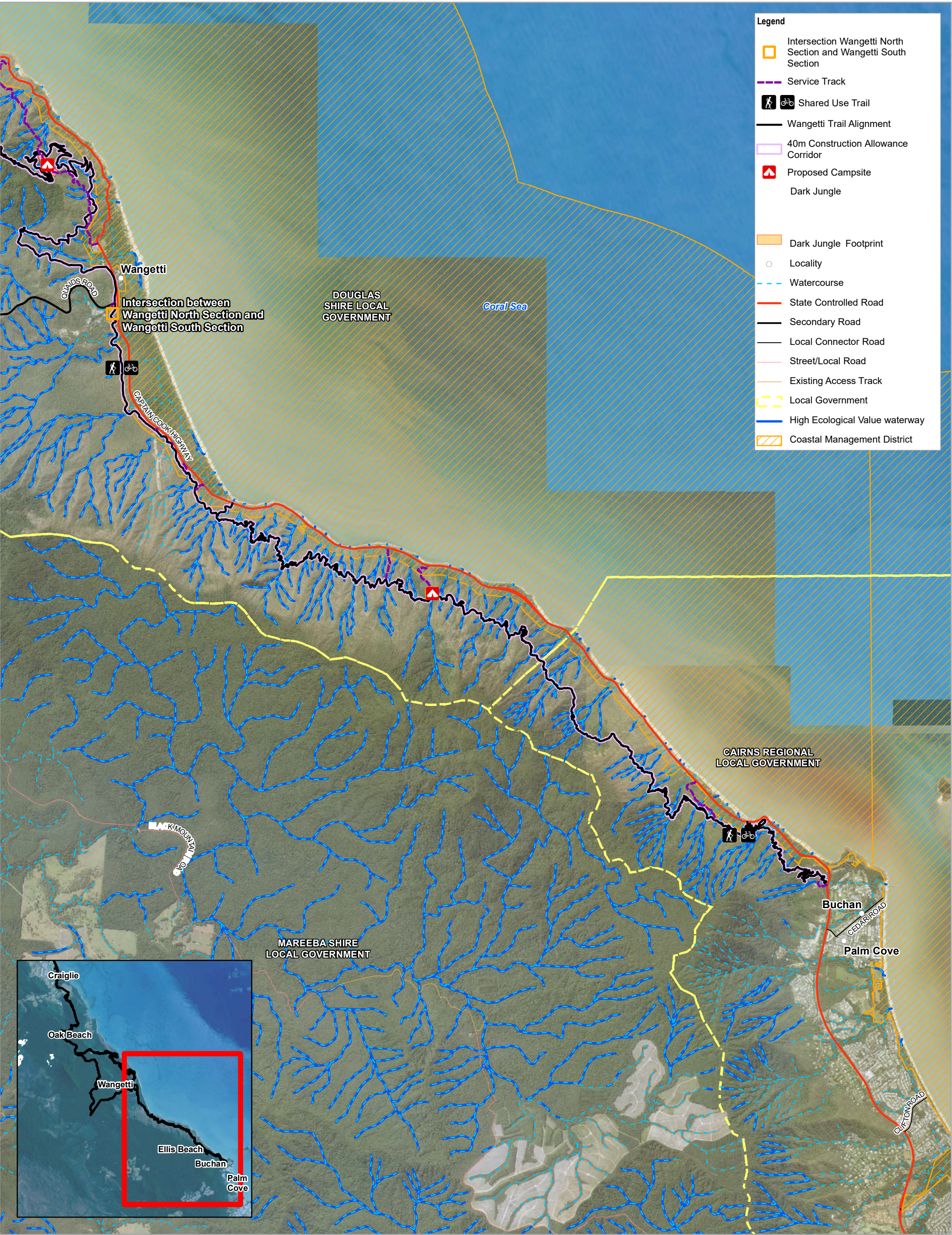
Where construction works are expected to expose subsoils within the central portion of the Project (where kurosol soils have been identified), sub-surface geology needs to be identified and characterised prior to the development of the ESCP by the Contractor, to appropriately identify and confirm if soils are highly erodible, and implement erosion and sediment controls accordingly.

2.6 Hydrology and drainage

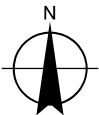
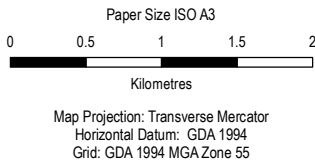
The shared use trail will traverse and intersect several waterways varying from low to major, and permanent and semi-permanent waterways. The Project is located less than 1 km from the coast at most of the waterway crossings, with all waterways flowing into the ocean.

The Project is predominantly mapped within a coastal management district, erosion prone area, tidal waterways and a medium and high storm tide inundation area on the Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) Development Assessment (DA) mapping. The majority of the alignment is also within the floodplain assessment overlay as mapped on the Douglas Shire Council Planning Scheme, which predominantly aligns with high storm tide hazard. The site is regarded to have low flood impact due to coastline proximity, whereby any flooding would rapidly flow out to sea from adequate drainage along the proposed alignment.

The trail alignment for the Project will cross approximately 23 waterways classified as watercourses under the *Water Act 2000*, as identified on Figure 2-3.



Based on or contains data provided by the State of QLD (DNRME) 2020. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.



DITID
Environment Assessment Stage 2 Wangetti Trail

Waterways
Mapped over Wangetti South Section

Project No. 41-32458
Revision No. A
Date 31/08/2020

FIGURE 2-3

All construction works to be undertaken in, or within close proximity to, waterways include the construction of waterway crossings. The waterway crossing construction is expected to cause minimal disruption and is scheduled to occur during the dry months when the waterways are likely to be dry. Visual inspections of any active waterway (waterways carrying water) are to be undertaken both upstream and downstream of the waterway crossing during construction to identify any changes in water quality through the construction area. If sediment-laden runoff is observed downstream of the waterway crossing, water quality monitoring will be required to ensure no contaminants from the site are discharged off site. Water quality performance requirements for the Project will be in accordance with the water quality objectives (WQO) outlined in the *Environmental Protection (Water and Wetland Biodiversity) Policy (EPP Water and Wetland Biodiversity) (2019) Great Barrier Reef River Basins – Wet Tropics Sub-Basin Environmental Values and Water Quality Objectives Basin No. 109-110* (DES 2019), detailed in Table 2-1.

Table 2-1 Water quality objectives

River basin name	Anthropogenic dissolved inorganic nitrogen (DIN) (tonnes/year)	Anthropogenic fine sediments (FS) (tonnes/year)
Mossman	52	6,000
Barron	35	32,000

Background water quality monitoring should be undertaken within waterways likely to carry water during the dry months, and therefore during waterway crossing construction, to compare the site specific water quality to the *EPP Water and Wetland Biodiversity* WQO identified above. If the site specific water quality differs considerably from the *EPP Water and Wetland Biodiversity* WQO, then the background water quality identified should be used as the preferred WQO.

3. Erosion hazard assessment

In accordance with Section 5.2 of the IECA Manual (IECA, 2008), a preliminary erosion hazard assessment has been undertaken as part of this CЕСP to provide an indication of the erosion risk for the site and identify indicative types and locations for erosion and sediment control measures through the Project.

3.1 Land disturbance activities

Land disturbance activities that have the potential to cause soil erosion and mobilisation of sediments are likely to include:

- Clearing and grubbing activities
 - Clearing of trees and other vegetation from the proposed trail alignment, service tracks and camping area. This will be undertaken using mini excavators, which require a minimum tread width of 1 m to operate safely. Where it is not safe, practical or desirable to use a mini excavator, the trail will be hand constructed.
All vegetation that is cleared is cut into small pieces and dispersed throughout the surrounding area; no large windrows or stockpiles should be present.
 - Construction of boulder waterway crossings and rock armouring. These crossings will be constructed using a rubber tracked mini excavator and hand tools, and include relocating nearby rocks or boulders to the waterway crossings. Typical dimensions for rock armoured areas will be 1.2 m (minimum) wide and often 5.0 m long.
 - Minor waterway crossings (small bridges spanning from 5 – 25 m) are used when the trail crosses a small permanent watercourse and suitable large rocks or boulders are not available locally to construct a boulder waterway crossing.
 - Traffic movement and construction activities along unsealed surfaces, creating erosion and generating dust.
- Bulk earthworks (cut and fill) activities
 - Trail benching is the main construction technique to be used to construct the vast majority of the trail. The earthworks will be undertaken by a mini excavator to construct the bench which becomes the tread of the trail.
When cutting the trail bench, the topsoil and mineral earth removed from the inner side of the bench are used to build up the outer edge of the bench. The benches will be approximately 1 – 1.5 m in width. It is noted that the cut material will be moved along the trail to areas where fill material is required, with no fill material removed off site.
 - Grade reversals will be constructed where appropriate along the trail, and are points at which trail gradient changes from up to down (or down to up) as the trail moves across a side slope.
 - Rock walling is used to retain soils of height between 0 and 500 mm. They may be used to retain the upslope or downslope batter.
 - Ballast surfacing is used in high traffic areas, sunken or low-lying areas, wet or boggy areas, or areas requiring the passage of vehicles. Due to the high bulk material requirements, it is usually only used in areas where vehicle access is available nearby to import materials.
 - Rock and concrete spoon drains will be constructed to convey surface runoff across the trail at a concentrated location. It could be used to manage the intersection of a small seasonal waterway and the trail, as per the description for rock armouring.

- Raised embankments will be constructed of extra 'fill' material to build the trail tread up higher. The fill material will usually be sourced from another area where there is an excess of material and moved along the trail to where it is required.
- Traffic movement and construction activities along unsealed surfaces, creating erosion and generating dust.

3.2 Rainfall and erosion risk

Rainfall data presented in Table 3-1 was sourced from the Bureau of Meteorology (BOM 2020) White Cliff Point Weather Station (Station ID 31189), which is located within 0.3 km of the Wangetti Township. The region has a tropical climate, with generally hot and humid summers and mild and dry winters. The majority of rain falls between December to March, with the highest mean rainfall occurring in February with 398.7 mm and the lowest mean rainfall occurring in August with 15.83 mm. The mean maximum annual temperature for the area is 29.1 °C, whilst the mean minimum temperature is 20.8 °C.

The rainfall and erosion risk for the project has been determined according to the criteria listed in Table 33 from IECA, 2008 (refer to Table 3-2).

Table 3-1 Rainfall and erosion risk

	January	February	March	April	May	June	July	August	September	October	November	December
Average rainfall (mm)	316.3	398.7	344.5	128.5	54.9	26.6	18.4	15.8	20.6	53.4	93.3	204.4
Erosion risk rating	E	E	E	H	M	VL	VL	VL	VL	M	M	H

Notes:

E = Extreme, H = High, M = Moderate, L = Low, VL = Very Low

Table 3-2 Erosion risk rating based on average monthly rainfall (IECA, 2008)

Erosion risk rating ^[1]	Expected 24 hour rainfall	Average monthly rainfall
Very Low	0 to 2 mm	0 to 30 mm
Low	2+ to 10 mm	30+ to 45 mm
Moderate	10+ to 25 mm	45+ to 100 mm
High	25+ to 100 mm	100+ to 225 mm
Extreme	> 100 mm	> 225 mm

Note: [1] Erosion risk rating based on worst case of expected rainfall within any 24-hour period or average monthly rainfall.

The Project is expected to occur across both the wet and dry seasons, with the construction of the trail and formalisation of the service tracks expected to commence in April/May 2021, with completion by April 2022 (approximately one year of construction). Project mobilisation is planned for February/March 2021, with clear and grub activities and bulk earthworks commencing from April/May. It is recommended that the majority of land disturbance works will be undertaken in the dry season between May and November to avoid high and extreme rainfall and erosion risk in the months of December to April. If works are not completed by December, it is advised that all land disturbance activities cease until April/May of the following year.

The Contractor shall ensure implementation of erosion and sediment controls, and shall also keep a record of rainfall forecast for the following week. Given the Project is located within the Wet Tropics, the Contractor, during high and extreme erosivity months (December to May) is to ensure that there are no unfinished/untreated exposed surfaces, and that all sediment controls are functioning and have the required capacity prior to predicted (greater than 50% chance) rainfall events.

All construction works to be undertaken in, or within close proximity to, waterways include the construction of waterway crossings. The waterway crossing construction is expected to cause minimal disruption and is scheduled to occur during the dry months when the waterways are likely to be dry. Site disturbances during the summer months, particularly between January and March, should be avoided whenever possible. If construction during the wet season is unavoidable, installation and maintenance of adequate erosion, drainage and sediment controls would be essential.

3.3 Preliminary erosion hazard assessment

Soil erosion hazard refers to the susceptibility of a parcel of land to the prevailing agents of erosion. The preliminary erosion hazard assessment adopted is based on the 'point score hazard assessment system' established in IECA Manual (IECA, 2008) and is included in Appendix A.

Based on this assessment, the Project site as a whole is considered to be "*high risk*" erosion hazard as the total score is 19 (disturbances with scores <17 are considered low risk). It is noted that the erosion hazard for the Project is conservative in nature and is considered across the Project as a whole.

As part of the development of the ESCP, it is recommended that the Contractor collect and analyse a number of soil samples across the Project to confirm soil conditions and better refine the above erosion hazard assessment. The assessment will also be further refined by the Contractor's understanding of the construction staging.

4. Construction staging and timing

4.1 Construction staging

The trail will be broken into construction segments. The purpose of creating construction segments is to break the project into smaller components, for ease of inspections, reporting, invoicing, practical completion, and staged opening. The segments will likely be determined based on the preferred staging approach undertaken by the TDPD Project Manager, or land tenures, or other variable to be determined closer to commencement of works.

Earthwork construction equipment will include a mini excavator, where it is not safe or suitable to use the excavator hand construction tools will be used. The construction corridor will be cleared in section lengths of approximately 100 to 150 m at a time. This process allows a visible amount of vegetation to be cleared ahead of where the excavator is operating, and the trail construction to be undertaken by the machine operator and trail labourers working behind the vegetation clearing activities to clean up before moving ahead to the next section.

4.2 Staging of work activities

Staging of works can be the most effective tool to minimise erosion risk, however ultimately the Contractor will be responsible for determining appropriate construction staging. For the purposes of this preliminary assessment, it is proposed that the following work activities are undertaken with respect to this CESP:

1. Prior to commencing construction, each separate trail construction segment is to be walked and assessed as part of a Pre-Start Trail Review undertaken by project managers and trail construction workers to determine the most suitable alignment. The alignment should be marked with flagging tape and no-go areas (i.e. areas outside the 40 m construction allowance corridor) to be understood. Noting that during construction if something needs to be avoided, the trail can be moved around within the 40 m construction allowance corridor.
2. Installation of downslope sediment fencing and upslope clean water diversion bunds at the boundary of the disturbed footprint, where soil disturbance is expected to occur. Where construction works are occurring in or adjacent to waterways, instream controls are to be installed. Erosion and sediment controls are to be progressively installed and decommissioned as the construction works progress along the trail or service tracks.
3. Clearing of vegetation along the proposed trail alignment and service tracks. Vegetation clearing to be undertaken during periods of none or minimal forecast rainfall (less than 5 mm rainfall). Waterways and adjoining banks are to be left undisturbed for as long as practicable and rehabilitated as soon as construction works have been completed. At this stage ground cover, herbs and grasses are left in place (they are later removed by the excavator). All vegetation that is removed is cut into small pieces and dispersed throughout the surrounding area; no large windrows or stockpiles will be present.
4. Bulk earthworks of trail alignment, service tracks and camping grounds within the active construction area. Sediment fencing is to be installed downslope of the disturbed area, to direct runoff to centralised locations for treatment, if required. If sediment fencing is unable to be established due to access or other issues, a suitable alternative is to be used. Exposed trail embankments and other exposed surfaces are to be stabilised as soon as practicable to minimise sediment loss.

Excess soil cuttings from trail benching is to be stockpiled away from waterways on selected flat areas until required in other portions of the trail, or for rehabilitation purposes.

5. Bulk earthworks at waterways, including rock armouring, boulder waterway crossings and other waterway crossings. Waterway crossing construction is expected to cause minimal disruption and is scheduled to occur during the dry months when the waterways are likely to be dry. Where earthworks occur in or adjacent to active waterways, sediment controls may require installation downstream of the waterway crossing if changes in water quality through the construction area are identified.

All construction work within waterways are identified as high risk zones as infrastructure placement (e.g. boulders) within the waterway is involved. Infrastructure placement is to be undertaken during dry forecasts where possible, where waterways are expected to be dry. If waterways are active during construction works, works within or directly adjacent to waterways are to be minimised, if possible, with visual inspection undertaken both upstream and downstream of the waterway crossings to identify any changes in water quality through the construction area.

6. Progressive stabilisation of work areas and disturbed areas in accordance with permanent stabilisation treatments, as soon as practicable. Sediment control measures are to remain in place for the duration agreed and determined by the TDPD Project Manager. As a minimum, sediment control measures should be retained until the trail curing period has finished and the trail or construction segment is deemed ready to be opened to the public (World Trail 2020).

All high risk activities associated with bulk earthworks, pavement works and revegetation / stabilisation must be completed within the proposed construction works period.

4.3 Construction timing

The Project is expected to occur across both the wet and dry seasons, with the construction of the trail and formalisation of the service tracks expected to commence in April/May 2021, with completion by April 2022 (approximately one year of construction). Project mobilisation is planned for February/March 2021, with clear and grub activities and bulk earthworks commencing from April/May. It is recommended that the majority of land disturbance works be undertaken in the dry season between May and November to avoid high and extreme rainfall and erosion risk in the months of December to April. If works are not completed by December, it is advised that all land disturbance activities cease until April/May of the following year.

5. Erosion and sediment control measures

The Contractor is responsible for implementing all erosion and sediment control measures and these must be implemented in accordance with best practice principles. The erosion, sediment and drainage control measures set out in this section are applicable across the entire Project site. The anticipated terrain to be encountered during construction will determine the type of erosion and sediment controls required, along with the soil characteristics.

All erosion, sediment and drainage control measures must remain in place until all construction works are completed and surfaces are stabilised and revegetated. Sediment control measures are to remain in place for the duration agreed and determined by the TDPD Project Manager. As a minimum, sediment control measures should be retained until the trail curing period has finished and the trail or construction segment is deemed ready to be opened to the public (World Trail 2020).

Standard ESC techniques shall be used in accordance with recommendations from IECA (2018). All control measures are to be designed, installed and maintained in accordance with management strategies identified in this CESP and recommendations provide in IECA (2008), which are described in factsheets available from IECA (2008: Book 6).

5.1 Erosion control

Erosion is dependent on the likelihood and intensity of predicted and / or expected rainfall. Where construction activities are scheduled during the dry season when rainfall is unlikely or limited, the required erosion protection measures may be significantly less than if construction was to occur during the wet season (IECA 2008).

Erosion control measures shall be employed to reduce the likelihood of soil erosion occurring on site and to protect any exposed areas from raindrop impact erosion. Erosion control measures are to be progressively implemented as the construction segments progress along the Project alignment. A summary of erosion control measures suitable for various slopes are shown below in Table 5-1. Erosion controls blankets, mats and mesh utilised throughout the Project will need to be made from natural fibres, such as those depicted in Figure 5-1.

Table 5-1 Application of erosion control measures to soil slopes (IECA 2008)

Flat land (flatter than 1 in 10)	Mild slopes (1 in 10 – 1 in 4)	Steep slopes (steeper than 1 in 4)
Erosion control blankets, mats and mesh	Erosion control blankets, mats and mesh	Erosion control blankets, mats and mesh
Gravelling	Rock mulching	Rock armouring
Rock mulching		

Table extracted from IECA 2008 Table 4.4.13.



Figure 5-1 Erosion control blankets, mats and mesh made from natural figures

Minimise disturbance area

The area of disturbance shall be minimised by the Contractor through staged clearing activities, where possible. Specifically, the clearing phase shall minimise encroachment on sensitive areas, such as riparian vegetation, waterways and any mapped regional ecosystems. Exclusion zones are to be clearly set out and marked prior to clearing and bulk earthworks. The minimisation of disturbance area will be identified during the inspection of each construction segment, prior to vegetation clearing and bulk earthworks.

Vegetation clearing

Vegetation is only to be cleared in the pre-approved trail alignment. Where a deviation is considered necessary, vegetation clearing must remain within the 40 m construction allowance corridor, which should be clearly outlined. Vegetation clearing will generally occur simultaneously with the construction of the trail, but around 50 to 100 m ahead of the mini excavator. Care should be taken to ensure no windrows or stockpiles of cleared vegetation are created. Cleared vegetation is to be scattered into the surrounding environment, without smothering existing vegetation.

Vegetation clearing adjacent to waterways shall be minimised, where possible, and delayed until necessary. Progressive stabilisation and, where possible, revegetation of disturbed areas shall occur as reasonably practicable.

If vegetation clearing is required to be carried out well in advance of earthworks, the clearing contractor shall aim to remove only woody vegetation, leaving the understory growth. Grubbing and removal of ground cover and understory is to be delayed until immediately prior to revegetation occurring within that particular stage of development.

Groundcover and surface treatments

Revegetation and ground coverage of low-growing ground cover vegetation can be one of the most effective forms of permanent erosion controls (IECA 2008). Vegetation and groundcover increases the surface roughness, slowing stormwater runoff, protects the soil against raindrop impact and reduces the evaporation losses from the underlying soil.

Refer to Table 4.4.7 of the IECA Manual for best practise measures associated with site rehabilitation depending on the erosion risk based on monthly erosivity (very low to extreme).

5.2 Sediment control

Sediment control techniques shall be applied across the disturbed areas to limit mobilisation of and settle mobilised soil particles across the Project. Sediment control techniques slow the movement of water and allow the influence of gravity to settle out particles before discharging into the receiving environment.

The minimum sediment control standard is determined based on the erosion risk of the site (IECA 2008), which the Contractor is required to complete as part of the site specific ESCP.

Dust suppression

The most effective control measure against wind erosion is revegetation, however in some cases this is not reasonably practicable until the end of the construction period. As the trail is difficult to access by vehicles in most locations, the standard practice of using water tankers to suppress dust on site during construction periods is not practicable. Therefore, vegetation clearing should be kept to a minimum, and exposed surfaces must be rehabilitated as soon as practicable to minimise the potential environmental risk. Exposed areas are limited to 50 to 100 m ahead of an active work front further reducing potential wind erosion.

Sediment control devices

Sediment control measures are required within the construction segments where soil disturbance is expected, which has the potential for sediment movement off site. Sediment controls that are recommended for the Project include sediment fencing along the downslope of the disturbed footprint, topsoil bunds upslope of the disturbed footprint, with instream sediment controls (such as a sediment fence isolation barrier) downstream of waterway crossing works, where active waterways are identified. IECA standard drawings (Book 6, IECA 2008) of the recommended sediment controls (sediment fencing, topsoil bunds, and instream sediment controls) are attached as Appendix B.

Suitable sediment controls for various water flows are identified below in Table 5-2.

Table 5-2 Default classification of sediment control techniques (IECA 2008)

Sheet flow treatment techniques	Concentrated flow treatment techniques
Buffer zone	Coarse sediment trap
Filter/sediment fence	U-shaped sediment trap

Table extracted from IECA 2008 Table 4.5.3.

Stockpile management

Stockpiles of cleared vegetation are not included as part of this Project, as cleared vegetation will be scattered into the surrounding environment, without smothering existing vegetation. In the instance where a stockpile of vegetation is required for the Project, stockpiling sites are to be located above flood extents and within close proximity to the Project. Stockpiling will be negotiated with the Wet Tropics Management Authority prior to construction commencing.

Similar to soil disturbance footprints, sediment fencing and topsoil bunds are to be implemented downslope and upslope of stockpiles, respectively, if demanded by the site conditions. No stockpiling should occur during wet season and should be stockpiled for the minimum amount of time to avoid sediment runoff. For example, stockpiled soil cuttings are to be used for sections of the trail 100 to 150 m in front or behind excavation works.

Stormwater discharge off site

Stormwater is discharged from the Project into a number of large and small waterways. Many of the waterways are ephemeral and carry water after a rainfall event. All construction works to be undertaken in, or within close proximity to, waterways include the construction of waterway crossings. Visual inspections of any active waterway are to be undertaken both upstream and downstream of the waterway crossing during construction to identify any changes in water quality through the construction area. If sediment-laden runoff is observed downstream of the waterway crossing, water quality monitoring will be required to ensure no contaminants from the site are discharged off site. Water quality performance requirements for the Project will be in accordance with the water quality objectives outlined in the *Environmental Protection (Water and Wetland Biodiversity) Policy 2019: Great Barrier Reef River Basins – Wet Tropics Sub-Basin Environmental Values and Water Quality Objectives Basin No. 109-110* or background site specific water quality determined for the Project, if background water quality varies considerably from the EP (Water and Wetland Biodiversity) WQO.

5.3 Drainage control

The primary functions of drainage control measures are to minimise the risk of erosion, minimise the risk to the adopted erosion and sediment control measures, control the velocity and location of water flowing through the site, and to appropriately manage 'clean' and 'dirty' water flows through the site.

The proposed drainage measures for the Project are as follows:

- During all phases of construction, the management of upstream waters must be considered and appropriately managed. If waterways are active during construction works, works within and directly adjacent to waterways are to be minimised, if possible, with visual inspections undertaken both upstream and downstream of the waterway crossings to identify any changes in water quality through the construction area.
- Provide diversion works (clean water topsoil bunds) to direct clean water flows from external catchments upslope of the development area towards existing discharge points, where possible. Diversion drains are to be constructed as trapezoidal bunds or channels and appropriately lined to minimise the risk of scour occurring.
- Permanent drainage control should be established simultaneously with trail construction. These include design features such as switchbacks, rock and concrete spoon drains, ensuring grade reversals flow correctly and that the trail is outsloped where practical.
- Provide diversion works (dirty water channels) to direct dirty water flows from internal catchments towards sediment treatment devices, where necessary.
- Check dams are to be placed along the trail alignment during the construction of the design features detailed in Section 2.2.4, where bulk earthworks have occurred and resulted in exposed slopes and surfaces. The purpose of check dams is to reduce runoff velocities and minimise soil erosion caused during rainfall runoff events. The IECA standard drawing (Book 6, IECA 2008) for rock check dams is attached as Appendix B.

6. Monitoring and maintenance

6.1 Site inspections and monitoring

6.1.1 General

In accordance with Section 7.2 of the IECA Manual, the Contractor shall make allowance for the preparation of a formal monitoring and maintenance program prior to site establishment. The monitoring and maintenance program shall make allowance for required site inspections (detailed in Section 6.1.3), monitoring of erosion and sediment control devices (including water quality monitoring) and reporting of results, inspections and non-compliance.

6.1.2 Responsible persons

In accordance with Chapter 7 of the IECA Manual, the Contractor shall generally be responsible for all items prescribed in this Report. The Contractor shall identify appropriate persons to ensure compliance with erosion and sediment control requirements and objectives for the project duration.

In addition to the erosion and sediment control elements detailed in this report, the Contractor shall also ensure the following general management practices are incorporated:

- Establish an erosion and sediment control training program for site staff
- Appropriately control subcontractors and material suppliers
- Suitably control site traffic to minimise dust generation and undesirable soil compaction outside designated accesses
- Maintain adequate supplies of emergency erosion and sediment control materials and ensure that these items are available at all times, particularly prior to imminent rainfall
- Establish an appropriate site inspection routine as well as the staff responsible for these inspections.

For further information regarding general construction practice and the management of construction sites, refer to Chapter 7 of the IECA Manual and the IECA 'Site Management' fact sheet.

6.1.3 Inspections and monitoring

General

Site inspections and monitoring are to be undertaken in accordance with Sections 6.17, 7.4, 7.6 and Appendix I of the IECA Manual and as detailed below. ESCPs are living documents that can and should be modified as site conditions change, or if the adopted measures fail, to achieve the required treatment standard. When a site inspection detects a notable failure in the adopted ESC measures, the source of the failure must be investigated and appropriate amendments made to the site and the plans.

Inspections

The IECA Manual requires that all erosion and sediment control measures be inspected as detailed in Table 6-1. An example inspection checklist template is included in Appendix C.

Table 6-1 Site inspection requirements

Frequency	Requirements
Daily (during rainfall)	<ul style="list-style-type: none"> • All drainage, erosion and sediment control measures (when work is occurring on site) • All instream erosion and sediment control measures (when work is occurring on site) • Occurrences of excessive sediment deposition (whether on or off site) • Water quality monitoring where a visible change in water quality is observed downstream of a waterway crossing.
Weekly	<ul style="list-style-type: none"> • All drainage, erosion and sediment control measures (when work is not occurring on site) • All instream erosion and sediment control measures (when work is not occurring on site) • Occurrences of excessive sediment deposition (whether on or off site) • Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements • Litter and waste receptors • Oil, fuel and chemical storage facilities.
Prior to anticipated runoff-producing rainfall (within 24 hours of rainfall occurring)	<ul style="list-style-type: none"> • All drainage, erosion and sediment control measures • All temporary flow diversion and drainage works.
Prior to rainfall event of sufficient intensity and duration to cause runoff (within 18 hours of rainfall occurring)	<ul style="list-style-type: none"> • All drainage, erosion and sediment controls • All temporary flow diversion and drainage works • All instream erosion and sediment control measures.
Following runoff-producing rainfall (within 18 hours of rainfall event)	<ul style="list-style-type: none"> • All drainage, erosion and sediment control measures • All instream erosion and sediment control measures • Occurrences of excessive sediment deposition (whether on or off site) • Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements • Water quality monitoring where a visible change in water quality is observed downstream of a waterway crossing.

Water quality monitoring

As mentioned in Section 2.6, visual inspections of any active waterway is to be undertaken both upstream and downstream of the waterway crossing during construction to identify any changes in water quality through the construction area. If sediment-laden runoff is observed downstream of the waterway crossing, water quality monitoring will be required to ensure no contaminants from the site are discharged off site. Water quality performance requirements for the Project will be in accordance with the water quality objectives (WQO) outlined in the *Environmental*

Protection (Water and Wetland Biodiversity) 2019: Great Barrier Reef River Basins – Wet Tropics Sub-Basin Environmental Values and Water Quality Objectives Basin No. 109-110 (DES 2019) or background site specific water quality determined for the Project, if background water quality varies considerably from the EP (Water and Wetland Biodiversity) WQO.

If the water quality objectives are not met, additional water quality monitoring may be required to assess the effectiveness of remediation erosion and sediment control measures.

6.1.4 Maintenance

Any erosion and sediment control failures or excess sediment build up identified during the site inspections is to be rectified as soon as practicable following identification.

Any sediment removed from devices will be disposed of in a lawful manner that does not cause ongoing soil erosion or environmental harm.

6.1.5 Reporting

Site check sheets will be filled out weekly, and monthly reports will be completed by the Contractor. Monthly reports shall include water quality monitoring reports (if required), details of the performance of the site's monitoring and maintenance activities, non-compliances and corrective actions implemented.

As the site has been identified as 'high risk' (see Section 3.3), the Contractor may be required to engage an independent, appropriately qualified person (i.e. CPESC) to undertake erosion and sediment control audits to confirm compliance with best practice. This is to be confirmed as part of the Contractor's ESCP when the erosion risk hazard is updated based on soil data, the confirmed trail alignment and refined construction staging.

A register of all ESC inspections and audits, if undertaken, will be maintained for the duration of the project site works, and will be available for review during site inspections undertaken by a regulatory authority. Any environmentally relevant incidents which occur on the site should be recorded, and also be available for review during site inspections undertaken by regulatory authorities.

If erosion and sediment controls are found to be deficient or failed in service, due to unforeseen circumstances, corrective action is to be undertaken immediately which may include modifications to the approved ESCP.

6.2 Wet weather preparedness

In accordance with the IECA Manual, the project site shall be appropriately prepared for both likely and unlikely wet weather conditions. The Contractor will prepare a wet weather preparedness plan to establish appropriate erosion and sediment control measures and actions that may be implemented prior to a predicted wet weather event.

The following erosion and sediment control measures will be considered where appropriate for inclusion within the wet weather preparedness plan:

- Inspect the condition of all erosion and sediment control devices on site to ensure that these measures are operationally effective prior to the rainfall event
- Establish temporary flow diversion up-slope of open, newly formed batters
- Stabilise all drainage pathways and exposed surfaces still subject to construction with temporary erosion and sediment control techniques (i.e. erosion control blankets or hydraulic blankets)
- Secure erosion control blankets with additional anchorage such as rocks or timber stakes

6.3 Non-conformances and corrective actions

Where an environmental non-conformance occurs regarding erosion and sediment control (such as loss of sediment from the site or accidental discharge of sediment into adjacent waterways), the Contractor shall immediately inform DSDTI of the incident. The Contractor must also prepare a monthly report detailing any incidents of environmental nuisance and non-conformance for review by DES, if requested in the ESCP.

The Contractor has a responsibility to report to DSDTI all major environmental incidents that risk causing environmental harm under the *Environment Protection Act 1994*.

Where an environmental incident occurs, the following mitigation strategies shall be adopted as a minimum:

- All non-conformances and incidents are to be corrected as soon as possible and strategies implemented to reduce the likelihood of the incident reoccurring
- Containment of the sediment laden runoff, where possible
- The environmental representative is to review the erosion and sediment control measures in place for effectiveness and check maintenance records
- The appropriate persons is to review the erosion and sediment control measures in place for effectiveness and check maintenance records
- An incident / accident report is to be completed for all incidents and non-conformances.

Where incidents have occurred, the Contractor shall ensure that all reasonable and practical control measures are implemented for future operations. This may include reviewing water quality monitoring data, where exceedances have been found, and implementing additional and/or alternative controls to achieve the required environmental outcomes.

7. Conclusion

This Report has been produced to support environmental approval applications for proposed works associated with the Project and demonstrate the management of erosion and sediment hazards and risks for the Project and demonstrates compliance with the relevant requirements with IECA.

Further recommendations for erosion and sediment controls relevant to this project are:

- Undertake site investigations to confirm geotechnical and soil conditions (characterisation of dispersive and sodic soils) that will inform the site-specific ESCP
- Undertake additional erosion risk assessment as part of the ESCP following the identification of the proposed trail alignment and required earthwork activities, to update the erosion risk and required ESC measures
- Prepare a construction ESCP as part of the CEMP for the Project, in accordance with the IECA guidelines and recommendations provided in this Report, prior to any disturbance occurring within the Project.

8. References

Department of Natural Resources, Mines and Energy 2020. *Queensland Globe*, State of Queensland. Accessed from: <https://qldglobe.information.qld.gov.au/>

Department of Agriculture and Fisheries 2018. Accepted development requirements for operational work that is constructing or raising waterway barrier works. Accessed from: https://www.daf.qld.gov.au/__data/assets/pdf_file/0006/1476888/adr-operational-waterway-barrier-works.pdf

Department of Environment and Science 2019. *Environmental Protection (Water and Wetland Biodiversity) Policy 2019: Great Barrier Reef River Basins – Wet Tropics Sub-Basin Environmental Values and Water Quality Objectives Basin No. 109 & 110*, Queensland Government.

IECA 2008. *Best Practice Erosion and Sediment Control*, International Erosion Control Association (Australasia), Picton, NSW.

World Trail 2020. *Wangetti Trail Construction – Final Version*, Cairns, QLD.

Appendices

Appendix A – Erosion hazard assessment



Appendix A Preliminary Erosion Hazard Assessment

Department of Innovation and
Tourism Industry Development
Wangetti South

Erosion Hazard Assessment

Project Name: Wangetti Trail - Wangetti South Section

Table 1 Erosion Hazard Assessment

Wangetti Trail - Wangetti South Section		
Controlling Factors	Point System	Wangetti Trail - Wangetti South Section
Item 1 – Average slope of Disturbance Area		
not more than 3%	0	4
more than 3% but not more than 5%	1	
more than 5% but not more than 10%	2	
more than 10% but not more than 15%	4	
more than 15%	6	
Item 2 – Soil Classification Group		
GW, GP, GM, GC	0	3
SW, SP, OL, OH	1	
SM, SC, MH, CH	2	
ML, CL, or if <i>imported fill</i> is used, or if soils are untested	3	
<i>*Soils are crushed mudstone</i>		
Item 3 – Emerson (Dispersion) Class Number		
Class 4, 6, 7, or 8	0	4
Class 5	2	
Class 3, (default value if soils are untested)	4	
Class 1 or 2	6	
Item 4 – Anticipated Duration of Soil Disturbance		
not more than 1 month	0	0
more than 1 month but not more than 4 months	2	
more than 4 months but not more than 6 months	4	
more than 6 months	6	
Item 5 – Area of Disturbance		
not more than 1000 m ²	0	0
more than 1000 m ² but not more than 5000 m ²	1	
more than 5000 m ² but not more than 1 ha	2	
more than 1 ha but not more than 4 ha	4	
more than 4 ha	6	
Item 6 – Waterway Disturbance		
No disturbance to a watercourse, open drain or channel	0	2
Involves disturbance to a constructed open drain or channel	1	
Involves disturbance to a natural watercourse	2	
Item 7 – Rehabilitation Method		
Percentage of area (relative to total disturbance) revegetated by seeding without light mulching (i.e. worst-case revegetation method).		0
not more than 1%	0	
more than 1% but not more than 5%	1	
more than 5% but not more than 10%	2	
more than 10%	4	



Appendix A Preliminary Erosion Hazard Assessment

Department of Innovation and
Tourism Industry Development
Wangetti South

Erosion Hazard Assessment

Project Name: Wangetti Trail - Wangetti South Section

Table 1 Erosion Hazard Assessment

Controlling Factors	Point System	Wangetti Trail - Wangetti South Section
Item 8 – Receiving Waters		
Saline waters only	0	
Freshwater body (e.g. creek or freshwater lake or river)	2	2
Item 9 – Subsoil Exposure		
No subsoil exposure except of service trenches	0	
Subsoils are likely to be exposed	2	2
Item 10 – External Catchments		
No external catchment	0	
External catchment diverted around the soil disturbance	1	1
External catchment not diverted around the soil disturbance	2	
Item 11 – Road Construction		
No road construction	0	0
Involves road construction works	2	
Item 12 – pH of soils to be revegetated		
more than pH 5.5 but less than pH 8	0	
other pH values, or if soils are untested	1	1
TOTAL SCORE		19
		High Risk Site.

Appendix B – Sediment and drainage control standard drawings

Drawing number	Drawing title
SF-01, SF-02	Sediment fence
DB-01	Flow diversion bank (topsoil bund)
SFB-01, SFB-02	Sediment fence isolation barrier
RCD-01	Check dams

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. CLEAR THE LOCATION FOR THE BANK, CLEARING ONLY THE AREA THAT IS NEEDED TO PROVIDE ACCESS FOR PERSONNEL AND EQUIPMENT.

3. REMOVE ROOTS, STUMPS, AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY. DO NOT USE DEBRIS TO BUILD THE BANK.

4. FORM THE BANK FROM THE MATERIAL, AND TO THE DIMENSION SPECIFIED IN THE APPROVED PLANS.

5. IF EARTH IS USED, THEN ENSURE THE SIDES OF THE BANK ARE NO STEEPER THAN A 2:1 (H:V) SLOPE, AND THE COMPLETED BANK MUST BE AT LEAST 500mm HIGH.

6. IF FORMED FROM SANDBAGS, THEN ENSURE THE BAGS ARE TIGHTLY PACKED SUCH THAT WATER LEAKAGE THROUGH THE BAGS IS MINIMISED.

7. CHECK THE BANK ALIGNMENT TO ENSURE POSITIVE DRAINAGE IN THE DESIRED DIRECTION.

8. THE BANK SHOULD BE VEGETATED (TURFED, SEEDED AND MULCHED), OR OTHERWISE STABILISED IMMEDIATELY, UNLESS IT WILL OPERATE FOR LESS THAN 30 DAYS OR IF SIGNIFICANT RAINFALL IS NOT EXPECTED DURING THE LIFE OF THE BANK.

9. ENSURE THE EMBANKMENT DRAINS TO A STABLE OUTLET, AND DOES NOT DISCHARGE TO AN UNSTABLE FILL SLOPE.

MAINTENANCE

1. INSPECT FLOW DIVERSION BANKS AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING RAINFALL.

2. INSPECT THE BANK FOR ANY SLUMPS, WHEEL TRACK DAMAGE OR LOSS OF FREEBOARD. MAKE REPAIRS AS NECESSARY.

3. CHECK THAT FILL MATERIAL OR SEDIMENT HAS NOT PARTIALLY BLOCKED THE DRAINAGE PATH UP-SLOPE OF THE EMBANKMENT. WHERE NECESSARY, REMOVE ANY DEPOSITED MATERIAL TO ALLOW FREE DRAINAGE.

4. DISPOSE OF ANY COLLECTED SEDIMENT OR FILL IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

5. REPAIR ANY PLACES IN THE BANK THAT ARE WEAKENED OR IN RISK OF FAILURE.

REMOVAL

1. WHEN THE SOIL DISTURBANCE ABOVE THE BANK IS FINISHED AND THE AREA IS STABILISED, THE FLOW DIVERSION BANK SHOULD BE REMOVED, UNLESS IT IS TO REMAIN AS A PERMANENT DRAINAGE FEATURE.

2. DISPOSE OF ANY SEDIMENT OR EARTH IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

3. GRADE THE AREA AND SMOOTH IT OUT IN PREPARATION FOR STABILISATION.

4. STABILISE THE AREA BY GRASSING OR AS SPECIFIED IN THE APPROVED PLAN.

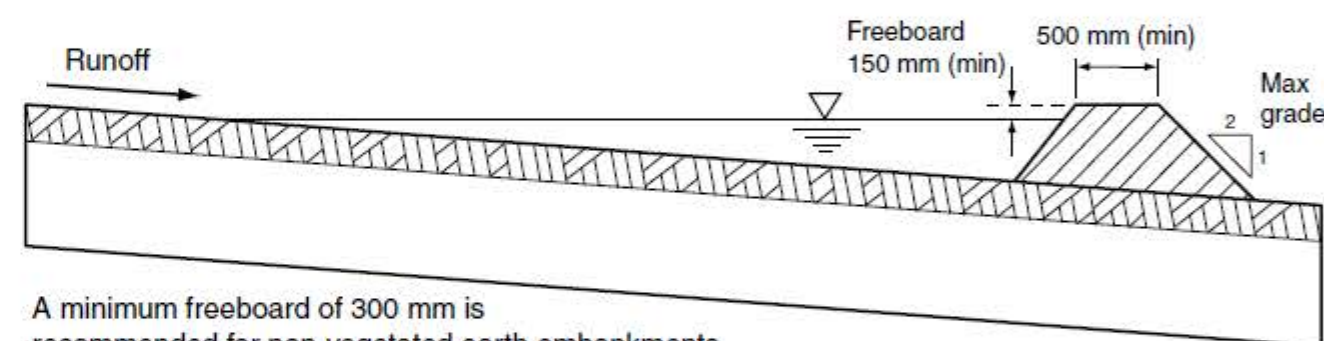
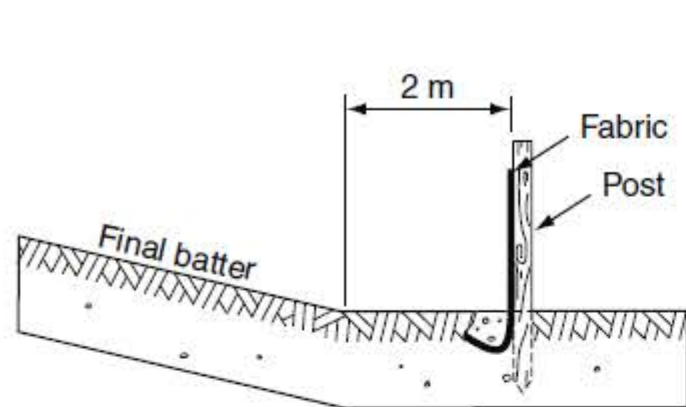


Figure 1 - Typical profile of flow diversion bank formed from earth

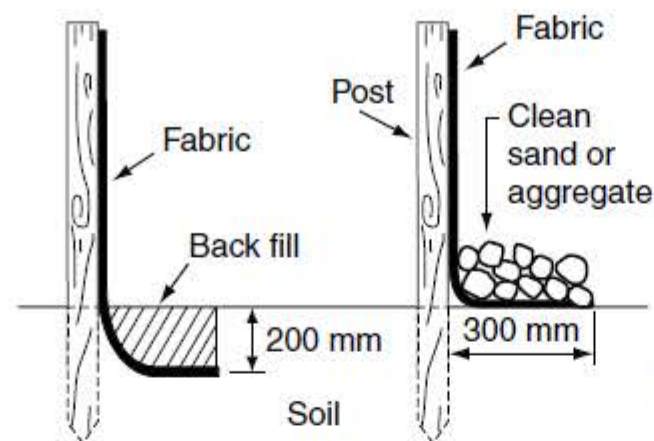
Table 1 - Recommended dimensions of flow diversion banks

Parameter	Earth banks	Vegetated banks	Compost berms	Sandbag berms
Height (min)	500 mm	500 mm	300 mm	N/A
Top width (min)	500 mm	500 mm	100 mm	N/A
Base width (min)	2500 mm	2500 mm	600 mm	N/A
Side slope (max)	2:1 (H:V)	2:1 (H:V)	1:1 (H:V)	N/A
Freeboard	300 mm	150 mm	100 mm	50 mm

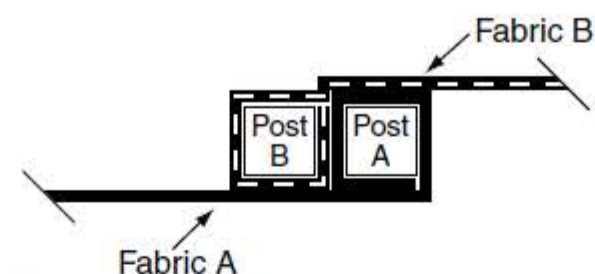
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GMW	Dec-09	Flow Diversion Banks	DB-01



(a) Location of fence relative to base of slope

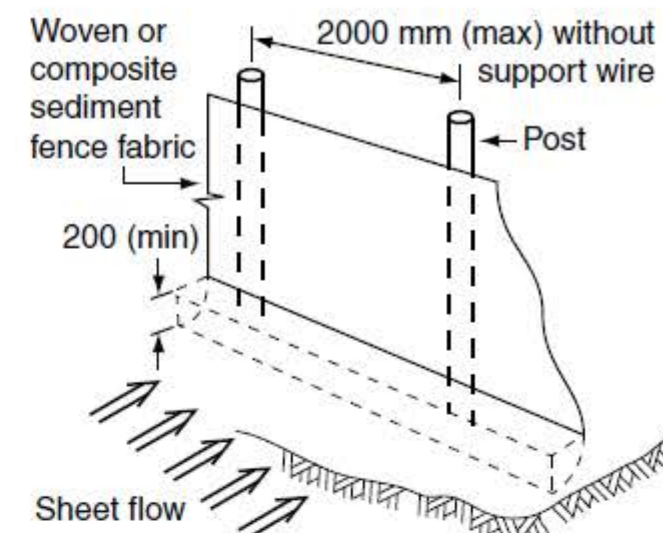


(b) Anchoring base of fabric

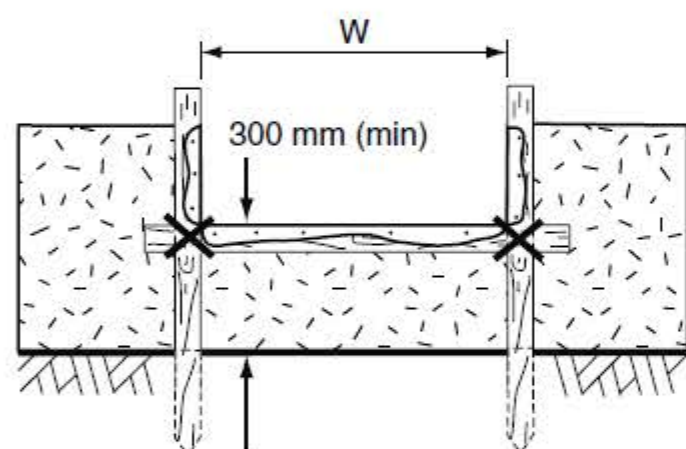


Fabric to fold around each stake one full turn. Stake B to be drive tightly against Stake A. The tops of both stakes to be secured with wire.

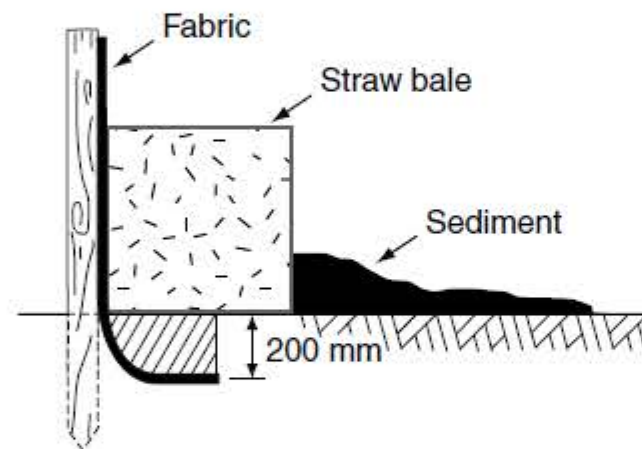
(c) Joining fabric - Method 1



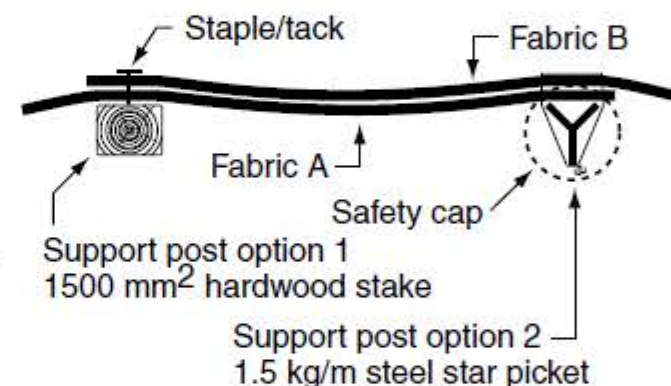
(d) Installation without backing support



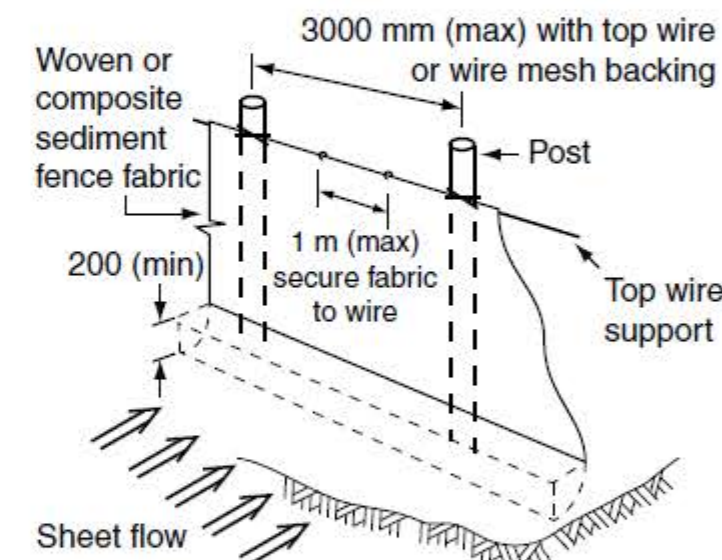
(e) Spill-through weir



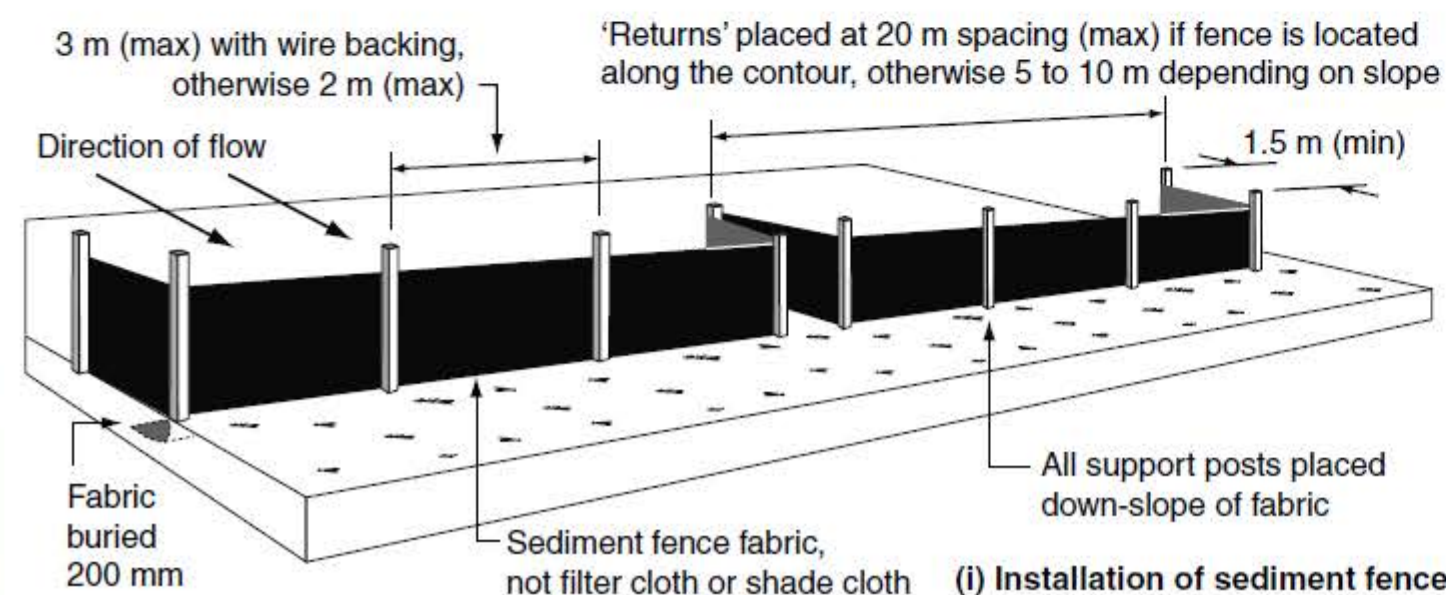
(f) Placement of up-slope straw bale



(g) Joining fabric - Method 2



(h) Installation with top wire support



(i) Installation of sediment fence

Notes:

1. Sediment fence to be installed along a line of constant ground elevation wherever practical.
2. Both end of the sediment fence to extend up the slope at least 1m.
3. Support post to be spaced a maximum 2m unless the fence is supported by a top wire or wire mesh backing, in which case 3m maximum spacing.
4. Fence 'returns' shall be installed at maximum 20m spacing if fence is installed along the contour, otherwise 5 to 10m maximum spacing.
5. Minimum 4 staples or tie wires per stake.

Drawn:	Date:		
GMW	Dec-09	Sediment Fence	SF-01

MATERIALS

FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700mm IN WIDTH AND A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

FABRIC REINFORCEMENT: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200mm.

SUPPORT POSTS/STAKES: 1500mm² (MIN) HARDWOOD, 2500mm² (MIN) SOFTWOOD, OR 1.5kg/m (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND REQUIRED TYPE OF FABRIC (IF SPECIFIED). IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, FABRIC TYPE, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. TO THE MAXIMUM DEGREE PRACTICAL, AND WHERE THE PLANS ALLOW, ENSURE THE FENCE IS LOCATED:

- (i) TOTALLY WITHIN THE PROPERTY BOUNDARIES;
- (ii) ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL;
- (iii) AT LEAST 2m FROM THE TOE OF ANY FILLING OPERATIONS THAT MAY RESULT IN SHIFTING SOIL/FILL DAMAGING THE FENCE.

3. INSTALL RETURNS WITHIN THE FENCE AT MAXIMUM 20m INTERVALS IF THE FENCE IS INSTALLED ALONG THE CONTOUR, OR 5 TO 10m MAXIMUM SPACING (DEPENDING ON SLOPE) IF THE FENCE IS INSTALLED AT AN ANGLE TO THE CONTOUR. THE 'RETURNS' SHALL CONSIST OF EITHER:
(i) V-SHAPED SECTION EXTENDING AT LEAST 1.5m UP THE SLOPE; OR
(ii) SANDBAG OR ROCK/AGGREGATE CHECK

DAM A MINIMUM 1/3 AND MAXIMUM 1/2 FENCE HEIGHT, AND EXTENDING AT LEAST 1.5m UP THE SLOPE.

4. ENSURE THE EXTREME ENDS OF THE FENCE ARE TURNED UP THE SLOPE AT LEAST 1.5m, OR AS NECESSARY, TO MINIMISE WATER BYPASSING AROUND THE FENCE.

5. ENSURE THE SEDIMENT FENCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE FENCE, AND THE UNDESIRABLE DISCHARGE OF WATER AROUND THE ENDS OF THE FENCE.

6. IF THE SEDIMENT FENCE IS TO BE INSTALLED ALONG THE EDGE OF EXISTING TREES, ENSURE CARE IS TAKEN TO PROTECT THE TREES AND THEIR ROOT SYSTEMS DURING INSTALLATION OF THE FENCE. DO NOT ATTACH THE FABRIC TO THE TREES.

7. UNLESS DIRECTED BY THE SITE SUPERVISOR OR THE APPROVED PLANS, EXCAVATE A 200mm WIDE BY 200mm DEEP TRENCH ALONG THE PROPOSED FENCE LINE, PLACING THE EXCAVATED MATERIAL ON THE UP-SLOPE SIDE OF THE TRENCH.

8. ALONG THE LOWER SIDE OF THE TRENCH, APPROPRIATELY SECURE THE STAKES INTO THE GROUND SPACED NO GREATER THAN 3m IF SUPPORTED BY A TOP SUPPORT WIRE OR WEIR MESH BACKING, OTHERWISE NO GREATER THAN 2m.

9. IF SPECIFIED, SECURELY ATTACH THE SUPPORT WIRE OR MESH TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200mm INTO THE EXCAVATED TRENCH. ENSURE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES EVEN WHEN DIRECTING A FENCE AROUND A CORNER OR SHARP CHANGE OF DIRECTION.

10. WHEREVER POSSIBLE, CONSTRUCT THE SEDIMENT FENCE FROM A CONTINUOUS ROLL OF FABRIC. TO JOIN FABRIC EITHER:
(i) ATTACH EACH END TO TWO OVERLAPPING STAKES WITH THE FABRIC FOLDING AROUND THE ASSOCIATED STAKE ONE TURN, AND WITH

THE TWO STAKES TIED TOGETHER WITH WIRE; OR
(ii) OVERLAP THE FABRIC TO THE NEXT ADJACENT SUPPORT POST.

11. SECURELY ATTACH THE FABRIC TO THE SUPPORT POSTS USING 25 X 12.5mm STAPLES, OR TIE WIRE AT MAXIMUM 150mm SPACING.

12. SECURELY ATTACH THE FABRIC TO THE SUPPORT WIRE/MESH (IF ANY) AT A MAXIMUM SPACING OF 1m.

13. ENSURE THE COMPLETED SEDIMENT FENCE IS AT LEAST 450mm, BUT NOT MORE THAN 700mm HIGH. IF A SPILL-THROUGH WEIR IS INSTALLED, ENSURE THE CREST OF THE WEIR IS AT LEAST 300mm ABOVE GROUND LEVEL.

14. BACKFILL THE TRENCH AND TAMP THE FILL TO FIRMLY ANCHOR THE BOTTOM OF THE FABRIC AND MESH TO PREVENT WATER FROM FLOWING UNDER THE FENCE.

ADDITIONAL REQUIREMENTS FOR THE INSTALLATION OF A SPILL-THROUGH WEIR

1. LOCATE THE SPILL-THROUGH WEIR SUCH THAT THE WEIR CREST WILL BE LOWER THAN THE GROUND LEVEL AT EACH END OF THE FENCE.

2. ENSURE THE CREST OF THE SPILL-THROUGH WEIR IS AT LEAST 300mm THE GROUND ELEVATION.

3. SECURELY TIE A HORIZONTAL CROSS MEMBER (WEIR) TO THE SUPPORT POSTS/ STAKES EACH SIDE OF THE WEIR. CUT THE FABRIC DOWN THE SIDE OF EACH POST AND FOLD THE FABRIC OVER THE CROSS MEMBER AND APPROPRIATELY SECURE THE FABRIC.

4. INSTALL A SUITABLE SPLASH PAD AND/OR CHUTE IMMEDIATELY DOWN-SLOPE OF THE SPILL-THROUGH WEIR TO CONTROL SOIL EROSION AND APPROPRIATELY DISCHARGE THE CONCENTRATED FLOW PASSING OVER THE WEIR.

MAINTENANCE

1. INSPECT THE SEDIMENT FENCE AT LEAST WEEKLY AND AFTER ANY SIGNIFICANT RAIN. MAKE NECESSARY REPAIRS IMMEDIATELY.

2. REPAIR ANY TORN SECTIONS WITH A CONTINUOUS PIECE OF FABRIC FROM POST TO POST.

3. WHEN MAKING REPAIRS, ALWAYS RESTORE THE SYSTEM TO ITS ORIGINAL CONFIGURATION UNLESS AN AMENDED LAYOUT IS REQUIRED OR SPECIFIED.

4. IF THE FENCE IS SAGGING BETWEEN STAKES, INSTALL ADDITIONAL SUPPORT POSTS.

5. REMOVE ACCUMULATED SEDIMENT IF THE SEDIMENT DEPOSIT EXCEEDS A DEPTH OF 1/3 THE HEIGHT OF THE FENCE.

6. DISPOSE OF SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

7. REPLACE THE FABRIC IF THE SERVICE LIFE OF THE EXISTING FABRIC EXCEEDS 6-MONTHS.

REMOVAL

1. WHEN DISTURBED AREAS UP-SLOPE OF THE SEDIMENT FENCE ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, THE FENCE MUST BE REMOVED.

2. REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

3. REHABILITATE/REVEGETATE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

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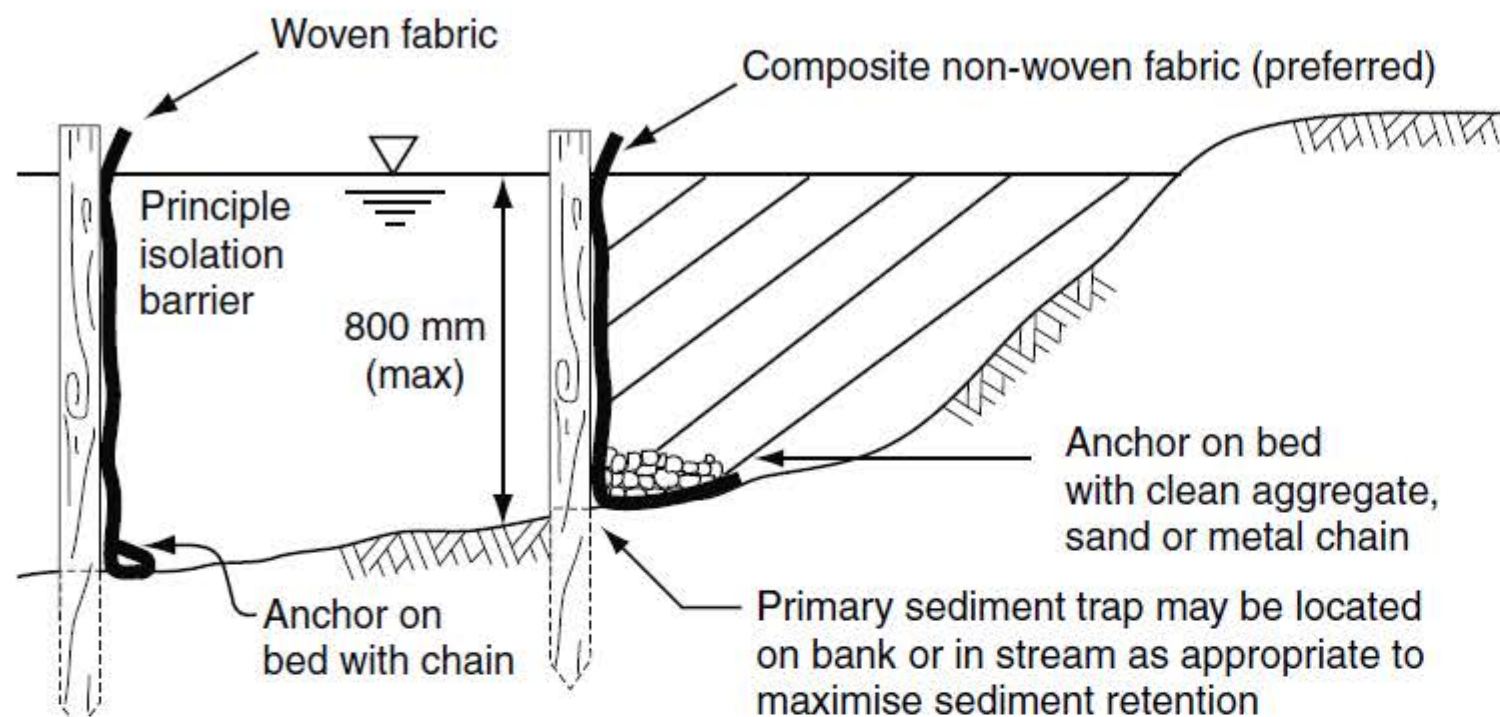
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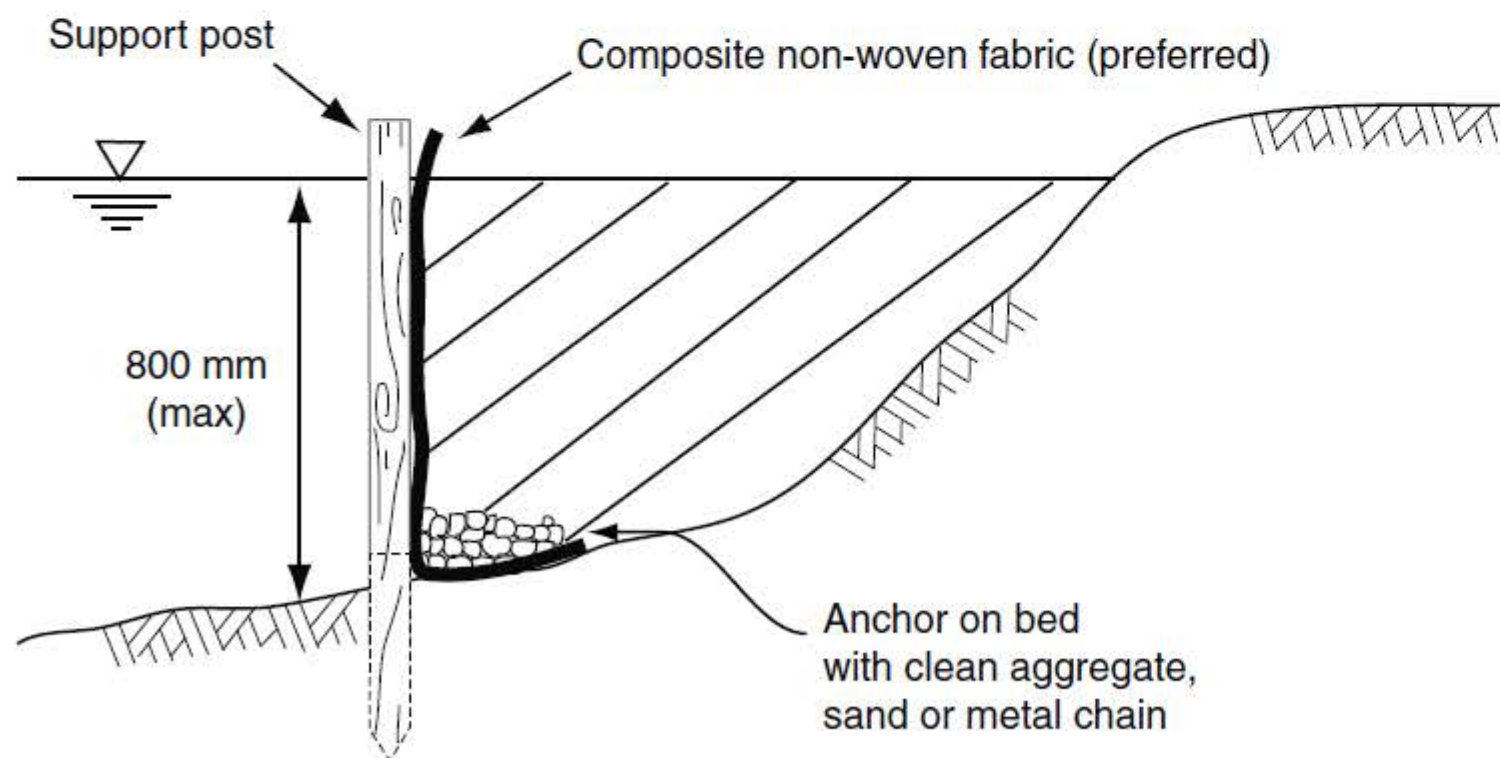
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Sediment Fence

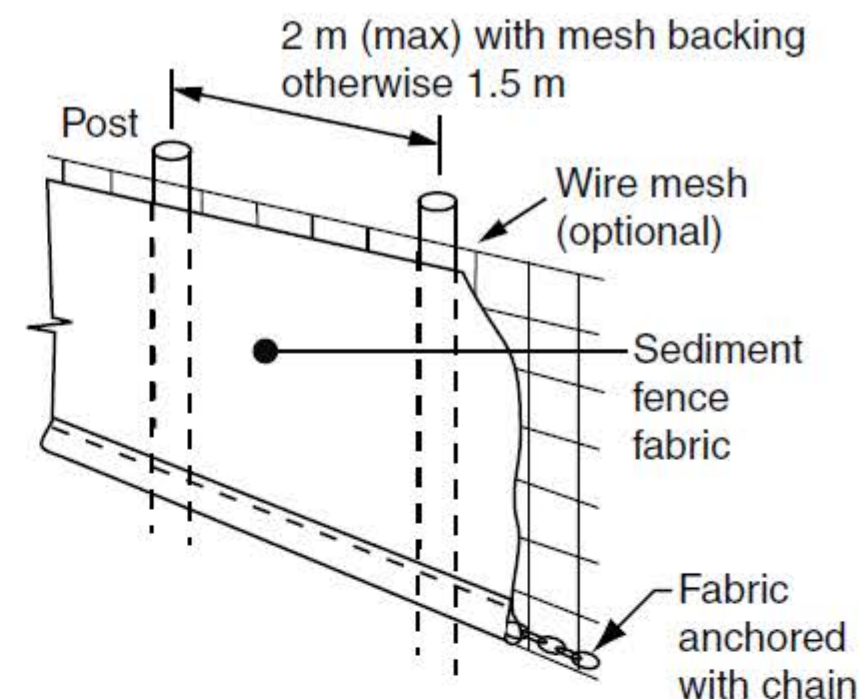
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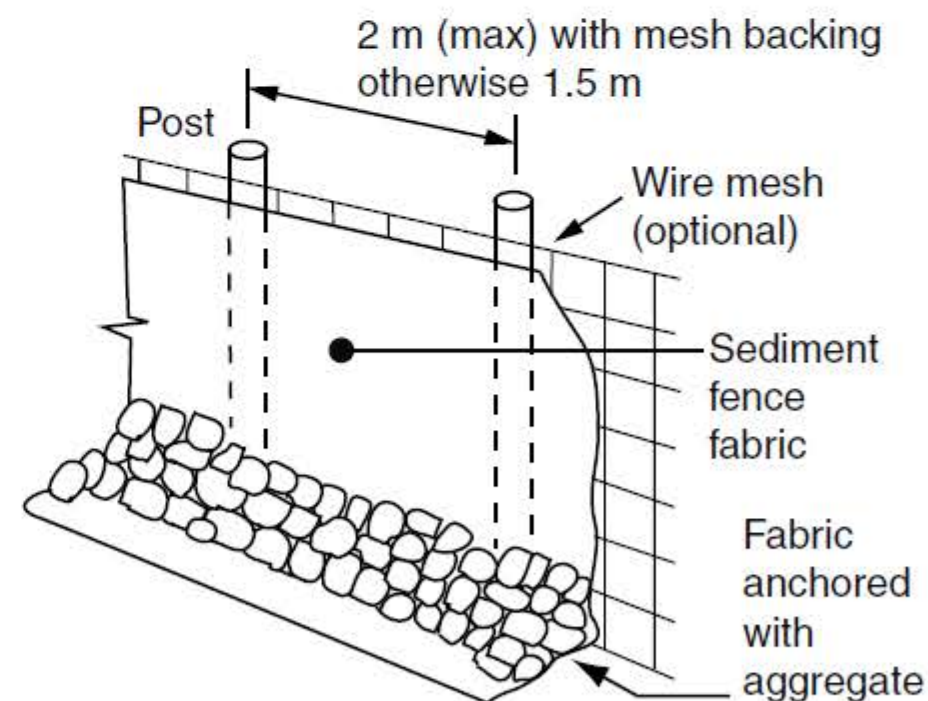
(a) Sediment fence isolation barrier with separate landward sediment fence



(c) Sediment fence isolation barrier acting as a combined isolation barrier and sediment trap



(b) Sediment fence isolation barrier with fabric anchored by ballast chain



(c) Sediment fence isolation barrier with fabric anchored by aggregate

Drawn:	Date:	Sediment Fence Isolation Barrier	SFB-01
GMW	Feb-10		

Catchments & Creeks Pty Ltd

MATERIALS

FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700mm IN WIDTH AND A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

FABRIC REINFORCEMENT: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200mm.

SUPPORT POSTS/STAKES: 1500mm² (MIN) HARDWOOD, 2500mm² (MIN) SOFTWOOD, OR 1.5kg/m (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

BALLAST (OUTER BARRIER): MINIMUM 8mm CHAIN OR EQUIVALENT, OR MINIMUM 50mm AGGREGATE.

STAPLES: HEAVY DUTY WIRE STAPLES AT LEAST 25mm LONG, OR WIRE TIES.

INSTALLATION

1. PRIOR TO COMMENCING ANY WORKS, OBTAIN ALL NECESSARY APPROVALS AND PERMITS REQUIRED TO CONDUCT THE NECESSARY WORKS INCLUDING PERMITS FOR THE DISTURBANCE OF RIPARIAN AND AQUATIC VEGETATION, AND THE CONSTRUCTION OF ALL PERMANENT OR TEMPORARY INSTREAM BARRIERS AND INSTREAM SEDIMENT CONTROL MEASURES.
2. REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
3. CONFIRM IF A SINGLE OR DOUBLE FENCE IS REQUIRED.

4. IF THERE IS FLOW WITHIN THE WATERCOURSE OR DRAINAGE CHANNEL AT THE TIME OF INSTALLATION OF THE ISOLATION BARRIER, THEN TAKE APPROPRIATE MEASURES TO MINIMISE THE RELEASE OF SEDIMENT DURING ITS INSTALLATION. SUCH MEASURES SHOULD ONLY INSTALLED IF CONSIDERED APPROPRIATE FOR THE LOCAL CONDITIONS, AND ONLY IF THEIR INSTALLATION IS JUDGED TO PROVIDE A NET OVERALL ENVIRONMENTAL BENEFIT.
5. TO THE MAXIMUM DEGREE PRACTICABLE, CONSTRUCTION ACTIVITIES AND EQUIPMENT SHOULD NOT OPERATE WITHIN OPEN FLOWING WATERS.
6. IDENTIFY THE APPROPRIATE LOCATION OF THE OUTER ISOLATION BARRIER. FOR REASONS OF SAFETY, THE OUTER BARRIER SHOULD NOT BE PLACED IN WATER DEPTHS EXCEEDING 1.2m.
7. IF PLACED IN LARGE OPEN WATERS, INSTALL THE ISOLATION BARRIERS SUCH THAT THE TOP OF EACH FENCE IS AT LEAST 300mm ABOVE THE WATERLINE TO PREVENT OVER-TOPPING BY WAVES OR FLUCTUATIONS IN WATER LEVEL.
8. PLACE THE SUPPORT POSTS (OUTER BARRIER) AT A MAXIMUM SPACING OF 2m WITH WIRE MESH BACKING, OR 1.5m WITHOUT WIRE MESH BACKING. DRIVE THE POSTS 600mm INTO THE CHANNEL BED OR UNTIL THE POST ARE SECURE. IF THE SUPPORT POST CANNOT BE DRIVEN 600mm INTO THE BED, THEN ADDITIONAL BRACING MAYBE REQUIRED.
9. ATTACH ANY FENCE REINFORCEMENT (WIRE MESH) AS SPECIFIED IN THE APPROVED PLANS OR AS DIRECTED.
10. PRIOR TO INSTALLING THE FABRIC, SECURE (SEW) A BALLAST CHAIN INTO THE BOTTOM OF THE FABRIC.
11. ATTACH THE SPECIFIED FABRIC TO THE CHANNEL SIDE OF THE POSTS. WHERE POSSIBLE, USED A CONTINUOUS ROLL OF FABRIC. IF THIS IS NOT POSSIBLE, CONSTRUCT SUITABLE LEAK-PROOF JOINTS IN THE FABRIC.

12. FASTEN THE FABRIC SECURELY USING HEAVY-DUTY STAPLES OR NAILS (WITH A WASHER) AT A MAXIMUM SPACING OF 50mm. USE WIRE TIES TO SECURELY ATTACH THE FABRIC TO THE WIRE MESH (IF USED).

13. IF IT IS NOT PRACTICABLE TO ATTACH A BALLAST TO THE BOTTOM OF THE FABRIC, THEN SECURE THE BOTTOM 300mm OF FABRIC TO THE CHANNEL BED USING A CONTINUOUS PLACEMENT (MINIMUM 50mm) OF LARGE AGGREGATE OR CLEAN ROCK FILL.

14. AFTER INSTALLING THE OUTER ISOLATION BARRIER, INSTALL THE SECOND LANDWARD BARRIER (IF REQUIRED). THE LANDWARD BARRIER IS USUALLY LOCATED JUST ABOVE THE NORMAL WATER LINE, BUT SHOULD BE LOCATED SO AS NOT TO INTERFERE WITH ADJACENT CONSTRUCTION ACTIVITIES.

15. ENSURE THE TOP OF THE FABRIC OF THE OUTER BARRIER IS AT LEAST 200mm ABOVE THE MAXIMUM EXPECTED, DRY WEATHER (I.E. NON-FLOOD FLOW) WATER LEVEL.

16. INSTALL THE LANDWARD SEDIMENT FENCE IN ACCORDANCE WITH THE NORMAL INSTALLATION PROCEDURES FOR A SEDIMENT FENCE, EXCEPT THE MAXIMUM SPACING OF SUPPORT POSTS IS 2m WITH OR WITHOUT A WIRE MESH BACKING. ENSURE THE FABRIC IS ATTACHED TO THE LANDWARD SIDE OF THE POSTS.

MAINTENANCE

1. INSPECT THE ISOLATION BARRIER DAILY AND AFTER ANY SIGNIFICANT CHANGE IN STREAM FLOW. MAKE NECESSARY REPAIRS IMMEDIATELY.
2. INSPECT THE BARRIER FOR TURBIDITY LEAKS THAT MIGHT BE CAUSED BY HOLES IN THE BARRIER OR DAMAGE TO THE FABRIC-STREAMBED CONTACT.
3. REPAIR ANY TORN SECTIONS WITH A CONTINUOUS PIECE OF FABRIC FROM POST TO POST.

4. WHEN MAKING REPAIRS, ALWAYS RESTORE THE SYSTEM TO ITS ORIGINAL CONFIGURATION UNLESS AN AMENDED LAYOUT IS REQUIRED OR SPECIFIED.

REMOVAL

1. ALL COMPONENTS OF THE SEDIMENT FENCE ISOLATION BARRIER SHOULD BE REMOVED AS SOON AS POSSIBLE AFTER IT IS NO LONGER NEEDED.
2. IF EXCESSIVE SEDIMENT OR DEBRIS HAS COLLECTED AROUND THE BARRIER, THEN REMOVE SUCH MATERIAL BEFORE THE BARRIER IS REMOVED AND DISPOSE OF SUCH MATERIAL PROPERLY.
3. ENSURE ANY CHANNEL WATER CONTAINED WITHIN THE ENCLOSED CHANNEL AREA IS SUITABLY TREATED BEFORE EITHER THE WATER IS DISCHARGED FROM THE ENCLOSURE OR THE ISOLATION BARRIER IS REMOVED.
4. IF IT IS NOT FEASIBLE TO WAIT FOR ADEQUATE SETTLEMENT OF SUSPENDED SEDIMENTS, THEN WHERE PRACTICABLE, PUMP THE SEDIMENT-LADEN WATER TO AN OFF-STREAM DE-WATERING SEDIMENT CONTROL SYSTEM FOR TREATMENT. THIS TREATMENT AREA SHOULD IDEALLY BE LOCATED AT LEAST 50m FROM THE CHANNEL.
5. STARTING FROM THE UPSTREAM END, REMOVE ALL MATERIALS USED TO FORM THE ISOLATION BARRIER AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
6. RESTORE THE WATERCOURSE CHANNEL TO ITS ORIGINAL CROSS-SECTION, AND SMOOTH AND APPROPRIATELY STABILISE AND/OR REVEGETATE ALL DISTURBED AREAS.

Drawn:	Date:		
GMW	May-10	Sediment Fence Isolation Barrier	SFB-02

MATERIALS

ROCK: 150 TO 300mm NOMINAL DIAMETER, HARD, EROSION RESISTANT ROCK. SMALLER ROCK MAY BE USED IF SUITABLE LARGE ROCK IS NOT AVAILABLE.

SANDBAGS: GEOTEXTILE BAGS (WOVEN SYNTHETIC, OR NON-WOVEN BIODEGRADABLE) FILLED WITH CLEAN COARSE SAND, CLEAN AGGREGATE, STRAW OR COMPOST.

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. PRIOR TO PLACEMENT OF THE CHECK DAMS, ENSURE THE TYPE AND SIZE OF EACH CHECK DAMS WILL NOT CAUSE A SAFETY HAZARD OR CAUSE WATER TO SPILL OUT OF THE DRAIN.

3. LOCATE THE FIRST CHECK DAM AT THE DOWNSTREAM END OF THE SECTION OF CHANNEL BEING PROTECTED. LOCATE EACH SUCCESSIVE CHECK DAM SUCH THAT THE CREST OF THE IMMEDIATE DOWNSTREAM DAM IS LEVEL WITH THE TOE OF THE CHECK DAM BEING INSTALLED.

4. ENSURE THE CHANNEL SLOPE IS NO STEEPER THAN 10:1 (H:V). OTHERWISE CONSIDER THE USE OF A SUITABLE CHANNEL LINER INSTEAD OF THE CHECK DAMS.

5. CONSTRUCT THE CHECK DAM TO THE DIMENSIONS AND PROFILE SHOWN WITHIN THE APPROVED PLAN.

6. WHERE SPECIFIED, THE CHECK DAMS SHALL BE CONSTRUCTED ON A SHEET OF GEOTEXTILE FABRIC USED AS A DOWNSTREAM SPLASH PAD.

7. EACH CHECK DAM SHALL BE EXTENDED UP THE CHANNEL BANK (WHERE PRACTICABLE) TO AN ELEVATION AT LEAST 150mm ABOVE THE CREST LEVEL OF THE DAM.

MAINTENANCE

1. INSPECT EACH CHECK DAM AND THE DRAINAGE CHANNEL AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING RAINFALL.

2. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN ANY OF THE CHECK DAMS, THEN CHECK THE SPACING OF DAMS AND WHERE NECESSARY INSTALL INTERMEDIATE CHECK DAMS OR A SUITABLE CHANNEL LINER.

3. CHECK FOR DISPLACEMENT OF THE CHECK DAMS

4. CHECK FOR SOIL SCOUR AROUND THE ENDS OF EACH CHECK DAM. IF SUCH EROSION IS OCCURRING, CONSIDER EXTENDING THE WIDTH OF THE CHECK DAM TO AVOID SUCH PROBLEMS.

5. IF SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE CHECK DAMS, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.

6. REMOVE ANY SEDIMENT ACCUMULATED BY THE CHECK DAMS, UNLESS IT IS INTENDED THAT THIS SEDIMENT WILL REMAIN WITHIN THE CHANNEL.

7. DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

REMOVAL

1. WHEN CONSTRUCTION WORK WITHIN THE DRAINAGE AREA ABOVE THE CHECK DAMS HAS BEEN COMPLETED, AND THE DISTURBED AREAS AND THE DRAINAGE CHANNEL ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, ALL TEMPORARY CHECK DAMS MUST BE REMOVED.

2. REMOVE THE CHECK DAMS AND ASSOCIATED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

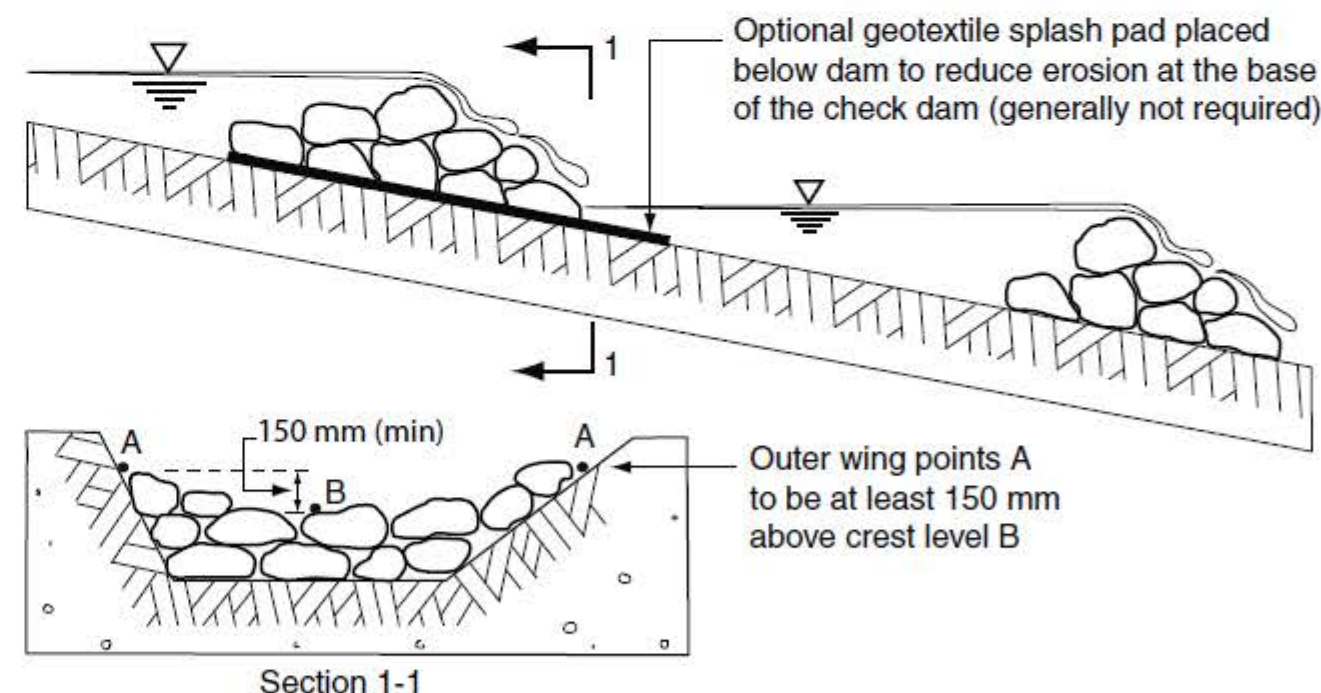


Figure 1 - Layout and profile of check dams (rock check dams shown)

Drawn:	Date:		
GMW	Dec-09	Check Dams	RCD-01

Appendix C – Inspection checklist template

_____ Inspection Checklist

Location:

Date:

Time:

Weather Conditions:

Days since last rainfall event:

Inspection conducted by:

Element	Yes	No	Comments	Actions (refer to Corrective Actions for each element)	Action Completed (tick box and sign)

(Note, a site plan and photographic evidence must accompany this checklist to identify the severity and locations of observed issues)

GHD

Level 13, The Rocket

203 Robina Town Centre Drive

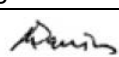
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Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	E Love / N Ambrey	S Petersen	On file	G Squires		09/12/2020

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Appendix B – Cassowary Management Plan

Department of State Development, Tourism and Innovation

Wangetti Trails Project

Wangetti South Cassowary Management Plan



environmentPACIFIC

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Wangetti Trails Project, Wangetti South Cassowary Management Plan

Document Status

Rev	Author	Signature	Reviewer	Signature	Date
A	A Small	AS	K Keane	KK	03/07/2021

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Appendix A

Cassowary Foodplants in the Wangetti Trails Project Area

1. Introduction

1.1 Introduction

A Cassowary Management Plan (CMP) was prepared in December 2020 (Environment Pacific 2020/DSDTI) to assist in the planning/design, construction and operation/maintenance aspects of the Wangetti Trail (north and south) in consideration of the southern cassowary ('cassowary' *Casuarius casuarius johnsonii*).

The primary purpose of the CMP was to provide guidance in managing potential impacts and negative interactions between cassowaries and human activities. The 2020 CMP was based on the level of available information for the Wangetti Trails project at the time. A key feature of the CMP is that it is to be 'live document' and is to be updated when further detailed information on design, construction and operation for the trails become available.

Subsequent to the release of the 2020 CMP, the design of the trails has progressed, and further information is now available for the Wangetti Trails Project. In particular, the Wangetti South section of the project is now at an advanced stage of planning, and amendments to the 2020 CMP are warranted that reflect current planning.

Habitat modelling and identification of management measures in the 2020 CMP was based on an assessment of the overall values of the entire Wangetti Trails Project Area, including the Wangetti North, Wangetti South, and the Southedge/Black Mountain mountain bike-only sections. For this Wangetti South applicable only CMP update, the modelling was revised to include only those attributes specific to this section of the Wangetti Trails project.

1.2 This Plan

This report is restricted to the Wangetti South trail section of the project and identifies management measures specific to the construction and operation of this trail on the basis of further design and construction information. The provisions of the CMP related to the Wangetti North trail (as presented in the 2020 CMP) continue to apply.

This revised Wangetti South trail CMP does not replace and is subordinate to legislative, regulatory and planning provisions relevant to the management of the values of the Wet Tropics World Heritage Area (WTWHA).

This CMP does not abrogate responsibility of the Management Authorities for the Wangetti South trail from the fulfillment of conditions as may be issued for permits, authorities, and approval for the construction, operation and maintenance of the project. Legislative obligations will prevail where there is a conflict between this Plan and regulatory requirements.

Where there are existing policy, planning and regulatory commitments that include gazetted public roads, recreation reserves, timber/forestry reserves, private property and their access roads, these must be addressed within the context of this Plan.

1.3 Area this Plan Covers

This CMP is limited to those works associated with the construction, operation and maintenance of the Wangetti South trail. This includes:

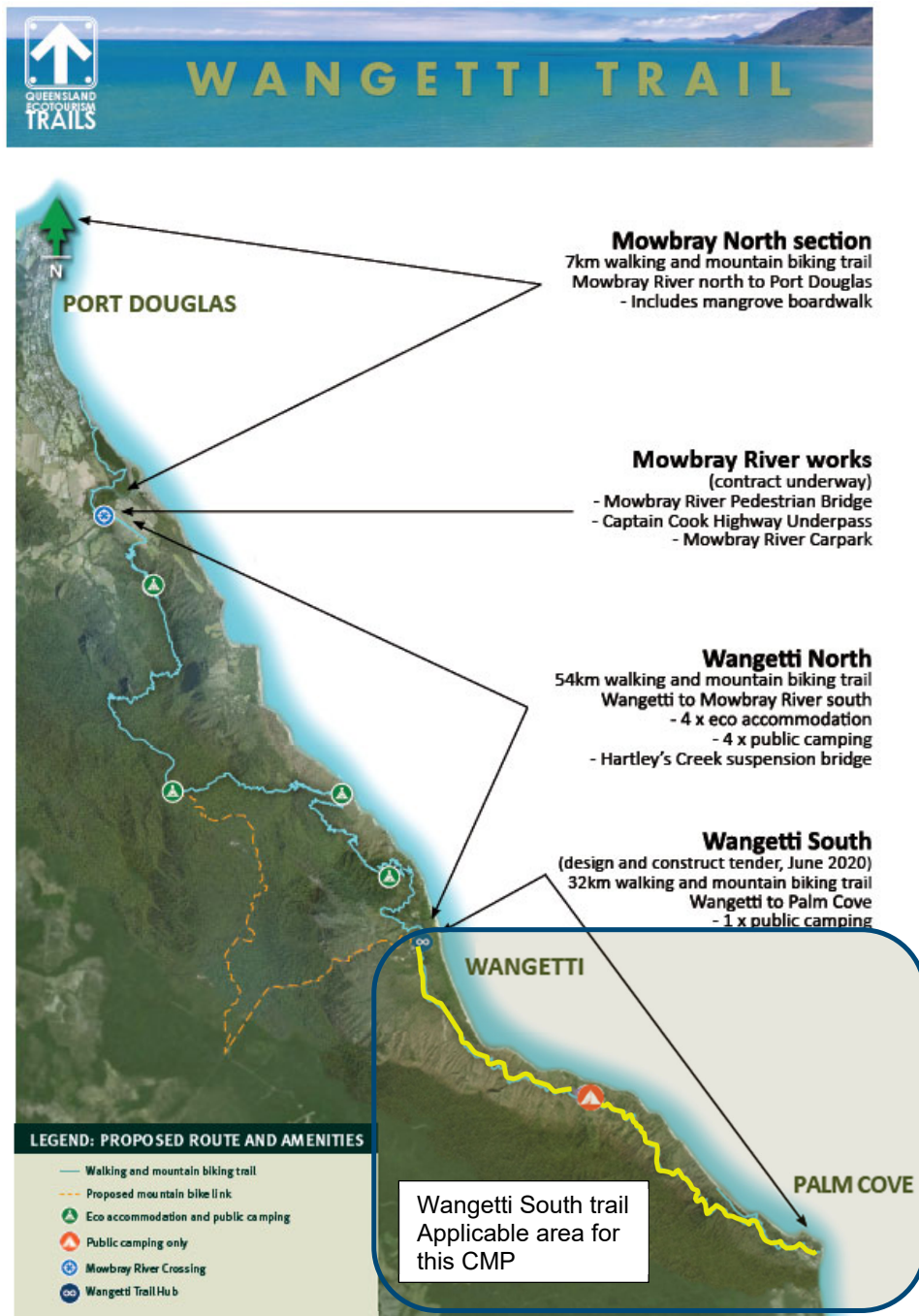
- The 40m wide proposed corridor construction area

- All aspects of construction including construction access trails, laydown and stockpile areas, temporary camps (if required) and any other infrastructure related area.

The alignment of the Wangetti South, trail as shown in the GHD report (2020) and reproduced as

- **Figure 1** (following).
- All camping grounds along the trail.
- All service access tracks and roads to trail facilities.
- Carparks, registration areas/trailheads and other locations.

Figure 1 Wangetti Trails Project Extent – Wangetti South



.Source: Wangetti Trails Project: (GHD report 2020)

1.4 Description of Works

A full description of the proposed works is to be found in documentation on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* ('EPBC Act') project referrals portal at:

<http://epbcnotices.environment.gov.au/referralslist/> Referrals no: [2020/8722](#) and [2020/8723](#).

The following is a summary of the information presented in the *Wangetti Trail South Section (Wangetti to Palm Cove) Matters of National Environmental Significance Baseline Ecology and Impact Assessment Report* (GHD July 2020).

The proposed infrastructure includes:

- A 29.7km¹ shared use trail to accommodate both mountain bike users and hikers. Trail will comprise both natural ground and built surface sections, to a maximum width of 1.5m when formed, with allowance for an additional 0.5m of disturbance either side during construction. A 40m wide construction corridor has been identified (GHD 2020) to allow flexibility of minor realignments and infrastructure aspects during construction.
- Built structures proposed as part of the trail include reinforcement of gully crossings, bridges, staircases, platforms, rock armouring and signage.
- A number of waterway crossings along the shared use trail will require armouring, boulder crossings and low-level bridges for minor waterway crossings.
- Public camping node and amenities block, with a footprint of 0.25 ha and comprising
 - 10 x 4 m diameter elevated camping decks
 - 1 x 2.5 m x 2.5 m toilet block
 - One communal gathering area including bike rack, table and seating, cooking and bench area and shelter
 - Interconnecting pathways, boardwalks and access tracks.
- The upgrading of existing access tracks into service tracks to provide restricted access to the shared use trail and the camping node for construction purposes, operational purposes, maintenance purpose and for emergency purposes. Upgrading will include vegetation trimming and ongoing maintenance, stabilisation of track surfaces, installing drainage controls where required.

¹ Note: this figure is based on original preliminary design. Actual distance may vary depending on constructability along alignment. An explanation of distances/discrepancies is provided in **Notes on Mapping** Section 3.3 of this document.

2. Application of this Plan

2.1 Understanding Cassowaries

2.1.1 Description and Ecology

The southern cassowary (*Casuarius casuarius*) is found in Indonesia, Papua New Guinea and Australia, with the Australian population being considered a subspecies, *Casuarius casuarius johnsonii*. The Australian population has disjunct populations represented on Cape York Peninsular and in the north Queensland wet tropics. Population estimates in Australia vary, with the Cape York populations poorly understood, and previous estimates for the wet tropics population widely varying. The most current estimate is approximately 4,400 (Westcott *et al* 2014).

The origin of the name 'cassowary' has several sources but is considered most likely to derive from Papuan languages referring to the 'horned (kasu) head'(weri) (Boles 1987). In the language of the Eastern Kuku-Yalanji traditional owners the cassowary is "kurrangi" (Hershberger, 1986) and "punta:raa" to the Yirrganydji traditional owners (Biggs, 2013). The cassowary is a totemic animal to traditional owners, and is an iconic emblem of the Wet Tropics World Heritage Area.

The southern cassowary ('cassowary' in this Plan) is a member of the ratites, a grouping of large flightless birds that includes other cassowary species in Melanesia, but also African ostriches, Australian emus, New Zealand kiwis and South American rheas. Cassowaries are large and heavy birds, females being the larger, and may reach heights of 1.8m and weigh 65kg (Biggs 2013). They are a polyandrous species, generally solitary in nature with variable size home ranges, although these ranges are fluid and may overlap the territory of adjacent birds (Crome and Moore 1990, Kutt *et al* 2007, Westcott *et al* 2014). Breeding occurs between June to October/November, with the male alone responsible for incubation and rearing of chicks for between 9 to 18 months after hatching. During the approximately 50 days of incubation males rarely leave the nest.

Cassowaries are primarily frugivorous, their core habitat being rainforest communities that are characterised by a wide diversity of fleshy fruited species. Cassowaries have been documented as being the primary dispersal agent of at least 238 plant species (Mack *et al* 2006).

Cassowaries will however feed on a variety of invertebrates (including crustaceans), carrion, and small vertebrates (Buosi and Burnett 2006, Bentrupperbäumer 1998).

Of importance to this plan is that cassowaries are not restricted to rainforest areas, but require a mosaic of habitats that offer resources, e.g. fruiting plants, that are seasonally only available outside of rainforests (Crome and Moore 1990). Their foraging is also strictly diurnal, meaning that cassowaries will not be active in the evenings (Crome 1976) and being bipedal, their habitat preference is for areas of milder terrain and flatter land. Subsequently the most significant wet tropics populations are to be found in the coastal lowlands (Westcott *et al* 2014) where preferential habitat is most at risk from development.

2.1.2 Conservation Status

The southern cassowary (*Casuarius casuarius johnsonii*) is listed nationally as 'endangered' under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). The southern population (wet tropics) is listed as 'endangered' under Schedule 1 of the Queensland *Nature Conservation (Animals) Regulation 2020* and Cape York Peninsular

populations are listed as 'vulnerable' under Schedule 2 of the *Nature Conservation (Animals) Regulation 2020*. Internationally the species (*Casuarus casuaris*) is listed under the IUCN Red List as 'vulnerable- declining population trend'.

Habitat loss and fragmentation of remaining habitat is recognised as the primary threat to cassowary populations, and has been most extensive in the coastal lowlands where cassowary densities are the highest (Moore 2003, Latch 2007, Westcott *et al* 2014). Other factors identified in the decline of cassowary populations include road death by vehicle strikes, dog attacks and avian diseases e.g. avian tuberculosis and *Aspergillosis* (Moore 2003). Degradation of habitat through logging, feral pig activity, weed invasion and altered fire regimes is also considered a key factor in reducing resource availability for cassowaries (Kutt *et al* 2009).

2.1.3 Behavioural Aspects

The behaviour of cassowaries is not well understood. They are a cryptic species, and captive individuals rarely exhibit the full range of behavioural aspects that have been observed of cassowaries in the wild (Biggs 2013). The behaviour of individuals to the same stimulus may vary from individual to individual bird, and conversely, the same bird may respond differently to the same stimulus at different times.

There is consensus in published literature (e.g. Crome 1976, Crome and Moore 1990, Bentrupperbäumer 1998, Buosi and Burnett 2006) that changes in behavioural aspects are a significant factor in cassowary mortality and injury. In particular hand feeding of cassowaries, or other ready availability of anthropogenic food sources, e.g. organic rubbish, is directly responsible for attracting cassowaries to road sides, where vehicle strike is the single most direct cause of cassowary mortality and injury (Moore 2003) or into urban, rural/residential areas and into conflict with dogs and urban traffic (Bentrupperbäumer 1998).

Kofron (1999, 2003) assessed the pattern of negative cassowary interactions with people (i.e. attacks) and of the 150 documented cases reported to 1999, 73% of these were in situations where cassowaries were soliciting or expecting food from humans. Other attacks occurred where birds were reacting in response to threat perceptions including defending food sources (5%), defending themselves (15%) or their eggs and chicks (7%). Eight of the attacks resulted in serious injury, and there is one historical mortality in a situation where a cassowary was defending itself from dogs and their handler.

Access to anthropogenic food sources and/or hand feeding appears to increase the changes of negative interactions with cassowaries (Kofron 2003). Behavioural changes relevant to the Wangetti Trails project may include:

- Persistent access to camp areas as a result of availability of anthropogenic food sources e.g. rubbish bins, food left in untended open areas, or hand feeding.
- Persistent occupation of trail areas in home ranges resulting from hikers/riders leaving food scraps or hand feeding birds, and subsequent potential confrontation with users on the trail.
- An increase in aggressive behaviour towards hikers/riders in defending chicks and nest areas in proximity to the trail/camp areas.
- An increase in aggressive behaviour towards hikers/riders in defending food sources, e.g. particular fruiting trees, adjacent to the trail/camp areas.

Other, more general behavioural responses noted with cassowaries that may arise as a direct result of construction and operation along the Wangetti South trail include the following:

- Response to noise (and light at night). Cassowaries are a reclusive species, relying on vocal communication for finding mates, husbanding chicks, and as a warning response. Noise has the potential to adversely impact behaviour which may include abandoning or limiting access to part of their range including water sources (permanent and seasonal), and important staple food sources (e.g. access to fruiting trees). At the most extreme, noise may preclude cassowaries from finding breeding partners in situations over large home ranges. Construction noise may result in only temporary displacement of the cassowary to other parts of their range, however over the extent of the Wangetti South trail, there are no key/essential habitat resource areas in locations where such impacts are expected.
- Cassowaries will readily adopt clearings into their movement patterns, and will use available paths, trails and minor roads to traverse their ranges. While though evidence of cassowaries has been obtained for other sections of the Wangetti Trails project (Wangetti North and the Mountain bike only trail) there have been no documented records of cassowaries using any part of the Wangetti South trail. The volume of hikers and mountain bike riders is not known, however it remains a low to very low possibility that users of the Wangetti South trail will come into contact with cassowaries. In such an event, the behavioural responses are unknown and will largely depend on the site-specific circumstances (e.g. adults with chicks, fruiting trees present, blind corners on fast moving mountain bikes, etc.)

2.2 Abundance and Distribution in the Project Area

2.2.1 Database records, Published Literature and Anecdotal Information

While there have been intensive surveys for specific localities in the Wet Tropics, for example Mission Beach (e.g. Moore 2007), specific information on the abundance and distribution of cassowaries in the Wangetti Trails project area overall is very limited. For the Wangetti South trail, there are no formal records, with the only information being anecdotal observations made in the 1800s with the most recent being 1907 at Tin Creek, near Wangetti. An extensive survey of the Wet Tropics using information obtained through direct observation and DNA analysis was undertaken by Westcott *et al* (2014). Subsequent complexing modelling utilising a number of tools, and including habitat condition and type (identified as essential habitat through Kutt *et al*. 2014) were used to obtain an estimate of cassowary density and population based on sub-regional areas including the Black Mountain corridor between Kuranda and Julatten (west of the Macalister Range), with the Wangetti South trail on the eastern foothills and ridges

With respect to the Wangetti South alignment area, all actual observations are clustered in the southern section of the Black Mountain corridor (outside the Wangetti South project area) with a lesser number of records collected in the northern end, closest to Julatten along Black Mountain road. No cassowaries were recorded east of the Macalister Range and the associated modelling did not include much of the eastern fall of the Macalister Range owing to the lack of suitable habitat including landform features, vegetation associations, permanent water availability and verified records/observations. Subsequently less than 1/10th (7.5%) of the Wangetti Trail south was modelled as having some resource capability for cassowaries. The modelling of occupancy of these areas, either transitory or permanent, identified densities from '0' to 0.12/ha (Kutt *et al* 2014). The boundaries largely follow those of the DERM (2009) essential habit layer shown in **Figure 2**.

2.2.2 Field Survey Data

Ecology surveys of the entirety of the Wangetti South shared use trail of were undertaken in 2019 (GHD). Surveys undertaken in 2020 were restricted to the Wangetti North trail and Southedge Road/Black Mountain Road mountain-bike only trail.

There was no evidence of cassowary utilisation of any part of the Wangetti South trail, with the majority of this trail being outside mapped essential cassowary habitat (DERM 2009 **Figure 2**). The lack of field survey observations (either direct or indirect) support the modelled density and likely occupancy of mapped essential habitat along the Wangetti South trail as estimated by Westcott *et al* (2014), which varied from 0 birds to 0.12 / ha.

Based on the modelled density incorporating Wangetti North, Wangetti South and the Southedge/Black Mountain mountain-bike only section, the current estimate is for 8 to 9 cassowaries within the entirety of the Wangetti Trails project area,. Combined with actual observations, all these birds are believed to occupy ranges west of the Macalister Range, along the Wangetti North trail and Southedge Road/Black Mountain Road mountain-bike only trail..

2.2.3 Field Habitat Observations

A number of environmental aspects considered important in the abundance and distribution of cassowaries in the project area were noted during the 2019 surveys.

- Permanent water is less available along or immediately adjacent the trail sections than would be available in wetter coastal areas of known higher cassowary abundance and distribution, e.g. Mission Beach, Daintree. Nearly all watercourses are ephemeral, and permanent water is restricted to a few major creek systems.
- The very small areas of rainforest types are primarily limited to notophyll vine forest types, i.e. these are drier-type rainforests that are generally characterised by floristic assemblages with a lesser representation of core foodplant species, and a higher representation of families that include genera with non-fruity seeds, e.g. *Flindersia*, *Agathis*, *Agyrodendron*.
- The Wangetti South trail is on the eastern fall of the Macalister Range, and landform and topography is challenging, with steep, rocky slopes, deep sided gullies, and include a number of localities that would pose challenges to bipedal cassowary movement.
- The availability of complex habitat mosaics, e.g. wetlands/swamps, littoral environments, is very limited. These habitat mosaics provide seasonal resources that may not be available in core rainforest habitats, and subsequently cassowary home ranges may be larger than recorded in the lowlands to accommodate this disparity. While some habitats may be important only briefly in the annual cycle of food production, they may be crucial to the survival of cassowaries whose home range encompasses them (Bentrupperbäumer 1998). Crome and Moore (1990) suggest food resources in non-rainforest habitats may be more important at times of food stress in the rainforest, such as after cyclones.

The above field observations of habitat quality are consistent with the modelling of West *et al* (2014) with respect to low to very low/no cassowaries within the Wangetti South alignment.

3. Habitat Management Areas

3.1 Derivation of Management Areas

The derivation of the habitat management areas in the 2020 CMP was based on the application of various habitat factors (see **Table 1**) which were weighted over the entirety of the Wangetti Trails Project Area, including the Wangetti North, Wangetti South, and the Southedge/Black Mountain mountain bike-only sections. As the Wangetti Trails project encompasses very many landform types, ecological communities and microclimates, the overall Wangetti Trails project area approach unduly weighted some attributes which resulted in skewing some outputs. Owing to the complexity of the overall project area, It was beyond the scope of the original modelling to equitably weight all habitat factors for each of the trail sections within the context of the original purpose of the 2020 CMP.

For this Wangetti South applicable only CMP update, the derivation of the Management Areas was revised to include only those attributes specific to the Wangetti South trail, however the overall approach as presented in the 2020 CMP remains the same (as below).

Habitat management areas and their relative priority for action have identified based on the presence of core habitat factors located either directly along the trail and camp areas and/or within an estimate home range of 500m to 1000m radius (Bentrupperbäumer 1998; Campbell *et al.* 2012).

The areas of likely highest occupation and resource utilisation by cassowaries were used to prioritise habitat management areas. These areas were determined through a qualitative weighted criteria analysis undertaken using a spatial query in a GIS platform and supported through evidence of birds observed during field work and of anecdotal records. This analysis also includes the areas of the proposed camps, as users of these facilities, and the operation/maintenance of camps, have a high potential to affect cassowary behaviour. The outcome of this analysis identifies the location of the most probable area of interaction with cassowaries, and forms the basis for habitat management priority areas and actions.

Changes from the original analysis (EnPac 2020) include:

- SQL queries were bounded by the coordinates of the Wangetti South trail, i.e., did not include overall model parameters as done on the first run for the overall Wangetti Trails project area.
- There are no CSIRO, WildNet, or other database records for cassowaries (either of birds or of scats) in proximity to the Wangetti South trail (except for historical anecdotal records at Wangetti.). Removed these records (applicable only to Wangetti North and the mountain bike trail) from the queries.
- Application of vegetation data as specific to the Wangetti South trail i.e. review of habitat complexity and connectivity, and floristics.
- Habitat patch size i.e., size of mapped essential habitat in most instances was smaller than the estimated home ranges of cassowaries ((Bentrupperbäumer 1998; Campbell *et al.* 2012.
- Proximity to permanent water. Review of some streams identified in database mapping as permanent. Only one of the streams actually mapped is considered to be permanent, others are seasonally dry gullies.

- More detailed topography was used. The DERM 2009 mapped essential habitat in some areas is almost precipitous.

The revised criteria, their relative importance, and notes used for identifying priority management areas are presented in Table 1.

The management areas were subsequently qualitatively allocated a ranking from Highest Priority to Lowest Priority based on:

- Quality of environmental factors sustaining cassowary habitat.
- Verifiable evidence (scats, observation, reliable witness accounts) of cassowary utilisation.
- Proposed infrastructure type, nature, and location.
- Existing habitat modelling and available data sources.

These were collectively mapped based on the 40m wide construction corridor identified in the GHD 2020 report, taking into account the potential abundance and density of cassowaries as modelled through Westcott *et al* (2014) within the Black Mountain corridor, any actual records/observations and the suitability of isolated patches of mapped essential habitat to support cassowary home ranges.

3.2 Habitat Management Areas Summary

The 2020 CMP (Section 3.2) recommended that the boundaries of derived habitat management areas and priority rankings should be reviewed following a period of establishment and operation of the trails, indicatively two years, when further data will have been collected on cassowary interactions with trail users and trail/camp operators. The mapping of these habitat management areas is shown in **Figure 2**, and described in the following.

3.2.1 Highest Priority Habitat Management Areas

These are localities within and/or immediately adjacent to essential habitat factors (core foodplant resources, permanent water availability) and supported by direct evidence of resource utilisation (actual birds or scats). Highest priority areas provide critical resources to the survival of cassowaries where seasonal or permanent occupation is supported by habitat components needed for the survival and recovery of the species, or a localised portion of the population.

There is a high to very high probability that interactions between cassowaries and users of the infrastructure in these localities will occur within the construction, operation and maintenance phase of the project.

3.2.2 High Priority Habitat Management Areas

These areas are allocated to infrastructure locations where the majority of the essential habitat factors are represented within an estimated home range area of 500 to 1000m radius of the infrastructure and supported by direct evidence of resource utilisation (actual birds or scats). Some habitat factors e.g. forest structure integrity, may be diminished but still provide critical resources to the survival of cassowaries where seasonal or permanent occupation is supported by habitat components needed for the survival and recovery of the species, or a localised portion of the population.

The probability is moderate to high that interactions between cassowaries and users of the infrastructure in these localities will occur within the project construction operation and maintenance phases.

3.2.3 Moderate Priority Habitat Management Areas

Moderate priority areas are localities in which there are habitat factors that may provide important seasonal resources but potential core habitat features are either diminished or lacking. There are no records of cassowaries, or observations of scats in these areas. These areas may provide important seasonal resources, or resources in the event of a cyclonic damage to core habitat.

Birds may use these areas on a seasonal, transitory and opportunistic basis, however the probability of interactions with users of the facilities is moderate to low and would only occur over a longer timespan during the operational and maintenance phase of the trails.

3.2.4 Low Priority Habitat Management Areas

These areas have greatly reduced habitat factors, and any factors present are small in extent, usually isolated from key habitat resources by topography, and/or large distances of intervening unsuitable habitat types (e.g. rocky sclerophyll woodlands). There are no recent verifiable records of cassowaries in these areas.

Published literature/research also identifies these areas as non-preferential cassowary habitat and the likelihood of interactions between cassowaries and trail users is very low to nil.

3.2.5 Lowest Priority Habitat Management Areas

Locations within developed areas, extensively cleared or with existing infrastructure with no supporting habitat for cassowaries. Habitat factors elsewhere are either absent, or exist in isolation with no other resource capacity to support cassowaries. Areas of mapped essential habitat either have a known history of local extirpation (i.e., coastal Wangetti area), or are too small to support cassowary home ranges. No likelihood of interactions between cassowaries and trail users.

3.3 Notes on Mapping

The mapping has been derived from a number of sources as cited in this plan. The alignments for the trail/road infrastructure were surveyed in the field for previous reports (e.g., GHD 2020) using a hand-held GPS. This has resulted in a number of anomalies arising from the practical need to traverse rough and steep terrain, areas of impassable vegetation, avoidance of large rock outcrops, safe crossings of waterways and similar field obstructions. Subsequently there are discrepancies in distances between original preliminary alignment GPS survey distances (as quoted in the GHD reports), and the distances as identified in this plan. Specifically, the distances used in this plan for the various management sections reflect the approximate centre line median of the 40m wide construction corridor along the GPS field survey alignment. That is, the quoted distances in this plan are shorter than those of the surveyed alignment as the approximate median centreline of the construction corridor does not include the various deviations made during the field surveys.

Table 1 Management Area Derivation

Criteria	Relative Importance	Data Source	Notes and relevance to Wangetti Trail (north and south) and Wangetti Mountain Bike Trail
Direct observation (cassowaries or their scats)	Very high	Field survey data 2019, 2020 RRRC surveys 2012-2014 Anecdotal information, QPWS, WTMA and Qld Forestry	<p>Scats indicate direct utilisation of an area that is within the home range of at least one bird. While though scats provide evidence of presence, they do not reflect the probable density of distribution without further work, e.g. DNA analysis, to identify individual birds.</p> <p>There are no verifiable records of cassowaries in the steep coastal section between Palm Cove and the descent to Wangetti along the Wangetti South trail alignment. Most of this trail section is outside of the essential habitat mapping (DERM 2009) for the wet tropics. Anecdotal information has identified that Wangetti coastal areas may have once hosted a cassowary population, however this population is no longer extant (last record being 1907, Tin Creek).</p>
Existing habitat modelling	Moderate	DERM Essential habitat overlay 2009	<p>Essential habitat has been mapped for cassowaries based upon direct, and verifiable evidence of cassowary utilisation of various regional ecosystem (RE) vegetation types across the Wet Tropics (Kutt <i>et al</i> 2004, DERM 2009). This does not mean that every mapped location of the relevant RE has a verifiable record. Of the 28.8km of the Wangetti South shared use trail, approximately 2.9km is within mapped essential habitat. The majority of this essential habitat has historically no cassowary records, and represent patches which are isolated from core habitat areas. The only significant area is near Wangetti hub (Tin Creek), where no cassowaries have been sighted since tin mining began in 1907.</p> <p>Additionally some of the areas of the small patches of mapped essential habitat along the Wangetti South trail are too small to support the home range of a cassowary, and are not connected with any other habitat.</p>
Complexity and type of habitat	High	RE mapping v.11 Field survey data 2019, 2020 WTWHA mapping, Stanton 2009	<p>Whilst cassowaries are dependent on rainforests, they require a mosaic of habitat types which can provide a year-round supply of flesh fruits. The distribution of cassowaries is constrained by the availability of habitat which can provide a year-round supply of fleshy fruits and access to permanent freshwater for daily drinking and bathing (Buosi & Burnett 2006). Cassowaries are subsequently not exclusively found in rainforest but will venture into vine forest, sclerophyll forest and wetland communities for resources that are seasonally not available in rainforest. Subsequently a home range typically will include ready access to other vegetation types.</p> <p>Within the context of the Wangetti South trail, the availability of suitable vegetation complexes that provide seasonal resources and mapped as essential habitat (other than rainforest types), is extremely limited. The poor representation of such seasonal resources, lack of connectivity with other habitats, lack of permanent water, is identified as a limiting factor to the abundance of cassowaries and their distribution along the Wangetti South trail.</p>
Proximity to permanent water	High	Field survey data 2019, 2020	<p>Cassowaries must have daily access to permanent water for drinking and bathing (Buosi & Burnett 2006). Typically, this implies a radius of less than a kilometre from permanent water within the average home range of a cassowary. Permanent water sources on the Wangetti South trail are present only on the coastal plain near the Captain Cook Highway including near Wangetti and an unnamed stream that passes through the Ellis Beach campground. With</p>

Criteria	Relative Importance	Data Source	Notes and relevance to Wangetti Trail (north and south) and Wangetti Mountain Bike Trail
		Watercourse mapping (Water Act) Qld Watercourse data	the exception of the Wangetti area, there are no historical records of cassowary usage of any watercourses along the Captain Cook highway below the Wangetti South trail.
Cassowary foodplants	Moderate	REDD database WildNet/Herbrecs database Field survey data 2019, 2020 WTWHA mapping, Stanton 2009	<p>The relative abundance and diversity of cassowary foodplants is a significant determinant in their distribution. Cassowaries are reliant on fleshy fruit from a number of rainforest habitat types, but must have access to seasonal resources from adjacent vegetation types. Cassowary foodplants are relatively well documented, and readily identifiable in the data sources cited. Areas with higher abundance of cassowary foodplants are more likely to provide resources and hence habitat utilisation and potential occurrence.</p> <p>Those limited areas of rainforest areas along the Wangetti South trail are primarily notophyll vine forests, Cassowary foodplants are less common in notophyll vine forests, and only seasonal resources would be obtained from adjoining ecotones with sclerophyll forest. In most instances the areas of notophyll vine forest are limited to deep gullies and steep slopes, are thus relatively inaccessible to cassowaries, are too small in area to support a cassowary and too distant from other suitable habitat to form part of a home range.</p>
Location of camps	Low	GHD report and data 2020	The location of the camps is important for prioritising management actions along the Wangetti North trail, however whilst a high degree of management of camp/accommodation areas in cassowary habitat is required, the proposed Wangetti South trail campsite is not in a priority cassowary habitat area and subsequently this is of significantly less weight in consideration of the impacts of a camp on cassowaries.
Topography	High	QTopo database	Cassowaries, being bipedal, are primarily a species with preference for flat/ mild to moderate terrain, and do not typically have extensive areas of steep, rocky, or otherwise difficult to traverse terrain in their home ranges. Such areas of the project area are primarily limited to the coastal eastern ridges and foot slopes of the Macalister Range and are suboptimal as habitat for cassowaries. A significant proportion of the Wangetti South shared use trail alignment is within steep, rocky areas along the Macalister Range that are not considered suitable for cassowaries.

Figure 2 Cassowary management areas, Wangetti South shared-use trail

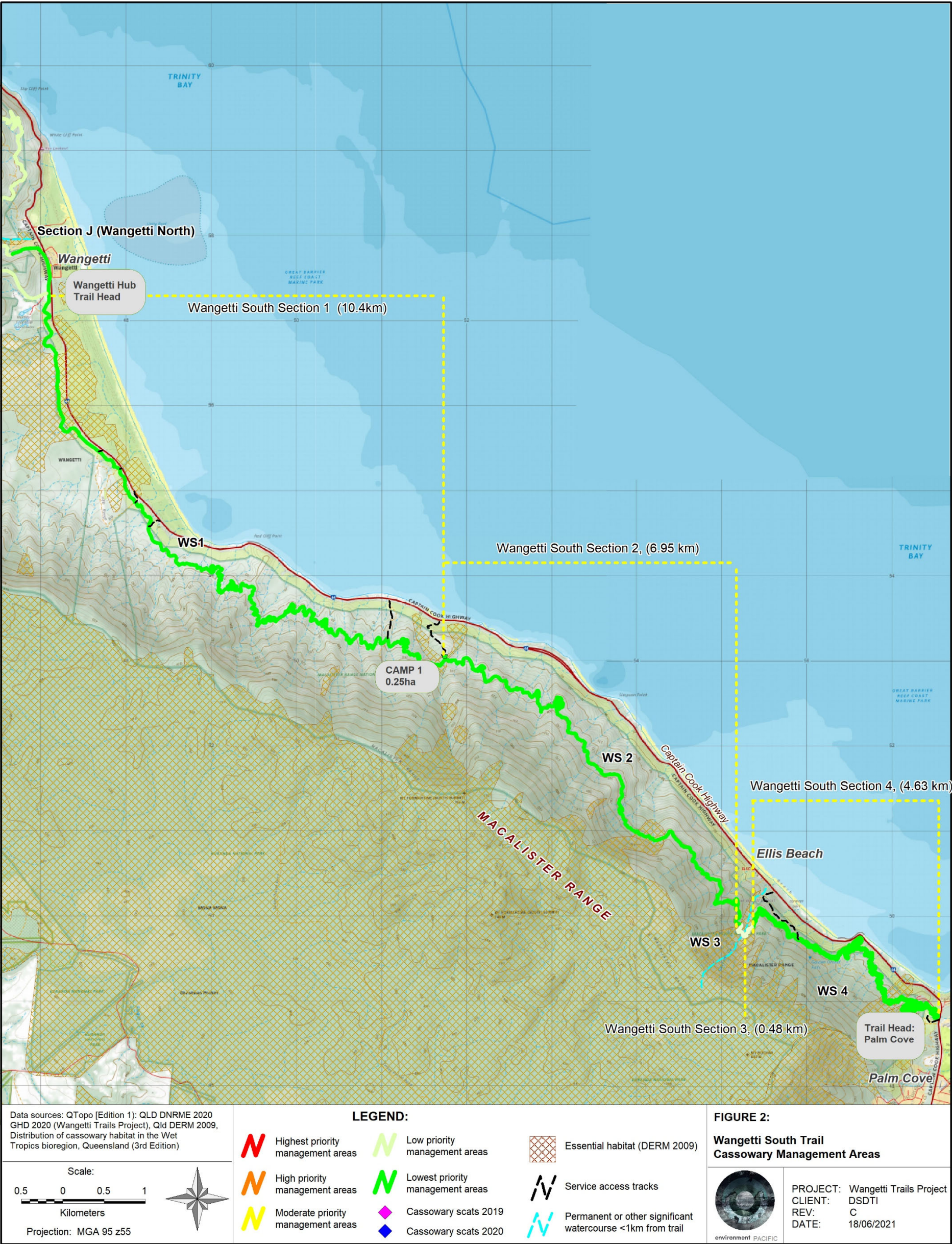


Table 2 Description of Priority Areas, Wangetti South Trail

Location	Distance	Habitat Factors	Summary Description
Highest Priority			
No areas along the Wangetti South trail meet these criteria Refer Figure 2	-	-	-
High Priority			
No areas along the Wangetti South Trail meet these criteria Refer Figure 2	-	-	-
Moderate Priority			
No areas along the Wangetti South Trail meet these criteria Refer Figure 2			
Low Priority			
A small section of notophyll vine forest in a gully behind Ellis Beach between -16.7291° / 145.6419° and -16.7282° / 145.6437° Refer Figure 2 Map Section WS3	480m	<ul style="list-style-type: none"> • Small area of notophyll vine forest with a number of mesophyll vine forest elements present with a variety of staple fleshy fruits present (Lauraceae and Myrtaceae). Dislocated from preferable core habitat areas (>1km) on western side Macalister Range by steep escarpment. • Permanent water present, but is within a steep sided gully and difficult to access. • Topography generally steep and trail inaccessible from habitat areas further west. 	Habitat is marginal, but may offer seasonal resources. The entirety of the vegetation is within a steep to very steep gully on the eastern fall of the Macalister Range that may significant obstructions to ready cassowary movement. Any cassowary utilisation (if at all) would be transitory and opportunistic and at best is considered to be extremely unlikely

Location	Distance	Habitat Factors	Summary Description
Lowest Priority			
<p>Shared use trail between Wangetti township trail head and Camp 1. Between -16.6629° / 145.5657° and -16.7008° / 145.6092°</p> <p>Refer Figure 2, Map Section WS 1</p>	10.4 km	<ul style="list-style-type: none"> No core rainforest habitat present within 2km of the trail Large areas of habitat mosaics are restricted to the eastern side of the highway. The majority of the trail in the Wangetti coastal lowlands is through grassy sclerophyll forest which offer few to no resources for cassowary foraging Proximity to busy highway (mostly less than 150m) and the Wangetti firing range (within 150m at closest point) are strong deterrents to cassowary using resources in this area. Significant watercourses (e.g. Tin Creek) are typically seasonal high flow, short duration events and are not permanent. 	<p>A long section of coastal walk, most of it within 150m of the Captain Cook Highway. Essential habitat features are present in the form of seasonal littoral swamp mosaics, but are separated from the trail by the highway. There is no core mesophyll rainforest habitat within 2km of the trail, and this is restricted to the uplands Mona Mona / Black Mountain corridor. The trail also passes by the Wangetti firing range. There have been no confirmed cassowary sightings in the Wangetti lowlands since European settlement (circa 1907), and the probability of cassowaries using any resources along the trail in this section is negligible.</p>
<p>Camp 1 to Ellis beach, between -16.7008° / 145.6092° and -16.7282° / 145.643725°</p> <p>Refer Figure 2, Map Section WS 2</p>	6.95 km	<ul style="list-style-type: none"> Small sections of notophyll vine forest were noted to be heavily disturbed during field surveys with vegetation characterised by mostly non-palatable species e.g. winged seeds. No permanent water present within 1km of the alignment of this section. There are no suitable habitat mosaics adjacent this section that would provide seasonal resources to cassowaries. Topography is steep (being on the eastern side of the Macalister Range), and is a significant obstacle to cassowary movement. Seasonal resources are only available in littoral coastal vegetation around the Ellis Beach area itself but alienated by Captain Cook Highway Dominant habitat along this section comprises areas of Acacia woodland, open sclerophyll woodlands on rocky slopes and grassy sclerophyll forest. None of these are characterised by cassowary foodplants and have little habitat value as seasonal foraging areas. Most of the trail section is < 500m to the west of the Captain Cook Highway. 	<p>A long section of the trail that is almost exclusively through rocky sclerophyll woodland on ridges above the Captain Cook Highway. Nearest core rainforest is over 1km to the west, and the trail is only accessible via steep to very steep gullies and drainage line from these areas.</p> <p>Small gullies with notophyll vine forest are present across the trail, some mapped as having permanent water however inspections have conformed these are ephemeral drainage lines only.</p> <p>Given the lack of permanent water, the distance from core mesophyll forest habitat and difficult access down steep to very steep slopes, cassowary utilisation (if at all) would be transitory and opportunistic and at best is considered to be extremely unlikely.</p>

Location	Distance	Habitat Factors	Summary Description
<p>Ellis Beach to Palm Cove trail head between -16.7282° / 145.64323° and -16.7391° / 145.6634°</p> <p>Refer Figure 2, Map Section WS 4</p>	4.63 km	<ul style="list-style-type: none"> No core habitat (contiguous mesophyll vine forest) represented within 1km of the trail, and then only on the western side of the range in the upper Flaggy Creek catchment. There is a small area of mesophyll and notophyll vine forest near the Palm Cove trailhead, however this area is fragmented and isolated from other habitat areas and would not be part of any cassowaries' range. There are no permanent water resources along this section of trail Most of the trail section is < 200m to the west of the Captain Cook Highway. Topography is steep and rocky in areas, with deeply dissected gullies across the trail. 	<p>This section of trail between Ellis Beach and Palm Cove trail head is on the lower slopes of the Macalister range, mostly less than 200m from the Captain Cook Highway. Habitat values for cassowaries are negligible, with the primarily Acacia and other sclerophyll forests having very limited to no representation by important cassowary foodplants, and no access to permanent water. A small section of mesophyll / notophyll vine forest on the trail is separated over 1km from core rainforest habitats to the west in the Flaggy Creek catchment (which discharges to the Barron River). Topography in the area is steep to very steep, and presents a significant impediment to cassowary movement.</p> <p>Cassowaries would not be expected to access any part of the trail in this section for core or seasonal resources.</p>
<p>Camp 1 -16.7008° / 145.6092°</p> <p>Refer Figure 2</p>	Footprint of 0.25ha	<ul style="list-style-type: none"> Camp site is located on a sclerophyll ridge adjacent vine forest. No permanent water within 1km of the camp Core mesophyll rainforest > 5km from camp Notophyll vine forest elements in locality do not have a high representation of cassowary food plant species. Topography in locality has steep to very steep slopes 	<p>Camp area is located at the top of a ridge overlooking a notophyll vine forest series of gullies and permanent water is absent. The camp site is more than 1km from core contiguous mesophyll vine forest, and accessible from the west only by a precipitously steep (in places) valley. Cassowaries would not be expected to access this section of trail/camp area for any resources.</p>

4. Wangetti Trail South Management Aspects

4.1 Introduction

The following management aspects are specific to the management of cassowary habitat along the Wangetti South trail, and of potential interactions between cassowaries and humans. This includes all aspects related to the design, construction, operation and maintenance of the Wangetti South trail, and the camp areas that have the potential to direct or indirectly impact on cassowary habitat, individual birds or on their behaviour. These management aspects are not intended to cover all environmental aspects of the project, but are to be considered and included where appropriate, in the detailed Environmental Management Plan (EMP) for the various phases of the Wangetti South including camp and service roads.

These management aspects are also not to be considered in isolation, and any EMP must also cross reference the regulatory/permitting conditions of any approvals issues, mandatory requirements of any existing legislative management plan (e.g. Wet Tropics Management Plan) or policy that is currently extent in part or all of the areas covered in this document. Various government agencies have legislative jurisdiction and management requirements for various tenures and localities within the broader area, and where these directly impact on the project area must also be considered in the EMP, e.g. road maintenance practices.

Of particular note is that the aspects implemented in regard to management of cassowary habitat and of cassowary interactions must align with those of the *Recovery plan for the southern cassowary* *Casuarius casuarius johnsonii* (Latch 2007), which forms the cornerstone of current conservation policy.

4.2 Management Area Summary

A summary of the management sections applicable to the Wangetti South shared use trail are set in the following . The detailed management aspects for each section is shown in **Table 3**.

The Wangetti South shared-use trail includes the following;

- No highest priority habitat management areas.
- No high priority habitat management areas.
- No moderate priority habitat management areas.
- One camp, Camp 1, with a proposed development footprint of 0.25ha, located within a lowest priority section.
- One section of Low Priority shared-use trail of approximately 480m traversing a permanent water course
- Three sections of Lowest Priority shared-use trail totalling 22.31km.

Table 3 Management Aspects Wangetti South Trail

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
Habitat management 1. Infrastructure layout and design – camp areas	Camp areas must be located and designed such that their development footprint and impact on habitat values present is minimised. This is particularly important for this project as cassowary habitat quality is already diminished in most areas owing to logging and cyclones. Retention of existing habitat, and where practical, avoidance of cassowary resource areas altogether, must be a key component of the design aspects. Concurrently, the design must be such that cassowaries will not seek resources that may be present (e.g. water and food sources) at the camps.								
	Site clearance survey of camp areas by experienced ecologist to be undertaken prior to any construction with the following requirements: <ul style="list-style-type: none"> - Location of potentially important cassowary foodplant trees within and immediately adjacent development footprint - Location and orientation of permanent water in relation to development footprint. Assessment of likely cassowary access routes to any of the above resources identified (tracks, pads etc)	-	-	-	-	X	X	X	
	<ul style="list-style-type: none"> • Survey outcomes to be used in design of the layout of camp infrastructure, including construction access routes, location of buildings, water and sewage requirements, waste management requirements 	-	-	-	-	X	X		
	<ul style="list-style-type: none"> • Provisions to be made to ensure that no open water is provided at the camps (e.g. basins, taps, laundry facilities, tanks, etc) that can be accessed by cassowaries, thus providing an attractant to the camp areas. 	-	-	-	-	X	X	X	X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	<ul style="list-style-type: none"> Any grey water discharge is to go to a sump, and not to irrigation or any surface drain accessible by cassowaries. 	-	-	-	-	X	X	X	
	<ul style="list-style-type: none"> Signage for camp and eco accommodation users at strategic locations advising of the requirements to ensure that cassowaries cannot access food, 	-	-	-	-	X	X		X
	<ul style="list-style-type: none"> Signage for camp and eco accommodation users at all water sources/disposal areas regarding water management and security from cassowary access 	-	-	-	-	X	X		X
	<ul style="list-style-type: none"> Lighting (where required) to be confined to directional and subdued lighting and address Australian Standard AS/NZS 4282:2019. Control of the obtrusive effects of outdoor lighting, which provides information in Appendix C about the impact of artificial light on biota 	-	-	-	-	X	X	X	X
	<ul style="list-style-type: none"> An audit of listed/declared weed species must be undertaken at the proposed camp sites prior to construction. This audit will provide the baseline for future monitoring of weed incursions and/or introduction of new weeds. Species, abundance and distribution need to be recorded. 	-	-	-	-	X	X	X	

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
Habitat management	The Wangetti South trail requires a potential higher level of construction than other trails, however does not traverse any identified highest, high or moderate habitat management areas. Notwithstanding, where practical, the basic precepts as set out below should be followed.								
2. Infrastructure layout and design – trails									
	<ul style="list-style-type: none">Trails in highest, high priority and moderate priority sections are to have clear line of sight for a minimum of 20m from any significant (permanent or ephemeral) watercourse crossing to enable hikers to have a clear view of key cassowary utilisation areas.	-	-	-	-	-			
	<ul style="list-style-type: none">Signage at all such locations warning of cassowary crossing and their potential use of riparian areas.	-	-	-	-	-			
	<ul style="list-style-type: none">Steep descents with sharp changes in angle of direction where the opposite side cannot be seen on the approach should not occur in high priority or moderate priority trail sections. Realignment to obtain clear line of sight to avoid blind corners is the preferred option.	-	-	-	-	-			
	<ul style="list-style-type: none">Where possible, all constructed watercourse crossings will be at level that will not obstruct potential cassowary movement. Preference is given to a bed level crossing that will not obstruct waterflow, and to be comprised primarily of natural material, e.g. laid stone pavements. Where there are practical limitations to the construction of bed level crossings, crossings should be designed such that their height will not obstruct cassowary movement. i.e., are capable of being stepped up onto, and over (or	-	-	-	X	X	X	X	

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	under). Heights are to comply with the Building Code of Australia AS 2156.2 (Walking Tracks Part 2: Infrastructure) and AS 5100 (Bridge Design) with respect to requirements for hand rails. Hand rails/balustrades on bridges/crossings will pose an impediment to cassowary movement and hence crossings should be of a 'low fall' design, less than the 1300 – 1400mm specified in AS 5100 for bicycles.								
	<ul style="list-style-type: none"> No clearing to be undertaken in highest, high or moderate priority shared use trail areas until site survey identifies potentially significant cassowary foodplants or high-quality habitat areas. 	-	-	-	-	-			
	<ul style="list-style-type: none"> An audit of listed weed species along the proposed alignments and must be undertaken prior to construction. This audit will provide the baseline for future monitoring of weed incursions and/or introduction of new weeds. Species, abundance and distribution need to be recorded. 	-	-	-	X	X	X	X	X
	<ul style="list-style-type: none"> Warning signs and speed limiting signs on approaches to bridges over permanent water where cassowaries may be likely to be encountered. 	-	-	-	X	-	X	X	X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
Habitat management 3. Vegetation clearing and rehabilitation	Vegetation clearing to 1.2m width will be required for the majority of the trail, centred on a construction corridor approximately 40m wide. The vegetation along the Wangetti South shared use trail is dominated by sclerophyll woodlands on moderate to steep slopes, often in rocky areas, and dissected by steep gullies and drainage lines. These do not represent optimum cassowary habitat conditions and clearing therefore is not expected to have any quantifiable impact on cassowary habitat integrity in this vegetation community type. There are small areas of notophyll vine forest, mostly in steep gullies and watercourse areas, where vegetation clearing will also be required. These areas are mapped as essential habitat (DERM 2009), but represent (mostly) isolates from contiguous cassowary habitat, are on steep slopes and are too small in area and isolated to form part of a cassowary home range. Additionally, the availability of food plant species in these drier rainforest types is significant less than found in mesophyll vineforest. Littoral rainforest in the Wangetti coastal plain represent potentially important cassowary habitat, however cassowaries are locally extinct in this area and the Captain Cook Highway alienates the majority of the suitable habitat from the Wangetti South trail.								
	<ul style="list-style-type: none">Vegetation clearing is to be restricted to that as only required for the safe construction, operation and maintenance of camp sites.	-	-	-	-	X	X	X	X
	<ul style="list-style-type: none">As above, vegetation clearing will be restricted to the minimum required for the safe construction, operation and maintenance of trails. Note that other agencies may have responsibilities for road/track maintenance according to the tenure and gazettal status.	-	-	-	X	X	X	X	X
	<ul style="list-style-type: none">Vegetation to be cleared at camps is to be clearly demarcated on all drawings and plans, and in practice by highly visible means such as biodegradable survey tape. Obstructive visible barriers such as orange Tensar construction fencing is not to be used.	-	-	--	X	X	X	X	
	<ul style="list-style-type: none">Important food plant trees identified as part of the preclearance survey are to be included as components of retained vegetation e.g. within movement	-	-		X	-	X	X	

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	corridors and preferably not left as isolates within clearings.								
	<ul style="list-style-type: none"> Greenfield vegetation clearing generally is to be undertaken only in accordance with protocols agreed with Traditional Owners representatives of the relevant locations and with a fauna/flora spotter present. 	-	-	-	X	X		X	
	<ul style="list-style-type: none"> Vegetation removed along trails will be the minimum required to ensure clear line of sight for cyclists (and hikers) approaching permanent or significant ephemeral watercourses (approximately 20m prior) 	-	-	-	X	X	X	X	X
	<ul style="list-style-type: none"> Vegetation waste is not to be mulched. Waste will be cut to practical sizes to transport to edge of clearings and allowed to naturally decompose. 	-	-	-	X	X		X	X
	<ul style="list-style-type: none"> All clearing is to comply with requirements of relevant permits and approval conditions, with specific reference to erosion and sediment control plans that clearly identify mechanisms to avoid the discharge of sediment during construction off site into local habitat. 	-	-	-	X	X		X	
	<ul style="list-style-type: none"> Any works involving the replanting of vegetation is not to use important cassowary food plants as found locally (refer Appendix A) within or immediately adjacent camp/eco-accommodation precincts, which may otherwise attract cassowaries into proximity with humans. 	-	-	-	X	X		X	

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
Construction management 1. Noise and vibration	Cassowaries use vocalisation to communicate and locate other cassowaries across sometimes large areas. This is particularly important during the breeding season June to November. They also vocalise as a stress/threat mechanism. Loud, persistent and disruptive noise will stress cassowaries, and may cause them to abandon sections of their range. Noise during construction is unavoidable, however cassowaries are extremely unlikely to occur in any area along the Wangetti South trail. Notwithstanding, the construction impacts generally should be minimised with regard to the following.								
	<ul style="list-style-type: none">On-site standard construction hours will apply as per EP (Noise) Policy 2019, local government statutes and permit conditions.	-	-	-	X	X		X	
	<ul style="list-style-type: none">All machinery used in construction and operation should be silenced to manufacturers specifications and maintained to that condition.	-	-	-	X	X		X	X
	<ul style="list-style-type: none">Blasting of hard rock areas for construction will not be permitted in any areas.	-	-	-	X	X		X	
	<ul style="list-style-type: none">Use of any recreational radios, playing of music, or general broadcasting will be strictly confined to in-vehicle operation whilst transiting to and from site only and not played within any highest, high or moderate priority areas during construction.	-	-	-	-	-			
	<ul style="list-style-type: none">Helicopters can only be used for the transport of materials to construction sites in all but Highest priority and High priorities areas where:<ul style="list-style-type: none">They are able to operate outside of the ground effect zone when hovering.Drop zones are in low or lowest priority areas where likely cassowary occurrence is nil or extremely unlikely.Preclearance of any drop zones for materials near watercourses or	-	-	-	X	X		X	X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	rainforest (essential habitat areas) identifies no evidence of cassowary presence. <ul style="list-style-type: none"> Helicopter overfly of WTWHA is in accordance with regulatory provisions of the Wet Tropics Plan 								
	<ul style="list-style-type: none"> Helicopters can be used in any area where emergency evacuation is required. 	-	-	-	X	X		X	
	<ul style="list-style-type: none"> Helicopters will not be used for the transport of construction personnel 	-	-	-	X	X		X	X
Construction management 2. Vehicle movements	<ul style="list-style-type: none"> Construction vehicle movements along formed roads through moderate and high/highest priority habitat areas is not to occur 5 to 7am, and between 5 to 7pm, when cassowaries are most active. This is applicable only to the Black Mountain Road, Southedge Road and Twin Bridges Road. 	-	-	-	-	-			
	<ul style="list-style-type: none"> Transit to construction sites will be via approved and designated access routes only, and no in-field unauthorised tracks/roads will be used. 	-	-	-	X	X	X	X	
	<ul style="list-style-type: none"> Construction vehicles will be of the smallest practical size to access the required areas, this includes the use of quad bikes with trailers, small rubber tracked excavators, etc. 	-	-	-	X	X		X	

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
Construction management 3. General	Management of construction activities will be via an Environmental Management Plan (EMP) approved by relevant regulatory authorities (QPWS, WTMA, DERM, Douglas and Mareeba Shire Councils). The EMP will typically address environmental, physical and social requirements of the construction. The following should be included in all project EMPs								
	<ul style="list-style-type: none">Domestic animals at all times are not permitted on site, this includes animals that are restrained inside vehicles. Poultry may be a vector for the introduction of avian diseases	-	-	-	X	X	X	X	X
	<ul style="list-style-type: none">Temporary fencing for construction purposes at camps (e.g. around open pits, newly laid concrete areas) will not be made of wire, nor obstruct fauna movement across the general site area. No fencing of any type to be used in vegetation retained for corridor/habitat purposes.	-	-	-	X	X		X	
	<ul style="list-style-type: none">No organic/food waste at any time is to be disposed of on site. All waste is to be collected and removed at the end of each day. Temporary storage of non-organic waste, e.g. cutoffs from construction materials, can be stored under a cover until they can be transported from site.	-	-	-	X	X		X	
	<ul style="list-style-type: none">Any development adjacent permanent or significant ephemeral watercourses (e.g. crossing works) will have full erosion and sediment control measures implemented and maintained for the duration of the works as per the ESCP to be developed for the project. The ESCP is not to be a generalised document, but will address specific infrastructure requirements for any works in moderate, high and highest priority areas.	-	-	-	X	X		X	
	<ul style="list-style-type: none">The induction program for all construction personnel will include a	-	-	-	X	X	X	X	

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	component on cassowary management measures, and will include methodologies for de-escalating confrontational interactions.								
	<ul style="list-style-type: none"> On any construction work site, should a cassowary approach the works area, then works in that particular location will cease until the cassowary has left of its own accord. All construction work should have a plan for alternate work sites and tasks in this contingency. 	-	-	-	X	X		X	
	<ul style="list-style-type: none"> Construction in watercourses must include consideration of the potential for interference with cassowary movements e.g. within the creek bed, or access to riparian resources. Watercourse crossings should either be at bed level, or at a level that enables cassowaries to traverse the watercourse bed without obstruction, e.g., low enough that they can step onto and over the crossing. Handrails and balustrades on waterway crossings represent a significant obstacle to movement. Bridge/crossing structures should therefore be less than the 1300 to 1400mm height for 'low fall' defined structures in Building Code of Australia and relevant standards to avoid the need for handrails. 	-	-	-	X	X	X	X	
	<ul style="list-style-type: none"> Biosecurity management, regular inspection of construction areas for electric ants, yellow crazy ants, potential Phytophthora infestation, and other highly invasive species that may be identified as a risk. 	-	-	-	X	X		X	X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
Operational Management 1. Camp areas: waste management	Cassowaries are attracted by of organic waste and are known to access compost piles, rubbish bins and unattended food in open areas (e.g. backpacks). This aspect increases the probability of human interactions with cassowaries. Waste management plan to be developed and implemented for the operation/maintenance of camps and eco accommodation. This plan should (at a minimum) adopt the following.								
	<ul style="list-style-type: none">Waste containers should be in a secured receptacle, e.g. wooden palisade barricaded area, that cannot be accessed by cassowaries.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Waste water management at camp area and eco-accommodation must take into account potential cassowary access and potential to impact on local water source quality. Waste water discharge is not to occur into a situation where the discharge can be accessed by cassowaries and should go to a sump.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Signage in camp and eco-accommodation must clearly identify locations of waste receptacles, and protocols in separating and disposing of waste.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Organic waste cannot be composted on-site and must be disposed of (preferably off site) daily in a manner / location that is not detectable or accessible by cassowaries. This includes all kitchen waste from the eco-accommodation area.	-	-	-	X	-			X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
Operational Management 2. Camp areas: water management	The camp sites have the potential to have open source water areas that may include dripping taps, wash basins, water tanks, etc, that may serve as attractants to cassowaries, particularly during dry periods of the year when opportunistic ephemeral water is not available. Cassowaries are known to access urban garden ponds, sprinkler systems and other similar water sources.								
	<ul style="list-style-type: none">Ensure that there is no cassowary accessible permanent water source within the camp and eco accommodation areas.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Signage for camp and eco accommodation users at all water sources/disposal areas regarding water management and security from cassowary access.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Rain water collection points off roofing (e.g. water tanks) to be sealed, with excess runoff to be directed to a sump.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Storm water discharge from eco accommodation and drains about the camp areas must not drain into any perennial water course.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Waste water discharge at the camp area and eco-accommodation similarly must take into account potential cassowary access and potential to impact on local water source quality. As for storm waste water should be directed to a sump.	-	-	-	X	-	X		X
	<ul style="list-style-type: none">Camp management to monitor condition of all potential water sources and ensure they are not available to cassowaries.	-	-	-	X	-			X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	<ul style="list-style-type: none"> Any watering of rehabilitation areas for establishment purposes is to be undertaken using handheld hoses and portable tanks and not through irrigation systems. 	-	-	-	X	-			X
	<ul style="list-style-type: none"> The use of ground water is to be considered only after an assessment of the recharge capacity and the potential for impact on surface environmental flows of nearby watercourses. 	-	-	-	X	-	X		
Operational Management 3. Camp areas: Human activities	Cassowaries are a reclusive species and exclusively diurnal in their foraging activities. Cassowaries may be stressed by loud noise, lights and human movement and can exhibit varying behaviour from complete avoidance and retreat, to confrontational responses. Feeding of cassowaries is the primary cause of aggressive interactions with cassowaries and will be a core management precept for the entire project, however this is unlikely to be an issue for Wangetti South trail camp area owing to the unsuitability of the habitat conditions locally, and subsequently lack of cassowaries.								
	<ul style="list-style-type: none"> Domestic animals of all types are banned in all parts of the project area, even if restrained inside vehicles. This includes contractor service vehicles. Poultry has the potential to be a vector for the introduction of avian diseases (e.g. avian tuberculosis, aspergillus) 	-	-	-	X	X	X	X	X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	<ul style="list-style-type: none"> Feeding of cassowaries is banned in all parts of the project area and is to be a prominent message at trailhead hub locations, at camp areas, and in eco-accommodation areas. Signage will be placed in all these locations and be part of any information package given to hikers, campers, mountain bike riders. Penalties should be considered if users of the trails and facilities are identified deliberately feeding cassowaries. 	-	-	-	X	X			X
	<ul style="list-style-type: none"> Deliberate loud noises including portable music devices, external speakers, radios etc cannot be used in any camp or along the high and moderate priority trail sections. Users may continue to use headphones with portable devices. 	-	-	-	X	-			X
	<ul style="list-style-type: none"> Security lighting may be required for some facilities, e.g. toilets, at camp areas. Lighting (where required) to be confined to directional and subdued lighting and address Australian Standard AS/NZS 4282:2019. Control of the obtrusive effects of outdoor lighting, which provides information in Appendix C about the impact of artificial light on biota. 	-	-	-	X	-	X		X
	<ul style="list-style-type: none"> Generators should not be used for power generation except as an emergency resource. Power generation should be reliant on alternative technologies e.g. solar 12V systems, lithium battery storage and backup, and similar low intensity energy systems. 	-	-	-	X	-	X		X
	<ul style="list-style-type: none"> Vehicles will be required to service the operation/maintenance of the facilities. All drivers are to be compliant with speed directions with no travel undertaken between 5pm and 7am (overnight) on any vehicle road 	-	-	-	-	-			

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	through moderate/high priority management sections. This is applicable only to the Southedge, Black Mountain and Twin Bridges Roads.								
	<ul style="list-style-type: none"> Helicopters can be used in any area where emergency evacuation is required. 	-	-	-	X	X			X
	<ul style="list-style-type: none"> Helicopters will not be used for the transport of personnel. 	-	-	-	X	X			X
Operational Management 4. Trail sections	Operation of the trail sections must consider the maintenance requirements of the use of the various trails. Sections of the various trails are within tenures where there may be pre-existing conditions related to maintenance of trails/roads, e.g. Southedge Road subject to conditions on a WTMA permit. Any conditions on those permits must be incorporated into the relevant activities and EMPs associated with the project.								
	<ul style="list-style-type: none"> Warning and speed limiting signs on vehicular road approaches to crossings over permanent water where cassowaries may be likely to be encountered. 	-	-	-	-	-			
	<ul style="list-style-type: none"> Cyclists and hikers must not use any trail before first light and after last light each day, times dependent on the season. Times to be set by camp/trail operators with consideration of seasonal visibility early morning/late afternoon. Cassowaries may settle for the evening on road/track verges. 	-	-	-	X	X			X
	<ul style="list-style-type: none"> Maintenance vegetation clearing, e.g. for <i>Calamus</i> regrowth and fallen vegetation, will be required over the trails. Vegetation not to be mulched but sawn to manageable lengths and put in locations off the trails and allowed to decompose. 	-	-	-	X	X			X

Aspect	Management Measures	Wangetti South Shared Use Trail APPLICABLE TRAIL SECTIONS & CAMPS					Project Phase Applicable		
		Highest Priority	High Priority	Moderate Priority	Low Priority	Lowest Priority	Design	Construction	Operation
					WS 3	WS 1, 2, 4 Camp 1			
	<ul style="list-style-type: none"> Helicopters can be used in any area where emergency evacuation is required. 	-	-	-	X	X			X
	<ul style="list-style-type: none"> Usage of helicopters for maintenance is subject to same requirements as per for construction. 				X	X			X
	<ul style="list-style-type: none"> Condition of watercourse crossings in highest, high and moderate priority sections of the trails are to be inspected after major rainfall events and repaired when required. 	-	-	-	-	-			
	<ul style="list-style-type: none"> Road/track conditions used as service road access to be inspected regularly for condition and areas of erosion off site to be repaired. 	-	-		X	X		X	X
	<ul style="list-style-type: none"> Monitoring of potential weed incursions must be a key requirement for the maintenance of the trails/tracks. Some agencies may have responsibility for management of listed weed species but the trail operators will be responsible for monitoring, reporting, and contribute to actions removing if required. 	-	-	-	X	X		X	X
	<ul style="list-style-type: none"> Monitoring of feral pig disturbance areas, location, size, general observations of damage 	-	-	--	X	X			X
	<ul style="list-style-type: none"> Biosecurity management, regular inspection of facilities for fire ants, yellow crazy ants, potential Phytophthora infestation, and other highly invasive species that may be identified as a risk. 	-	-		X	X		X	X

4.3 Other Management Aspects

4.3.1 Roles and Responsibilities

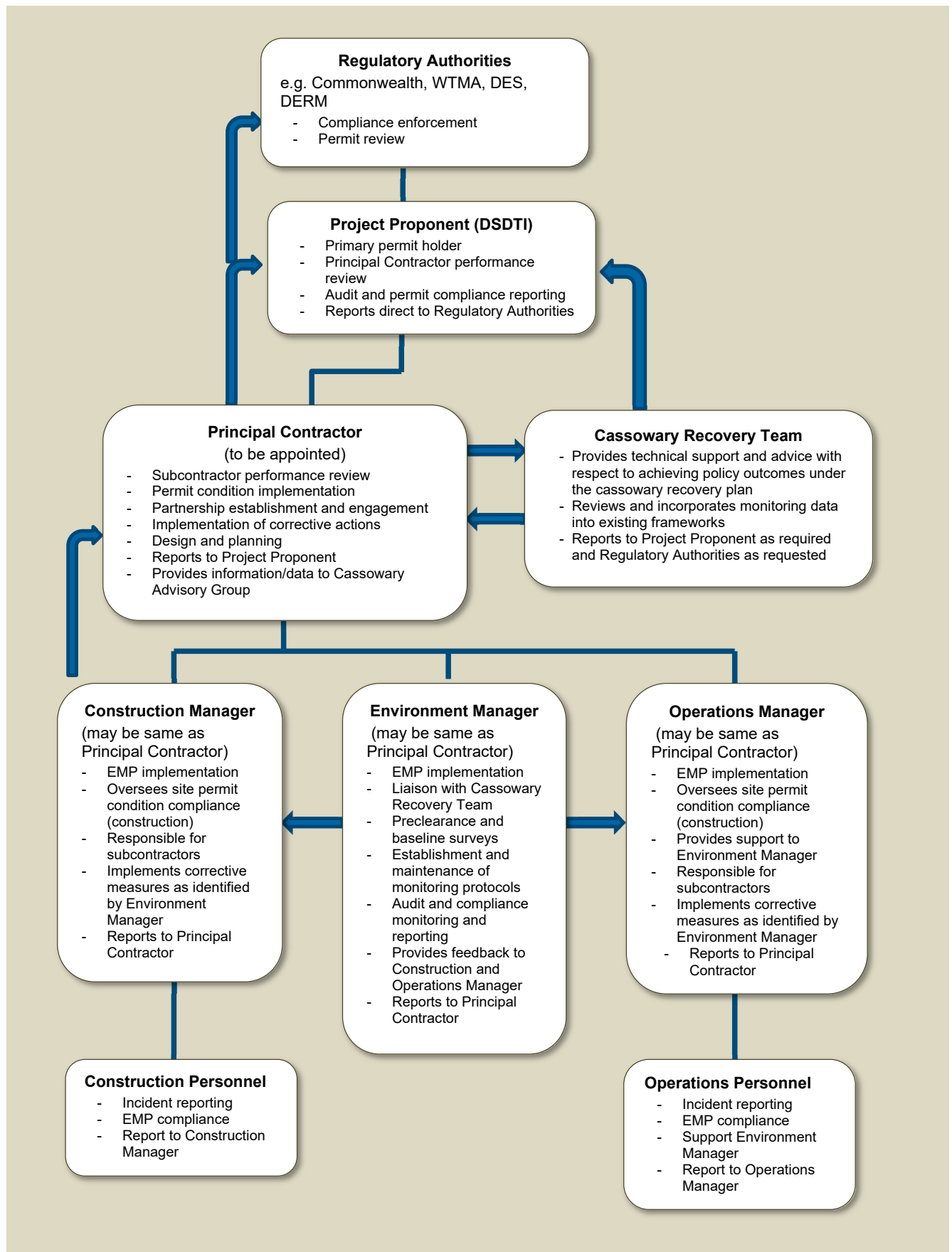
Management of the Wangetti South shared use trail (as part of the overall Wangetti Trails Project) will require a clearly demarcated hierarchy of management to ensure that management of cassowaries and their habitat is effective, and meets the overarching requirements of the Commonwealth and State adopted *Recovery Plan for the Southern Cassowary* (Latch 2007). The Recovery Plan's overall objective is "to secure the long-term protection of cassowary populations through improved planning mechanisms supported by robust monitoring, threat abatement and community engagement programmes". Recovery Plan specific objectives and actions include to "institute a more coordinated and stronger planning response to development issues in cassowary habitat" and "help develop better planning scheme mechanisms to protect cassowary habitat". The Recovery Plan does not cover all the particular circumstances for this project, i.e. a private, commercial venture will be responsible for the construction, operation and maintenance (within the context of the permitted activities) of the Wangetti Trails Project.

The Wangetti Trails Project traverses tenures where government agencies have various legislative and policy obligations in relation to fulfilling environmental management responsibilities. Additionally, a significant section of the Wangetti Mountain Bike Trail utilises a private road (Southedge Road) that is subject to permit conditions under the *Wet Tropics Plan 1998* for the maintenance (but not use of) this particular road.

Multiple regulatory requirements and permit conditions will be required to be met by the project. In the first instance, the Queensland Department of State Development, Tourism and Innovation has applied for and will hold overarching authorities under the Commonwealth EPBC Act and the Wet Tropics Plan (permit through the WTMA) that will consolidate approvals and conditions for the Wangetti Trails with consensus from other stakeholder groups, e.g. other government agencies (such as QPWS) and Traditional Landholders. Additional approvals will be required, including those over tenure where other regulatory/policy requirements must be met. For example, use of Forestry managed roads for commercial activities, use of Southedge Road by agreement with the landholder and in accordance with the administering authority of the maintenance permit on use of the road for commercial activities.

Management of cassowary habitat, and cassowary interactions, will be integral to the Wangetti Trails. The following figure identifies a suggested framework roles and responsibilities in ensuring that no long-term, cumulative or adverse impacts on cassowary habitat and cassowary populations arises from the project.

Figure 3 Suggested Cassowary and Habitat Management Framework



4.3.2 Project Monitoring

A monitoring program will be implemented to ensure that any direct, indirect, and cumulative impacts on cassowaries and their habitats are able to be detected and management actions undertaken at the earliest opportunity. The monitoring program would not be necessarily unique to cassowaries, as those factors potentially affecting cassowary habitat also would be more widely affecting habitats/ecosystems for fauna/flora generally. Notwithstanding there are a number of aspects to monitoring that would be particular to cassowaries owing to their ecology and behavioural characteristics.

Three monitoring components are recommended.

1. Habitat condition and integrity
2. Recording of cassowary interactions (including direct observations of birds, scats, etc)
3. Facilities management

The primary aim of the monitoring program would be to collect verifiable data that can be used to review, modify or implement any additional management requirements that support the Recovery Plan for the southern cassowary.

Habitat condition and integrity

The condition of the natural environment may be classically defined by the abundance and distribution of naturally occurring functional ecological communities and diversity of natural ecological processes (DEE 2017). In the context of this monitoring program, ecological communities include vegetation types, their floristic composition, and their extent areas.

While condition refers to the quality of that vegetation defined by the abundance and distribution of natural vegetation types, 'integrity' is an indicator of likely long-term viability or sustainability of ecological processes (DEE, 2017). This considers the extent to which these processes have been affected by past or present condition, the ability of the community subject to these processes to rebound (or be rehabilitated) and a time frame for any restorative process.

Simplistically, a complete monitoring program encompassing all of the above is neither practical, nor effective in applying to a project and site-specific scale. Both the condition and integrity of cassowary habitat in the project area have been impacted to varying degrees. These include anthropogenic factors (e.g. logging) and natural factors (including cyclonic events). The surveys by GHD in 2019, and further surveys specific to cassowary habitat in 2020 have confirmed that habitat values for cassowaries have been significantly diminished by these factors. Logging has been intense in many areas and altered fire regimes in sclerophyll/rainforest ecotones and cyclonic damage has resulted in a patchy habitat landscape that is difficult to monitor on-ground. Climate change may also have longer term impacts on habitat but are beyond the scope of this project to monitor.

There are many models in deriving a monitoring program for habitat condition and integrity. The suitability and applicability of a particular model should be derived in consultation and partnership with the Cassowary Recovery Team. Regardless of the model and methodologies to be used, there are a number of basic precepts for a monitoring program that should be observed. These include:

Establishing the purpose of the monitoring: what is the data to be used for, how is to be collected, who will undertake the analysis, how will this be used to manage cassowary habitat.

Defining the sampling unit: what attributes exactly are to be monitored? What is the practicality in collection and analysis of these units.

Scope and extent of the program: determine a realistic scale for monitoring, extent, time factors, statistical accuracy.

Identification of threshold levels: deciding on a minimum detectable change that is biologically meaningful.

Type of data analysis: the appropriate level of data analysis will depend on the first point, purpose of the monitoring.

Budget and resources: who is paying for it, time and resource commitments in reporting and implementing recommended actions

Some potential indicators could be:

- Using available Landscape scale monitoring undertaken through the State-wide Landcover and Trees Study (SLATS), a scientific monitoring program undertaken through the Department of Environment and Science in partnership with a number of other institutions. On a broad scale over the project area this may be a useful indicator of changes in vegetation type and extent.
- Simple site level indicators, e.g. disturbance by feral pigs, location of activity, relative intensity and general observations.
- Weed presence: - baseline surveys pre-construction of existing weeds along the alignment and within the camp areas, assessment of their extent, abundance and potential invasiveness. Weeds would be continued to be monitored as part of the operational program of the Wangetti Trails Project and would be expected to be part of the ongoing operational EMP.
- Phenology of cassowary foodplants. A list of cassowary foodplants known to occur within the project facility areas is included in Appendix A. A preconstruction survey of the location of significantly important individual trees may identify particular resources utilised by cassowaries. An understanding of the phenology (flowering and fruiting patterns) of these resources may assist in developing management responses for resources that may be impacted by project activities.
- Plot based studies on recruitment and recovery of cassowary habitat. For areas that are identified as within a cassowary home range, and subject to impacts from project activities, it may be useful to establish plot-based studies to determine forest recruitment and successional processes. The outcomes of these may be used in rehabilitation or other offset programs over the longer term that would benefit improving forest recovery.
- Water quality monitoring. Cassowaries are critically dependent on the availability and access to permanent water. A water quality monitoring program for permanent water courses in proximity to facility infrastructure in habitat areas (e.g. Camp 4, trails along Twin Bridges Road parallel and adjacent to permanent water) may provide threshold indicators suitable for habitat analysis.

Cassowary Interactions

Cassowary interactions includes any aspect of direct dealings, observation of cassowaries or evidence of cassowaries. The exact population and distribution of cassowaries in the project area is unknown. While it is predicted that they are in low abundance over a relatively wide area, verifiable quantitative information is limited to observations from two surveys. Only one direct observation of a cassowary has been made to date: a female in the vicinity of the proposed Camp 4 locality on the Wangetti North Trail. Scats observed along a linear transect (i.e. the trail alignment) is not a reliable mechanism for determining population. Scats indicate

utilisation of an area, and a formal field survey specific to cassowaries is time consuming, logistically extremely difficult, and ultimately of limited use as cassowaries are a naturally cryptic species and field surveys may well underestimate a population.

Westcott *et al* (2014) implemented the use of DNA analysis of faecal material for their surveys between 2012 and 2014 to identify individual birds. The technology and cost of faecal DNA monitoring is prohibitive and requires expert analysis. The project area is in a “black hole” with regards to quantitative data. It would be to the advantage of the project if collaborative partnerships could be made with research agencies through the Cassowary Recovery Team, whereby field work could be undertaken by Wangetti Trails project staff, with direction and sampling methodologies provided through a research partner. This may involve:

- A database of direct cassowary observations, including date, location, general description of the bird, identifying features (e.g. bent casque) etc. This database could be established at Hub areas or at the eco-accommodation centres, with provision for hikers and trail bike riders to enter observations.
- Establishment of motion triggered remote trail cameras in key locations.
- Sand traps to record footprints, e.g. along watercourses, under bridges, and similar locations to record frequency of utilisation of these areas
- Collection of scats, feathers, other organic material from cassowaries, under direction from the research partner with methodologies about sampling, collection, storage requirements.
- Results from the habitat condition and integrity monitoring.
- Any other records, observations (e.g. what cassowaries may have been observed foraging).

Facilities Management

Management of facilities *per se* is not a specific monitoring program. Rather, the purpose of including facilities (trails, camp, eco-accommodation areas) is to ensure a rigorous approach to complying with requirements of the EMP for the project. Primarily the monitoring would be a series of checklists against the specific elements of the EMP which may have an impact on cassowary habitat, or on cassowary behaviours. This may include:

- Ensuring water sources at the camps comply with EMP conditions, i.e. are not available to cassowaries, do not discharge to the environment, and make no demands on local environmental flows or impact on water.
- Noise and light levels at the camps, considering that up to 40 people per night may be feasible in some locations (e.g. Camp 4 on the Wangetti North trail), this represents a substantial potential impact.
- Regular maintenance inspection of facilities e.g. trails and condition, noting erosion areas, watercourse crossing degradation and other aspects that have an impact on habitat condition and integrity arising from use of the facilities.
- Any other aspects identified during the project development (including site clearance surveys to guide design).

4.3.3 Education and Communication

Education and communication will be a core component in ensuring that negative interactions with cassowaries are minimised or do not occur in the first instance. Negative interactions include adverse impacts on cassowary habitat, and changes in cassowary behavioural aspects as a result of anthropogenic influences (e.g. access to food, hand feeding, access to artificial water sources, noise/light, general human presence) that may cause stress to the birds.

The Cassowary Recovery Team (CRT) is a partnership of organisations working together to implement the Recovery Plan for Southern Cassowaries. The CRT is sponsored and coordinated through the Wet Tropics Management Authority and is the peak body engaged in the dissemination of information and providing support to organisations and individuals engaged in the protection of cassowaries and their habitats through planning, monitoring and community engagement. The Wangetti Trails Project should, as a matter of high importance, engage with and be involved with the CRT.

Cassowary Recovery Team.

c/o Wet Tropics Management Authority | PO Box 2050 | Cairns QLD 4870 | Australia

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Email: [cassowary_recovery_team](mailto:cassowary_recovery_team@wtma.gov.au)

Website: <http://cassowaryrecoveryteam.org>

Many non-government community groups such as Kuranda EnviroCare, Trees 4Life etc, are active in cassowary conservation and management and may be contacted through the CRT or through their own websites. Research organisations are also active within the CRT and can provide specific advice related to technical monitoring and reporting. The development of partnerships with these organisations would be a favourable outcome for the Wangetti Trails Project. Traditional Owner inputs would similarly benefit the Wangetti Trails Project in aspects related to cassowary habitat management (as well as a host of other management aspects).

This Cassowary Management Plan has highlighted that informing the design team of site-specific factors related to cassowary habitat and utilisation is a key early step in the education process. Early information requirements include baseline surveys, assessment of cassowary utilisation areas, identification of water sources, key movement/corridor areas, key foraging locations etc, will assist in ensuring that design of facilities is sympathetic to the management of cassowary habitat and interactions.

At the construction phase, all contractors must enter into a vigorous induction program as part of the EMP which would include specific elements such as:

- Vehicle movements, traffic speed and limitations
- Working hours
- Noise and lights
- Biosecurity (yellow crazy ants, electric ants, weeds, avian disease potential)
- Protocols for dealing with cassowaries at work sites, including de-escalating confrontations
- Enforce the no feeding, no external water, no rubbish work ethic.

The appointment of an Environmental Manager (or similar) for the Wangetti Trails Project could also include duties related to information, communication and education. Various mechanisms for different means of communication and their efficacy in getting the message across re: cassowaries, could be implemented with consideration of the target audience. Education / communication would range across various media, from booking offices, to signage, to social media/digital platforms. The program of education can also include commercial and non-commercial promotional material including on-line resources such as social media, at booking offices, the Wangetti Hub, government partner agency offices, local government offices, brochures at tourism information centres/etc.

Education material could also include signage at the Wangetti Hub, all camps/eco

accommodation areas, on approaches to watercourse crossings in highest, high and moderate priority areas, and any other areas identified during the projects operation.

Prospective educational material can canvass:

- Cassowary behaviour and management, e.g., highlight no feeding, no deliberate approaches etc
- Ways to de-escalate unexpected interactions between cyclists, hikers and campers with cassowaries.
- Curfew times in relation to travel on the trails.
- Lights and noise minimising requirements.
- General camp/eco-accommodation cassowary habitat management protocols
- Biosecurity issues.
- Provision for hikers/cyclists to enter cassowary observation data (either scats or interactions) through web-based media, physical hardcopy at camp/eco-accommodation areas and telephone hotline (e.g. <http://www.daintreecassowary.org.au/index.php/submission>)

Much of the information for education and communication is already available through various government agencies, community groups and online resources. The Wangetti Trails Project, can adapt material to be specific to the requirements of the project, and the Cassowary Recovery Team, in the first instance, would be the most applicable contact in this regard.

5. Summary

5.1 Abundance and Distribution

Based on the modelling of Westcott *et al* (2014), survey results in 2019 and 2020, and field habitat assessments in 2020, cassowaries are believed to be in low abundance (possible as few as 8 to 9 individuals) over an area of approximately 4,000 ha, centred on the upper Spring Creek, Allen Creek catchments in the Wangetti North Trail sections, and in the Big Rooty and Hartleys Creek catchments in the Wangetti Trail mountain bike sections. There are no records of cassowaries within the majority of Wangetti South trail area, nor does suitable habitat exist over most of this trail. The only exception is the Wangetti coastal plain, however cassowaries have not been recorded in this area since 1907 and are locally extinct.

Cassowaries are a cryptic species, and simple counts of observed scats indicates utilisation of an area but does not indicate specific individuals. DNA faecal analysis and/or long-term intense area surveys are required to determine more accurately the numbers of cassowaries and their home range extent within the Wangetti Trails project area.

5.2 Key Threatening Processes and Impacts

The following summary is an abbreviated version of the full report section found in the EnPac 2020 CMP. The following is relevant only to the Wangetti South shared use trail.

The primary threatening process to cassowaries within the Wangetti Trails project area is believed to be anthropogenic interactions that result in behavioural impacts. However, these interactions are anticipated to either be nil to exceptionally rare events along the Wangetti South trail owing to the paucity of suitable habitat along the trail as identified in this specific CMP. Notwithstanding, basic precepts related to the day-to-day management e.g. rubbish, litter or other potential food sources and/or being hand fed along trails and in camp should continue to be observed

Available permanent surface water is a key cassowary resource, and the only permanent watercourse along the Wangetti South trail alignment confirmed is a spring fed system traversing the trail near Ellis Beach. This watercourse is within a rainforest community, however is isolated from core habitat areas, has no record of cassowaries, is on steep to very steep slopes, and is extremely unlikely to be utilised by these birds. Tin Creek, at the northern end of the Wangetti South trail, is subject to high volume, short duration flows during the wet season, but otherwise is dry for most of the year. Groundwater flow through the substrate does however contribute to the maintenance of littoral rainforest types in the Wangetti coastal area, which was known to host cassowaries until their localised extinction *circa*. 1907 with the advent of tin mining. Construction of infrastructure through/over waterways along the Wangetti South trail will not impact on potential cassowary movement.

Cassowaries use vocalisation over large distance to locate and communicate with other cassowaries, and noisy camp/eco-accommodation areas in cassowary habitat may stress and cause animals to abandon parts of their ranges, potentially putting them into conflict with the home ranges of neighbouring cassowaries. However the proposed camp along the Wangetti South trail is not in a location where noise/light or similar human related disturbances will have any impacts on cassowaries.

Habitat degradation as a result of the project will be minimal, with trails in the highest, high and moderate mapped priority habitat management areas primarily using existing tracks, roads and infrastructure (e.g., Southedge Road, Black Mountain Road, Twin Bridges Road). Most habitat removal will be along the Wangetti South Trail, the majority of which is not within mapped essential cassowary habitat. While habitat condition and integrity as a result of logging, cyclones and altered fired regimes do not represent optimal habitat conditions for cassowaries, ecosystems are in a state of advancing restoration, and there is minor potential for degradation to water quality and soil/water processes as a result of the construction/operational phases. These are expected to be addressed through the EMP for the project.

Table 4 following, sets out a detailed summary of the likely impacts of various project elements on cassowary behavioural aspects, the nature of the interactions and summary of proposed management measures. This summary is for the entirety of the Wangetti Trails Project Area, with revisions as necessary identifying specific references to the Wangetti South trail.

Table 4 Summary, Key behavioural aspects, threatening process and general mitigation

Behaviour and Aspect	Nature of Interaction	General Mitigation (full reference Table 3)
<p>Resource access, water.</p> <p>Cassowaries require daily access to permanent water for drinking and bathing within their home range, usually using the same general location that has an easy access. They will also use ephemeral streams on an opportunistic basis.</p> <p>Permanent accessible water appears to be the major determinant of cassowary distribution and potential abundance along the trails. Permanent water is found along Allen Creek and other tributaries of Spring Creek which parallel the Twin Bridges track north of Camp 2. Camp 2 is also located less than 100m from permanent water, and a cassowary was photographed here in October 2020 and scats observed within two km in 2019 field surveys.</p> <p>The camp sites and eco accommodation have the potential to have open source water areas that may include dripping taps, wash basins, water tanks, etc, that may serve as attractants to cassowaries, particularly during dry periods of the year when opportunistic ephemeral water is not available. Cassowaries are known to access urban garden ponds, sprinkler systems and other similar water sources.</p> <p>Permanent water is present in one location on the Wangetti South trail, in a location that is noted as being extremely unlikely to be utilised owing to unsuitability of habitat factors associated with cassowary occupation.</p>	<p>Cassowaries may be cumulatively impacted through noise, human activity, and partial clearing of movement corridors from accessing habitual watering locations. Camp 4 (Wangetti North trail) has a footprint of 3.5ha, directly within a confirmed cassowary occupation area, with a potential for up to 40 campers per night (20 within camp ground, 20 at eco accommodation areas). With any open source water present there is a very high probability of interactions between cassowaries accessing open source water (if present) and camp ground users.</p> <p>Users of the trails will cross two permanent water sources in high priority management areas, and sections of trails are parallel in close proximity to permanent water. There is a high probability that cassowaries will be encountered by some users in these localities.</p> <p>Cassowary response may vary, depending largely on the site-specific situation of the interaction. Cassowaries may simply retreat from trails and areas in frequent human use, or may, depending on territorial and parental instinct, defend territory (including food tree resources) and chicks (if present) vigorously.</p>	<ul style="list-style-type: none">- Ensure that there is no cassowary accessible permanent water source within the camp and eco accommodation areas.- Signage for camp and eco accommodation users at all water sources/disposal areas regarding water management and security from cassowary access- No development west of Twin Bridge Road and south of existing east-west track at Camp 4- Warning signs and speed limiting signs on approaches to bridges over permanent water where cassowaries may be likely to be encountered.- New vehicle bridges (where required) over permanent watercourses are to allow head room of 2m to enable cassowary undercrossing via creek bed.- Pedestrian and mountain bike watercourse crossings should be designed to be either be at bed level, or at a height that enables cassowaries to traverse the structures without obstruction.- Rain water collection points off roofing (e.g. water tanks) to be sealed.- Waste water management at the camp area and eco-accommodation similarly must take into account potential cassowary access and potential to impact on local water source quality. Grey water discharge, including irrigation from eco accommodation for example, is not to occur into a situation where the discharge can be accessed by cassowaries.- Abstraction of water from surface watercourses is not to occur at any location.- Storm water discharge from eco accommodation and drain about the camp areas must not drain into any adjacent perennial water course.
<p>Resource access, food resources</p> <p>While cassowaries are omnivorous, they are reliant on core rainforest types that have a high representation by suitable food plants, and also reliant on more marginal habitat areas for seasonal resources that may not be available in core habitat. The home range for cassowaries in the project area is expected to be larger than that for birds in the lowlands owing to wider and less reliable water sources and a high level of habitat disturbance. These home ranges may vary from season to season and overlap with adjoining territories A large number of cassowaries foodplants have been identified in mesophyll rainforest types in primarily high priority (and highest priority) management areas, with a significantly lower representation in more marginal habitats, e.g. notophyll vine forests, and fewer still in sclerophyll rainforests. Many of the successional species in the disturbed mesophyll areas are important cassowary food plants, e.g. those species in the Elaeocarpaceae family.</p> <p>While cassowaries are known to share communally share important fruiting trees with other cassowaries (e.g. a mast flowering/fruiting event), this is a rare event and they are more prone to defend key food plants than share them. This includes vigorous intimidation of other animals, and humans, that may be in the vicinity and considered a threat to their food source.</p>	<p>Access to important foraging areas may be treated in a similar manner as access to water. Cassowaries have an internal ‘map’ for locations of important food plants in their home range and have been documented as accessing an important food source despite clearance of vegetation leaving a particular tree behind. That is, if an important food plant/tree is left within the boundary of a camp area/eco accommodation area, then in the absence of any significant hindrance (infrastructure, human activity/noise) cassowaries would reasonably be expected to continue accessing that resource. In this instance they would come into contact with camp users, with varying behaviour responses that may include defending that resource from a perceived threat, simply ignoring human presence, or retreating.</p> <p>Conversely, if the cassowary can no longer access that resource, e.g. clearing, infrastructure obstruction, then that is a direct impact on habitat resources supporting that bird (and potentially offspring), within that home range. If a particular tree is an important annual seasonal resource, then the loss of that tree, either through obstruction, human activity or clearing, may have significant impacts on an individual/offspring.</p> <p>Important fruiting trees beside the trails may attract seasonal visitation and cassowaries may regard users of the trail as threats, and either defend their resource, or abandon it for the duration that people are present.</p> <p>Rehabilitation/revegetation may be required in some localities post-construction and/or during operation. The planting of cassowary foodplants in locations close to high use trail and camp areas is strongly not recommended as it may encourage cassowaries into situations where interaction with humans and trail/camp activities (e.g. servicing/maintenance) may be unavoidable.</p>	<ul style="list-style-type: none">- Site based planning of camp and eco – accommodation must take into account location and importance of potential cassowary food plant resources. Any significant (e.g. a large fruiting tree) within the camp area should be retained within buffering vegetation or vegetated corridor through the camp and not be an isolate.- Cassowary food plants are not to be used in revegetation/rehabilitation in high use human activity areas, e.g. around the camps.- Rubbish at camp and eco accommodation area must in be situations that cannot be accessed by cassowaries.- Organic waste cannot be composted on-site and must be disposed of (preferably off site) daily in a manner / location that is not detectable or accessible by cassowaries. This includes all kitchen waste from the eco-accommodation area.- Permanent barrier fencing, of any sort, is not be employed in any situation. Any secured areas e.g. around waste disposal locations, should use wooden palisade fencing. Temporary fencing for construction purposes (e.g. around open pits, newly laid concrete areas) will not be made of wire, nor obstruct movement across the general site area. No fencing of any type to be used in vegetation retained for corridor/habitat purposes within the Camp 4 general site.- General educational signage at trail heads, Wangetti Hub, at all eco accommodation areas, camps and potential rest areas, must directly identify that feeding of cassowaries is not to occur under any circumstance, the appropriate rubbish disposal protocols while hiking/cycling, and waste management requirements at camp and eco accommodation areas.- General education on cassowaries as per the following notes should also be pursued.
<p>Territorial and threat perception</p> <p>Cassowaries are known to have home ranges which are largely determined by habitat quality, including variability in habitat for seasonal resources, access to permanent water,</p>	<p>As noted, the responses of individual cassowaries to the same perceived threat/activity is not consistent and will vary from bird to bird. Also, the response of the same bird cannot be taken for granted to be predictable. The</p>	<ul style="list-style-type: none">- Education on ways to de-escalate unexpected interactions between cyclists, hikers and campers (either camps or eco accommodation areas) is the singularly most important element in managing encounters with cassowaries.

Behaviour and Aspect	Nature of Interaction	General Mitigation (full reference Table 3)
<p>and core habitat with staple food plants present. Cassowaries have various documented responses to incursions to their home ranges and perceived threats, either to resources in their home range, themselves, or their chicks. Individual birds have varying responses to these aspects, with individual birds having responses to the same perception in different manners. Cassowaries have no fixed behavioural response, which may vary from indifference to vigorous (and aggressive) defence.</p> <p>Particular aspects to this project may include food trees adjacent to trail (or in camp areas), which may lead to interactions between feeding cassowaries and hikers/ mountain bike users, cassowaries with chicks on the trail being startled or approached by hikers/ mountain bike users, adult cassowaries themselves being startled e.g. by fast moving mountain bikes on sections on the trail where birds cannot be seen on the trail, e.g. on sharp bends. The presence of dogs (particularly) are seen as a threat, or any other unexpected interaction generally where the cassowary has no forewarning of the approach of people.</p>	<p>same individual may respond differently to the same territorial/perceived threat at different times (e.g. males with chicks present).</p> <p>For all interactions, the constant response must be from users of the trail and the camping/eco accommodation areas. This will be to de-escalate the potential for threatening interactions by withdrawal from the location at the earliest opportunity.</p> <p>Mountain bike users, at speed, present a challenge in addressing this issue where the rider cannot see forward around blind corners on descents, and particularly on approaches to water courses and gully areas, which are key cassowary utilisation areas. There is a probability albeit low, that cassowaries in in these trail “blind spots” may have a very vigorous response and/or be injured when surprised/encountered by a fast-moving bike.</p>	<ul style="list-style-type: none">- Education can begin with all commercial and non-commercial promotional material including on-line resources such as social media, at booking offices, the Wangetti Hub, government partner agency offices, local government offices, brochures at tourism information centres/etc.- Existing information from QPWS, WTMA, and other agencies and community groups on how to respond to a cassowary interaction are already available. Leverage could be made of these existing sources, coupled- The operator of the facilities and trail should have an information officer or similar position to support education, cassowary interactions and the monitoring program. This may be part of a wider environmental role for this position.- Domestic animals, under no circumstances, are to be taken into any part of the project area, trails, or camp grounds, nor to accompany service/maintenance vehicles during operation (even if they stay in the vehicle).- Cyclists and hikers must not use any trail before first light and after last light each day, times dependent on the season. Times to be set by camp/trail operators with consideration of seasonal visibility early morning/late afternoon.- Alignment of the mountain bike only trail, and shared use trail should include consideration of clear line of sight when approaching watercourses and “blind corners” in high and highest priority areas. The distance of clear line of sight should consider the speed factor (e.g. slope, for cyclists) and the ability to respond to a cassowary. No minimal distance is suggested at there are no known standards, but the distance should be enough for a downhill cyclist to come to a safe stop on sighting a cassowary on a bend.
<p>General disturbance, construction and operation aspects</p> <p>As has been noted, the behavioural response of individual birds will vary, and an individual’s response to the same disturbance may also vary from event to event. Some behavioural aspects however have been observed to be generally consistent. For example, cassowaries will avoid situations of high activity associated with construction at the eco accommodation areas. This may be temporary and reversible, depending on the nature of the vegetation cleared, and restrictions to site resources, e.g. notable food plants cleared, or access to permanent water restricted.</p> <p>Vegetation clearing and chainsaws are a high disturbance issue as are generators for electrical tools and other equipment in use during construction. These are generally deterrents to cassowaries, with birds retreating to other sections of their range. Other noise: humans talking, vehicles, hammering, using tools, etc during construction are less intrusive, but similarly will result in birds retreating to other areas of their home range. This is applicable to both trail construction and camp / eco-accommodation areas.</p> <p>This may be problematic in those situations where key resources, such as permanent water, are not accessible during construction or important food trees may be lost.</p> <p>Cassowaries use vocalisation to communicate and locate other cassowaries across sometimes large areas. This is particularly important during the breeding season.</p> <p>Operationally, noise and traffic (including maintenance and service traffic) along the trail areas are not anticipated to have a measurable effect on cassowary behaviour, excepting for those general notes under Territory and Threat Perception (point previously). Cassowary abundance and distribution in key habitat areas (those mapped as high and highest priority) is considered to be sparse, and the numbers of hikers and trail riders will be capped and subject to quotas. Camp 4 (Wangetti North trail) and immediate surrounds is the only location with a very high probability of cassowaries at some stage interacting with people, with the probability increased if there are obvious resources, such as permanent water or food resources present (both natural sources and anthropogenic sources).</p> <p>Noise at the camp areas during the day is anticipated to be a minimal disturbance and</p>	<p>Primarily, direct interactions between cassowaries and human activity are not anticipated during construction owing to the high level of noise and human presence related to certain activities (e.g. vegetation clearing and building construction). Cassowaries in these situations generally respond through withdrawal to other parts of their home range, and will only resume their utilisation area post disturbance. If key resources (including removed food plants or access to permanent water) in the activity area (construction areas along trails or camps) are permanently removed, then re- occupation of that part of their home range may not occur (other than traversing).</p> <p>Provided cassowaries have visual or audible warning of cyclists or hikers approaching, then similarly the normal expected response would be for cassowaries to withdraw into adjoining habitat (temporarily). On occasions they may hold their ground if the interaction is unexpected/unannounced.</p> <p>As noted, cassowaries are diurnal, most active earlier in the mornings and later in afternoons. They are seldom active in the evenings. The minimal lights and noise at the camps in the evenings are not anticipated to result in any human/cassowary interactions unless cassowaries are attracted by some aspect, e.g. water availability. Night time trail use by cyclists/hikers will not occur. Minor camp noise during the day will not deter cassowaries from accessing camp areas, particularly if there are anthropogenic sources of water and food resources accessible. However continued disruptive loud noise during the day and in the evenings, has a high potential to stress cassowaries in the locality who may abandon part of their range as a result.</p> <p>Eco-accommodation, and general camp areas and trail will require maintenance and servicing by mechanised vehicles. Access roads and trails to all but Camp 4 (Wangetti North trail) and the high priority trail areas are not in localities where cassowaries are known to occur, nor predicted to occur in other than in very rare transitory and opportunistic circumstances. In most cases not at all. Vehicle access to Camp 4 (Wangetti North trail) will require traverse of high priority cassowary management areas. Vehicle type, speed</p>	<p>The Environmental Management Plan (construction and operation/maintenance) will have a clearly defined element that specifically addresses the potential for impacts on cassowaries arising from the project, and will identify the mitigation mechanisms that must be implemented to address these. These will include the following as a minimum</p> <ul style="list-style-type: none">- Helicopters cannot be used in any highest or high priority management areas. The only exception for helicopter access to these areas will be for emergency situations.- In other locations helicopters can be used for construction material drop-off provided they comply with WTMA regulatory requirements, can operate outside of ground effect zone, and a site clearance of the drop-zone has been surveyed by an ecologist and vetted as clear of cassowary occupation/possible utilisation.- Domestic animals, under no circumstances, are to be taken into any part of the project area, trails, or camp grounds, nor to accompany service/maintenance vehicles during operation (even if they stay in the vehicle).- Any development adjacent permanent or significant ephemeral watercourses (e.g. bridge works) will have full erosion and sediment control measures implemented and maintained for the duration of the works as per the ESCP to be developed for the project. The ESCP is not to be a generalised document, but will address specific infrastructure requirements for any works in moderate, high and highest priority areas.- On any construction work site, should a cassowary approach the works area then works in that particular location will cease until the cassowary has left of its own accord. All construction work should have a plan for alternate work sites and tasks in this contingency.- As per the EMP for the project, all machinery used in construction and operation should be silenced to manufacturers specifications and maintained to that condition. Lighting and electrical supply to the eco-accommodation and emergency lighting should be reliant on alternatives to fuel generators.- Lighting (where required) to be confined to directional and subdued lighting and address Australian Standard AS/NZS 4282:2019. <i>Control of the obtrusive effects</i>

Behaviour and Aspect	Nature of Interaction	General Mitigation (full reference Table 3)
unlikely to be a deterrent to cassowaries accessing those areas if resources are present. However excessive and disruptive noise, e.g. radios, media devices, generator equipment have the potential to stress cassowaries in proximity to these impacts as it effectively renders them incapable of communicating/locating other cassowaries.	and driver education are the primary determinant in the nature of any type of interaction with cassowaries along the service road.	<p><i>of outdoor lighting</i>, which provides information in Appendix C about the impact of artificial light on biota.</p> <ul style="list-style-type: none">- Vehicles will be required to service the construction and operation/maintenance of the facilities. Motorised vehicles may range from quad bikes (or similar) to 4WD vehicles and light trucks. All drivers are to be aware of speed limits for the varying sections of road/track.
<p>Monitoring and management responses</p> <p>Monitoring of cassowary habitat, individual birds and of encounters with cyclists/hikers and service providers (e.g. maintenance contractors for eco-accommodation areas) will form the cornerstone of determining management responses to habitat maintenance and in dealing with individual birds where intervention is deemed necessary. Monitoring will require a multi-task approach, as cassowaries in the project area are considered to have a low population density with a sparse distribution.</p> <p>Monitoring of cassowary activity, habitat status and interactions will be the responsibility of the trail/camp operator in cooperation with members of the Cassowary Recovery Team.</p> <p>The key element to monitoring will be having multiple mechanisms whereby cyclists, hikers and campers (and staff servicing the trail/infrastructure) are able to communicate encounters and observations. Scientific monitoring methodologies e.g. use of DNA to identify individual birds through scat collection and analysis, will depend on the inputs and requirements from research members of the Cassowary Recovery Team.</p>	<p>The Queensland National Parks and Wildlife Service (QPWS) under the Qld <i>Nature Conservation Act 1992</i> has the final responsibility in determining any management response that involves direct manipulation of cassowaries, or their habitat. In order to determine an appropriate response to any negative interaction (e.g. territorial cassowary within campgrounds), it will be necessary for the management authority to have full access to all data, information and other relevant factors collected during the monitoring program relevant to that situation.</p> <p>Management responses may vary from measures that can be implemented by trail and camp/eco-accommodation operators, e.g. altering speed limits, temporary restrictions on access to certain areas, modifying water source availability within camp areas; to direct intervention by QPWS that may include (at the extreme) relocation of a bird following problematic, repeat negative interactions that cannot be managed at the operator level.</p>	<ul style="list-style-type: none">- Clearly defined reporting mechanisms and responsible agencies/authorities are to be enacted for the project. A range of reporting situations are to be covered that reflect compliance with permit conditions and recommendations from Cassowary Recovery Team- Provision for hikers/cyclists to enter cassowary observation data (either scats or interactions) through web-based media, physical hardcopy at camp/eco-accommodation areas and telephone hotline.- Cassowary data to be shared with the Cassowary Recovery Team, who will have access to all observation data. This may be through direct access to online data, including the data recording portal being set up within one of the existing CCT cassowary information portals, reporting mechanisms on a regular basis by the trail/camp operator or on as needs basis (e.g. on negative interactions being recorded).- Education on ways to de-escalate unexpected interactions between cyclists, hikers and campers (either camps or eco accommodation areas) is the singularly most important element in managing encounters with cassowaries.- Education will include signage at the Wangetti Hub, all camps/eco accommodation areas, on approaches to watercourse crossings in highest, high and moderate priority areas, and any other areas identified during the ongoing operational monitoring program.- The program of education will also be implemented through online and digital media resources acting as a promotional vehicle, with booking agencies, social media or any other media that acts as a commercial mechanism for the operator.

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APPENDIX A:

Cassowary Foodplants Recorded within the Project Area

Cassowary foodplants recorded within the project area, including field observations, regional ecosystem detailed descriptions, HERBREC, WildLife OnLine. This does not necessarily represent all foodplants present. Detailed audits of the construction footprints would be required to establish those of significance in the habitat areas. Revegetation within areas of high human utilisation locations, e.g. camp areas, should avoid using the following in rehabilitation efforts.

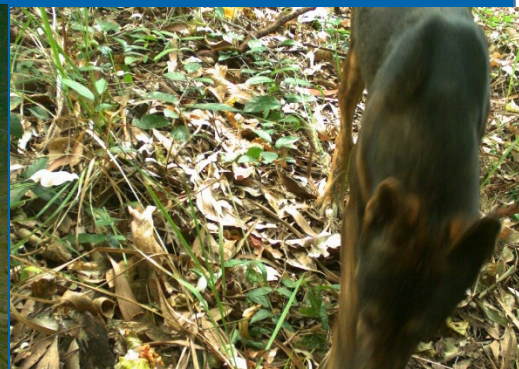
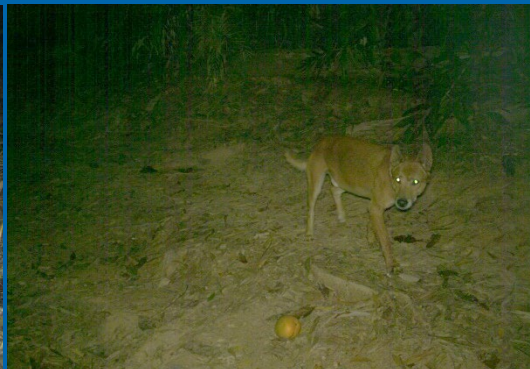
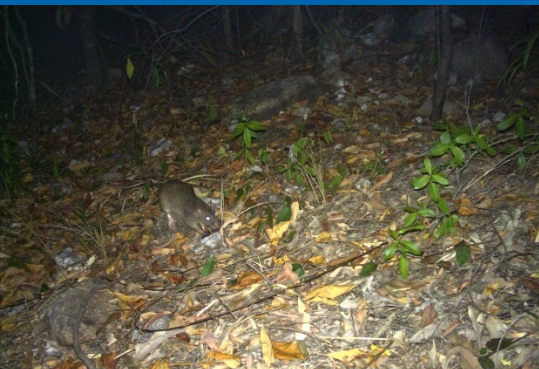
Family	Species	Common Name
Anacardiaceae	<i>Pleiogynium timorense</i>	Burdekin Plum
Annonaceae	<i>Cananga odorata</i>	Ylang Ylang
Apocynaceae	<i>Cerbera floribunda</i>	Cassowary Plum
Araliaceae	<i>Leea indica</i>	Bandicoot berry
Araliaceae	<i>Polyscias australianum</i>	Ivory Basswood.
Arecaceae	<i>Archontophoenix alexandrae</i>	Alexandra Palm.
Arecaceae	<i>Licuala ramsayi</i>	Fan palm
Arecaceae	<i>Ptychosperma elegans</i>	Solitaire Palm.
Asparagaceae	<i>Cordyline cannifolia</i>	Cordyline
Asparagaceae	<i>Cordyline petiolaris</i>	Palm Lily.
Burseraceae	<i>Canarium australianum</i>	Mango bark
Burseraceae	<i>Canarium muelleri</i>	Scrub Turpentine
Combretaceae	<i>Terminalia sericocarpa</i>	Damson Plum
Cunoniaceae	<i>Davidsonia pruriens</i>	Davidsons plum
Elaeocarpaceae	<i>Aceratium megalospermum</i>	Bolly carabeen
Elaeocarpaceae	<i>Elaeocarpus bancroftii</i>	Kuranda quandong
Elaeocarpaceae	<i>Elaeocarpus eumundii</i>	Eumundii Quandong
Elaeocarpaceae	<i>Elaeocarpus grandis</i>	Blue Quandong
Lamiaceae	<i>Gmelina dalrympleana</i>	White beech
Lamiaceae	<i>Gmelina fasciculiflora</i>	White beech
Lauraceae	<i>Beilschmedia obtusifolia</i>	Blush walnut
Lauraceae	<i>Beilschmedia bancroftii</i>	Yellow walnut
Lauraceae	<i>Beilschmedia recurva</i>	Ivory walnut

Family	Species	Common Name
Lauraceae	<i>Beilschmiedia tooram</i>	Brown walnut
Lauraceae	<i>Cryptocarya clarksoniana</i>	Clarkson's laurel
Lauraceae	<i>Cryptocarya grandis</i>	Cinnamon laurel
Lauraceae	<i>Cryptocarya hypospodia</i>	Purple laurel
Lauraceae	<i>Cryptocarya laevigata</i>	Glossy laurel
Lauraceae	<i>Cryptocarya mackinnoniana</i>	Rusty laurel
Lauraceae	<i>Cryptocarya murrayi</i>	Murrays laurel
Lauraceae	<i>Cryptocarya triplinervis</i> var. <i>riparia</i>	Three vein laurel
Lauraceae	<i>Endiandra compressa</i>	Greenheart
Lauraceae	<i>Endiandra hypotephra</i>	Rose Walnut
Lauraceae	<i>Endiandra sankeyana</i>	Sankeys walnut
Lauraceae	<i>Endiandra wolfei</i>	Black Mountain laurel
Lauraceae	<i>Litsea leefeana</i>	Brown Bollywood
Lauraceae	<i>Neolitsea dealbata</i>	Grey Bollywood
Lecythidaceae	<i>Barringtonia calypttrata</i>	Cassowary Pine
Moraceae	<i>Ficus benjamina</i>	Weeping fig
Moraceae	<i>Ficus congesta</i>	Red Leaf Fig
Moraceae	<i>Ficus copiosa</i>	Plentiful fig
Moraceae	<i>Ficus drupacea</i>	Red fig
Moraceae	<i>Ficus hispida</i>	Hairy fig
Moraceae	<i>Ficus racemosa</i>	Cluster Fig
Moraceae	<i>Ficus septica</i>	White stemmed fig
Moraceae	<i>Ficus variegata</i>	Variegated fig
Myrtaceae	<i>Archirhodomertus beckleri</i>	Small leaf myrtle
Myrtaceae	<i>Decaspermum humile</i>	Brown myrtle
Myrtaceae	<i>Gossia bidwillii</i>	Python tree
Myrtaceae	<i>Gossia dallachiana</i>	Lignum
Myrtaceae	<i>Rhodamnia sessiliflora</i>	Iron mallet
Myrtaceae	<i>Syzygium alliligneum</i>	Onionwood
Myrtaceae	<i>Syzygium angophoroides</i>	Yarrabah satinahs
Myrtaceae	<i>Syzygium australe</i>	Creek lily pilly
Myrtaceae	<i>Syzygium cormiflorum</i>	Bumpy satinash
Myrtaceae	<i>Syzygium cryptophlebium</i>	Powderpuff lily pilly
Myrtaceae	<i>Syzygium divaricata</i>	Cassowary Satinash

Family	Species	Common Name
Myrtaceae	<i>Syzygium fibrosum</i>	Sour satinash
Myrtaceae	<i>Syzygium forte ssp forte</i>	White apple
Myrtaceae	<i>Syzygium graveolens</i>	Cassowary Satinash
Myrtaceae	<i>Syzygium gustavioides</i>	Watergum
Myrtaceae	<i>Syzygium hemilampra</i>	Broad leaf lilly pilly
Myrtaceae	<i>Syzygium kuranda</i>	Kuranda satinash
Myrtaceae	<i>Syzygium leuhmanii</i>	Small leaf lilly pilly
Myrtaceae	<i>Syzygium suborbiculare</i>	Lady apple
Myrtaceae	<i>Syzygium tierneyanum</i>	River Cherry
Myrtaceae	<i>Syzygium wilsonii</i>	Powderpuff lily pilly
Oleaceae	<i>Chionanthus ramiflorus</i>	Northern Olive
Phyllanthaceae	<i>Breynia sp. Black Mountain</i> (B.Hyland 25658RFK)	Breynia
Phyllanthaceae	<i>Breynia stipitata</i>	Breynia
Podocarpaceae	<i>Podocarpus grayae</i>	Brown pine
Rhamnaceae	<i>Alphitonia whitei</i>	Red Ash
Rhizophoraceae	<i>Carallia brachiata</i>	Corky bark
Rosaceae	<i>Prunus turneriana</i>	Almondbark
Rubiaceae	<i>Atractocarpus fitzalanii</i>	Native gardenia
Rubiaceae	<i>Atractocarpus sessilis</i>	Brown gardenia
Rubiaceae	<i>Cyclophyllum coprosmoides</i>	Coffee canthium
Rubiaceae	<i>Morinda citrifolia</i>	Cheese fruit
Rubiaceae	<i>Nauclea orientalis</i>	Leichardt Tree
Rutaceae	<i>Acronychia acidula</i>	Lemon Aspen
Rutaceae	<i>Acronychia acronychioides</i>	White aspen
Rutaceae	<i>Acronychia vestita</i>	Hairy aspen
Salicaceae	<i>Scolopia braunii</i>	Flintwood
Sapindaceae	<i>Aglia sapindina</i>	Boodyarra
Sapindaceae	<i>Castanospora alphandii</i>	Brown Tamarind
Sapindaceae	<i>Diploglottis diphyllostegia</i>	Northern tamarind
Sapindaceae	<i>Diploglottis smithii</i>	Smith's Tamarind
Sapindaceae	<i>Ganophyllum falcatum</i>	Scaley Ash
Sapotaceae	<i>Niemeyera prunifera</i>	Boxwood
Sapotaceae	<i>Palaquium galactoxylon</i>	Pencil cedar

Family	Species	Common Name
Sapotaceae	<i>Planchonella chartacea</i>	Thin leaf coondoo
Sapotaceae	<i>Planchonella myrsinodendron</i>	Yellow boxwood
Sapotaceae	<i>Planchonella pohlmaniana</i>	Boxwood
Thymelaeaceae	<i>Phaleria clerodendron</i>	Scented daphne
Zingerberaceae	<i>Alpinia caerulea</i>	Native ginger

Appendix C – Preliminary Weed, Pest, and Disease Management Plan



Department of State Development, Tourism, and Innovation

Wangetti Trail South Section (Wangetti to Palm Cove)

Preliminary Weed Pest and Disease Management Plan

February 2021



Abbreviation and acronyms

Abbreviation/acronym	Definition
AS	Australian Standards
AWTGS	Australian Walking Track Grading System
Biosecurity Act	<i>Biosecurity Act 2014</i>
DAF	Department of Agriculture and Fisheries
DAWE	Department of Agriculture, Water and the Environment
DES	Department of Environment and Science
DSDTI	Department of State Development, Tourism and Innovation
EMP	Environmental Management Plan
EP Act	<i>Environmental Protection Act 1994</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
GBO	General Biosecurity Obligation
GED	General Environmental Duty
IPAC	Invasive Plants and Animals Committee
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
MTBA TDRS	Mountain Bike Trail Guidelines Trail Difficulty Rating System
PMST	Protected Matters Search Tool
PSTR	Pre-Start Trail Review
QLD IPAS	Queensland Invasive Plants and Animals Strategy 2019-2024
QPWS	Queensland Parks and Wildlife Service
TDPD	Tourism Development Projects Division
Wet Tropics	Wet Tropics of Queensland
WHD	Weed Hygiene Declarations
WoNS	Weeds of National Significance
WPDMP	Weed, Pest and Disease Management Plan
WTMA	Wet Tropics Management Authority
WTWHA	Wet Tropics World Heritage Area

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Appendices

Appendix A – Map showing distribution of weeds, pests and pathogen
Appendix B – Factsheets about the identification and treatment of high risk weeds, pests and pathogens

1. Introduction

1.1 Project background

The Department of State Development, Tourism and Innovation (DSDTI) – Tourism Development Projects Division (TDPD) is proposing to establish the Wangetti Trail – Wangetti South (Project) Section, a 29.7 kilometre (km) shared use trail to accommodate both mountain bike users and hikers from the southern boundary Lot 2 SP309094 in the township of Wangetti, to Palm Cove (refer to Figure 1-1).

The Wangetti South Section will comprise of the following components:

- 29.7 km shared use trail to accommodate both mountain bike users and hikers, consisting of natural ground and surface treatments, which will be a maximum of 1.5 m wide. The 1.5 m wide trail will be located within a 40 m survey corridor, referred to as the construction allowance corridor, to allow flexibility for the placement of infrastructure during the construction phase. The trail has been designed to be a 'Mountain Biking – intermediate (blue square with blue outline) as defined in the Australian Mountain Bike Trail Guidelines Trail Difficulty Rating System (MTBA TDRS) and grade 3 for hikers, as defined in the Australian Walking Track Grading System (AWTGS), which also equates to Class 3 in the Australian Standard for Walking Tracks, Part 1: Classification and Signage (AS 2156.1-2001). The trail will have an average gradient of <10% and a maximum gradient no greater than 15% (for short distances only). Built structures proposed as part of the trail include gully crossings, bridges, staircases, platforms, rock armouring and signage, where appropriate and required.
- A number of waterway crossings along the shared use trail that will comprise of the following: rock armouring, boulder crossings and low-level bridge (minor water crossing).
- Dark Jungle (public camping node and amenities block).
- The formalisation of existing access tracks into service tracks to provide restricted access to the shared use trail and Dark Jungle for construction purposes, operational purposes, maintenance purpose and for emergency purposes.

The Wangetti South Section is being proposed over four properties located within the Douglas Shire Council and Cairns Regional Council local government areas. The project area intersects both the Macalister Range National Park and the Wet Tropics World Heritage Area (WTWHA).

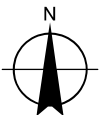
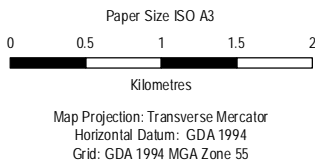
The project is being delivered by TDPD as part of an adventure-based ecotourism development in north Queensland. The shared use trail will provide walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including the Wet Tropics of Queensland (Wet Tropics), and national parks.

Development of a Weed, Pest and Disease Management Plan (WPDMP) is required to demonstrate the management of weeds, pest and disease during the construction and operational phases of the Wangetti South section. This report is based on desktop information available at the time of preparation. A detailed weed survey was not carried out during previous ecological surveys of the project area, however general observations were made of weed and pest species within the project area.

It forms part of a sub-plan in the Environmental Management Plan (EMP) for the Wangetti South Section. This document, and focuses on the management of weeds, pests and diseases throughout the Project.



Based on or contains data provided by the State of QLD (DNRME) 2020. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.



DITID
Environment Assessment Stage 2 Wangetti Trail

Wangetti South Section
Project Locality Plan

Project No. 41-32458
Revision No. 5
Date 1/12/2020

FIGURE 1-1

1.2 Purpose, objectives, and structure of this report

TDPD and the operator of the Wangetti South Section Project have both a legal and social reasonability to manage existing weeds, pests and disease within the Wangetti South Section and to prevent the further spread of biosecurity matters as a result of project activities during the construction phase and operational phase. This WPDMP has been prepared to satisfy the obligations and complements the overarching Wangetti South Section Environmental Management Plan.

The objectives of the WPDMP is to:

- Protect the biodiversity of the surrounding landscape of the adverse impacts from weeds.
- Reduce weed infestations by integrating control methods and cost-effective management.
- Manage weeds in disturbed areas and to protect rehabilitated areas.
- Manage the weed species that are currently present on the site as well as off-site work areas.
- Prevent introduction of new weed infestations to the Project area and adjoining areas.
- Increase on-site awareness about the major weed species and manage pest species through strategic management, where possible.
- Avoid and effectively manage impacts associated with weeds, pests and diseases.

The WPDMP provides an overview of the strategy, methods and controls implemented as part of the Wangetti South Section Project to manage the issue of weeds, pests and diseases.

Specifically, this WPDMP:

- Identifies weeds, pests and potential diseases within the Wangetti South Section project area; and
- Describes the weeds, pests, and disease management strategy, to identify, avoid and, prevent/minimise and control the introduction of and spread of weeds, pests and diseases within the Wangetti South Section and to neighbouring areas.

The WPDMP is to be implemented at the project area and is applicable to all activities that have the potential to introduce and/or spread of weeds, pests or disease throughout the construction and operational phases of the Project.

1.3 Limitations

This report has been prepared by GHD for Department of State Development, Tourism and Innovation and may only be used and relied on by Department of Innovation & Tourism Industry for the purpose agreed between GHD and the Department of Innovation & Tourism Industry as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other Department of State Development, Tourism and Innovation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

1.4 Acronyms, Terms and Definitions

This section provides definition of terminology used throughout this report.

Clean means free from any pest plant and pathogen reproductive material.

For vehicles, plant and equipment, 'clean' means that no soil and/or, organic matter that may contain pest plant and pathogen reproductive material, is on or in areas that are accessible during cleaning and maintenance work. A vehicle is considered to remain clean if it leaves its point of origin clean and only travels on sealed roads or well-maintained unsealed roads.

Contractor is any person undertaking work for or on behalf of the Project.

Pathogen includes any disease-causing organism such as bacteria, parasites, viruses or fungi.

Pest means any animal, plant, parasite or disease causing organism (such as bacteria, virus or fungus) capable of causing adverse impacts to environmental, economic or social values, whether or not it is declared and listed in the *Biosecurity Act 2014* (Biosecurity Act) and *Biosecurity Regulation 2016* (Biosecurity Regulation).

Pest management includes all activities involved in the planning, detection, control, monitoring or eradication of pests in QPWS managed areas.

Pest plant means any plant capable of causing adverse impacts to environmental, economic or social values whether or not it is a declared plant listed in the Biosecurity Act and Biosecurity Regulation.

QPWS managed areas include protected areas (State land) managed under the *Nature Conservation Act 1992* and other areas managed by QPWS including a range of freehold lands, *Land Act 1994* reserves and other tenures.

QPWS Pest Management System refers to a system to facilitate pest management planning and reporting which guides operational implementation, including monitoring, on all QPWS managed areas.

Reproductive material is any part of a pest plant or pathogen that is capable of sexual or asexual reproduction. Examples include, but are not limited to:

- Seed;
- Spores;
- Roots, bulbs, rhizomes, stolons, tubers, or parts thereof;
- Stem or leaf pieces; and
- Whole plants or fungi.

Surrounding area or surrounding environment area adjoining the 40 m construction corridor

Transport or utility corridor includes any formed or unformed road or track (gazetted or not), power line or pipeline (regardless of whether an easement exists) and associated access tracks.

Vehicle, plant and equipment includes, but is not restricted to, any car, motorcycle, truck, tractor, grader, tracked earthmoving equipment, boat, vessel, airplane or helicopter.

Visitor is any person who is not an employee that visits QPWS managed areas, for recreational or scientific purposes.

Weed and Seed Hygiene Declaration is the written declaration that may be required before supplying anything that is, or could be, contaminated with weeds and/or organic matter.

WoNS Weeds of National Significance

1.5 Site specific background documents

WPDMP has been prepared for both the construction phase and the operational phase of the Project and outlines measures to prevent the introduction of new weed species, pest species and diseases into the project area and minimise the spread of declared weeds, pests and disease within the surrounding area of the project area.

The Wet Tropics bioregion has diverse and complex flora and fauna protected within the Wet Tropics World Heritage Area and surrounding regions. Invasive species and diseases can have significant impacts on the bioregion. According to the Wet Tropics Management Authority – Invasive Pests - A threat to the WTWHA brochure dated 2016, the tropical climate of the WTWHA offers favourable growing conditions for exotic tropical plants and animals. There are a broad range of habitats offering varied temperatures and rainfall. The Wet Tropics has frequent cyclones, floods and droughts which can disrupt ecosystems and help spread weeds, diseases and, occasionally, feral animals such as tramp ants. For instance, cyclones can move weed seeds great distances via wind and water and destroy the rainforest canopy, allowing weeds to flourish.

This WPDMP has been developed in consultation with TDPD and the Department of Environment and Science (DES) and has considered QPWS operational policies, procedural guides, guidelines, information sheets, technical manuals, procedures and checklists associated with pest, weed and disease management and has also considered the information in the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD.

2. Roles and responsibilities

This section outlines parties associated with the Wangetti South Section and the responsibilities regarding weeds, pests and disease management. All personnel are responsible for ensuring they comply with the EMP, their General Environmental Duty (GED) and Duty to Notify in accordance with the EP Act. Table 2-1 outlines the responsible parties for managing weeds, pests and pathogens.

Table 2-1 Environmental roles

Responsible parties	Responsibilities
TDPD	<p>TDPD is responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants under control within the project area. This is known as the General Biosecurity Obligation (GBO).</p> <p>The Project Manager shall support all project personnel in the implementation of the WPDMP. The Project Manager may delegate responsibilities to appropriately qualified personnel where appropriate.</p> <p>The Project Manager's responsibilities are to:</p> <ul style="list-style-type: none"> • Ensure that all personnel are familiar with the WPDMP and are aware of their environmental responsibilities. • Ensure that all personnel operate in accordance with the WPDMP, statutory approvals and legislative requirements. • Ensure necessary guidance and advice is provided to all personnel with regard to biosecurity management requirements. • Ensure that all relevant licenses/permits/approvals are in place prior to any works being undertaken (if required). • Undertake audits of the WPDMP and review environmental performance once a construction segment has been completed during the construction phase. Undertake audits of the WPDMP on a monthly basis during the operational phase of the project. • Where necessary, coordinate and/or assist in the response to environmental incidents through implementation of corrective actions. • Report environmental incidents to relevant Administering Authority.
Contractor's Project Manager	<p>Implementation of the provisions relating to construction phase of this WPDMP during the construction phase including:</p> <ul style="list-style-type: none"> • Complying with the EMP, statutory approvals, legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard.
Contractor's Trail Designer/Builder	<ul style="list-style-type: none"> • Provide the resources and training systems to develop, schedule and deliver induction to all staff and contractors including site induction and any relevant site-specific biosecurity training. • Record training events and maintain personnel records.

Responsible parties	Responsibilities
	<ul style="list-style-type: none"> • Provide portable toilets onsite if required and ensure that maintenance and disposal of waste is conducted by a licensed contractor as required. • Ensure all vehicles arriving onsite utilise the designated entry/exit points and parking area. Ensure that all equipment is fuelled, maintained and 'fit for purpose' for the required task prior to arriving at the site. • Notify the Project Manager of environmental incidents and corrective actions taken (if any). • Record and maintain a database detailing environmental incidents and non-conformances including corrective actions taken.
Operator in Partnership with DES/ QPWS	<ul style="list-style-type: none"> • Develop, implement, monitor, and maintain effectiveness of the WPDMP. • Liaise with relevant organisations in relation to biosecurity approvals. Identify, record, report (as required) and rectify non-compliances. Investigate and report biosecurity related incidents to TPDP/DES. Report biosecurity related incidents to regulatory agencies. • Complying with the EMP, statutory approvals, legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard. • Provide the resources and training systems to develop, schedule and deliver induction to all staff and trail users including site induction and any relevant site-specific biosecurity training. • Record training events and maintain personnel records.
All Personnel	<p>Adhere to the general biosecurity obligation as specified under the Biosecurity Acts. Implement the provisions of this plan where they apply to their day to day activities. Report any biosecurity non-compliances to operational management. Raise non-compliances with this WPDMP. Participate in biosecurity training as relevant.</p>

3. Legal and other requirements

3.1 Legislative framework

Applicable legislation, regulations, guidelines and strategies enacted by the Commonwealth, State of Queensland and local governments for weed, pest and disease management in the Wangetti South Section are described in the following sections.

3.2 Commonwealth, State and Local Government Legislation and Strategies

An overview of Commonwealth, State Government and local government legislation and strategies considered in the development of the WPDMP is presented in Table 3-1.

Table 3-1 Summary of applicable Commonwealth legislation and strategies

Act or Strategy	Summary of Act of Strategy
Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The purpose of the EPBC Act is to provide a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places.
Australian Weeds Strategy 2017-2027 (AWS)	The purposed of the AWS is to provide a national guideline, outlining the principles that underpin weed management in Australia. The AWS aims to guide a coordinated effort for all jurisdictions and affected stakeholders, informing plans and actions by state and local governments, industry, landholders and communities (DAWE, 2017). The Invasive Plants and Animals Committee (IPAC) is responsible for reviewing the list of Weeds of National Significance (WoNS), all of which have individual national strategic management plans.
Biosecurity Act 2014 (Biosecurity Act)	<p>The purpose of the Biosecurity Act is to provide a framework for an effective biosecurity system and manage risks associated with emerging, endemic and exotic species. All individuals and organisations have a GBO under Biosecurity Act, which means that they are responsible for managing biosecurity risks that are under their control and that they know about, or should reasonably be expected to know about. Under the GBO, individuals and organisation whose activities pose a biosecurity risk must:</p> <ul style="list-style-type: none">• Take all reasonable and practical steps to prevent or minimise each biosecurity risk• Minimise the likelihood of causing a biosecurity event, and limit the consequences if such an event is caused• Prevent or minimise the harmful effects a risk could have, and not do anything that might make any harmful effects worse. <p>The Biosecurity Act takes a risk-based approach to biosecurity threats which allows greater flexibility and more responsive approaches to manage each specific circumstance focussing on biosecurity risks that are, or are</p>

Act or Strategy	Summary of Act of Strategy
	<p>likely to become, a significant problem for human health, social amenity, the economy or the environment. For example, a biosecurity risk exists where a person or organisation is moving soil, vegetation, machinery and/or equipment that could carry a weed or contaminant. Terms used under the Biosecurity Act are defined under legislation and can also be viewed on the Department of Agriculture and Fisheries (DAF) website. For the purpose of this CWMP, key terminology includes prohibited matter and restricted matter as defined within the Biosecurity Act 2014, as follows:</p> <ul style="list-style-type: none"> • Prohibited Matter is biosecurity matter not currently present or known to be present in Queensland. It is prohibited because it may have a significant adverse effect on a biosecurity consideration if it did enter Queensland. • Restricted Matter is biosecurity matter found in Queensland that may have adverse effects on a biosecurity consideration if conditions or restrictions under the Act were not imposed. Restricted invasive plants may fall into 1, a combination or all of Categories 2 to 5 (listed below). • Invasive plants are not prohibited or restricted invasive plants. Everyone is obligated to take all reasonable and practical steps to minimise the risks associated with invasive plants under their control.
<p>Department of Environmental and Science, 2013. Operational policy Pest plant and pathogen spread prevention QPW/2013/746 v1.03</p>	<p>The policy provides guidance for staff of the DES, QPWS on minimising pest plant and pathogen spread into, within and from QPWS managed areas.</p>
<p>Vehicle and machinery cleandown procedures 2019</p>	<p>The purpose of this procedure is to provide consistent approaches across Queensland to vehicle and machinery cleandown procedures and reduce risk of invasive species spread via transportation of vehicle and machinery across Queensland (DAF 2019a). Suitable Weed Hygiene Declarations (WHD) should be developed by the Contractor as appropriate to reflect Project activities and risks (e.g. vehicle inspections, vehicle wash/brush down, etc.).</p>
<p>Environmental Protection Act 1994 (EP Act)</p>	<p>The purpose of the EP Act is to protect Queensland environment while allowing for ecologically sustainable development. Under the EP Act, a person has a GED to not undertake activities that cause or are likely to cause environmental harm unless the person takes all reasonable and practicable measures to prevent and minimise the harm.</p>

Act or Strategy	Summary of Act of Strategy
	<p>General Environmental Duty</p> <p>Section 319 of the EP Act states that every person has a GED. This GED requires that a person must not carry out an activity that causes or is likely to cause environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm. In deciding measures to be undertaken to fulfil the GED the following must be considered:</p> <ul style="list-style-type: none"> • The nature of the harm or potential harm. • The sensitivity of the receiving environment. • The current state of technical knowledge for the activity. • The likelihood of successful application of the different measures that might be taken. • The financial implications of the different measures as they would relate to the type of activity.
Invasive pests - a threat to the Wet Tropics World Heritage Area prepared by Wet Tropics Management Authority	The Wet Tropics Management Authority has produced a brochure which highlights the importance of biosecurity and management of invasive pests in the Wet Tropics. The brochure also stresses the need for education, research and community participation to help control a range of weeds, feral animals and diseases in the Wet Tropics
Queensland Invasive Plants and Animals Strategy 2019-2024 (QLD IPAS)	<p>The QLD IPAS is a state-wide strategic planning framework that addresses the impacts caused by invasive plants and animals. The QLD IPAS aims to direct and facilitate strategic and targeted actions to reduce the impacts of invasive species and identifies the shared responsibility of state and local government, landholders, industry and community (DAF 2019b).</p> <p>This can be accessed from the DAF at:</p> <p>https://www.daf.qld.gov.au/business-priorities/biosecurity/policy-legislation-regulation/queensland-invasive-plants-animals-strategy</p>
Wet Tropics Management Plan 2020	The Wet Tropics Management Plan 2020 lists undesirable plants and regulates bringing them into the World Heritage Area
Wet Tropics Conservation Strategy 2004	<p>The Wet Tropics Conservation Strategy was developed by Wet Tropics Management Authority and the Queensland Parks and Wildlife Services. Conservation Strategy outlines actions to achieve the conservation, rehabilitation and transmission to future generations of the Wet Tropics World Heritage Area.</p> <p>The strategy identifies the need to address the many direct and underlying threats to the integrity of the Area. Integrated regional planning and cooperation with industry and the community will be necessary to minimise underlying threats to</p>

Act or Strategy	Summary of Act or Strategy
	<p>World Heritage such as population growth, agriculture and other farming, urban development, community infrastructure, water use, tourism and recreation. The strategy also addresses direct threats to the Area such as habitat loss and fragmentation through vegetation clearing, altered water flows and drainage, changed fire regimes and the spread of weeds, feral animals or pathogens.</p>
<p>Local Council Biosecurity Plans</p> <p>Cairns Region Biosecurity Plan 2019-2024</p> <p>Douglas Shire Biosecurity Plan 2017-2021.</p>	<p>Two local government areas are traversed by the trail. Each of these areas employ's its own biosecurity plan based on the Biosecurity Act. These plans prioritise Council's management of weeds based on the level of national and local significance of the impact (environmentally, economically and socially) and the capacity to manage. Scores are determined through a combination of scored risk assessments and consultations. Depending on the council, the plans may use differing labels for 'high', 'medium' and 'low' priorities. Higher priority species are primarily targeted with intense and on the ground control strategies, while low priority species will generally have education/awareness programs or no control. Proposed management techniques and control strategies are assessed for each species and include prevention, eradication, reduction, containment, education and impact/asset protection.</p> <p>The Cairns Region Biosecurity Plan 2019-2024 and the Douglas Shire Biosecurity Plan 2017-2021 noted the following priority weeds in the region:</p> <ul style="list-style-type: none"> • Gamba grass (<i>Andropogon gayanus</i>) • Hiptage (<i>Hiptage benghalensis</i>) • Miconia tree (<i>Miconia calvescens</i>) • Senegalia spp. • Parthenium weed (<i>Parthenium hysterophorus</i>) • Salvinia/Water fern (<i>Salvinia molesta</i>) • Olive hymenachne (<i>Hymenachne amplexicaulis</i> and <i>hybrids</i>) • Glush weed (<i>Hygrophila costata</i>) • Thunbergia (<i>Thunbergia grandiflora</i> syn. <i>T. laurifolia</i>) • Pond apple (<i>Annona glabra</i>) • Water lettuce (<i>Pistia stratiotes</i>) • Mexican bean tree (<i>Cecropia pachystachya</i>, <i>C. palmata</i> and <i>C. peltata</i>) • Siam weed (<i>Chromolaena odorata</i>) • Opuntoid cacti • Water hyacinth (<i>Eichhornia crassipes</i>) • Brilliantaisia (<i>Brillantaisia lamium</i>) • Water Mimosa (<i>Neptunia oleracea</i> and <i>N. plena</i>) • Lantana (<i>Lantana camara</i> and <i>L. montevidensis</i>)

Act or Strategy	Summary of Act of Strategy
	<ul style="list-style-type: none"> • Giant rat's tail grass (<i>Sporobolus pyramidalis</i> and <i>S.natalensis</i>) • Cabomba (<i>Cabomba caroliniana</i>) • Amazon frogbit (<i>Limnobium laevigatum</i>) • Kudzu (<i>Pueraria montana</i> var. <i>lobata</i> syn. <i>P. lobata</i>, <i>P. triloba</i>) • Sicklepods (<i>Senna obtusifolia</i>, <i>S. hirsute</i> and <i>S. tora</i>) • Panama Rubber tree (<i>Castilla elastica</i>) • Venezuelan Pokeweed (<i>Phytolacca rivinoides</i>) • Tobacco Weed (<i>Solanum mauritianum</i>) <p>Priority pest animals in the region includes:</p> <ul style="list-style-type: none"> • Electric Ants (<i>Wasmannia auropunctata</i>) • Feral Deer (all species) • Yellow Crazy Ants (<i>Anoplolepis gracilipes</i>) • Feral Pig (<i>Sus Scrofa</i>) • Wild Dog (<i>Canis familiaris</i>) <p>In addition, the plan identified a number of weeds that are considered to be high risk for the region:</p> <ul style="list-style-type: none"> • Red-eared slider turtle (<i>Trachemys scripta elegans</i>) • Alligator weed (<i>Alternanthera philoxeroides</i>) • Fire weed (<i>Senecio madagascariensis</i>) • Mikania vine (<i>Mikania micrantha</i>) • Koster's curse (<i>Clidemia hirta</i>) • Bog moss (<i>Mayaca fluviatilis</i> Aubl.) • Sagittaria (<i>Sagittaria platyphylla</i>) • Limnocharis, yellow burrhead (<i>Limnocharis flava</i>) • Candyleaf (<i>Stevia ovata</i>) • Aleman grass (<i>Echinochloa polystachya</i>) • Madras thorn (<i>Pithecellobium dulce</i>) • High biomass grasses (such as thatch grass, Guinea grass, molasses grass and giant rat's tail grass)

4. Existing environment

4.1 Overview

The Wangetti South Section is to be located within an area of high natural and cultural value. The area is visually appealing due to the location between the reef and the rainforest. High biodiversity is present in the local area and therefore the introduction of pathogens, weed and pest species has the potential to cause significant impacts such as disrupting the ecological integrity of the ecosystems within the Wangetti South Section area. MNES and MSES values including habitat and vegetation types are discussed within the document and appropriate mitigation measures have been prioritised to prevent and reduce impact on this area.

Weeds, pests, and pathogens can be introduced/transported to new areas via a range of methods. Key vectors for weeds and pest translocation within the Wangetti South Section project area include:

- Transportation into and across the project area – via vehicles, equipment, construction material, maintenance equipment, construction and operational personal and trail users (parts attached to footwear, bikes, clothing etc).
- Contaminated materials and produce – from raw materials such as gravel, sand and mulch may contain or carry weed seed or other biosecurity risks like invasive ants, pathogens or diseases.
- Natural methods of dispersion – via wind, waters (including flood water) and wildlife.

Recognising and managing potential vectors within the Wangetti South Section is an important step for minimising the spread of weeds, pests, diseases. Translocation by vehicles and construction equipment presents the highest risk for assisting the spread of weed species across the Wangetti South Section project area. Factsheets regarding the identification and treatment of high-risk weeds, pests and pathogens are provided in Appendix B. If treatment is required, methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable.

4.2 Weed species

Table 4-1 summarises the declared weeds considered to be known or potentially present within the Wangetti South Section Project area. This information has been sourced from the EPBC Act Protected Matters Search Tool (PMST), the DES WildNet database search, Wet Tropics Management Authority (WTMA) website, discussions with WTMA, Cairns Region Biosecurity Plan 2019-2024 and Douglas Shire Biosecurity Plan 2017-2021. The species presented in Table 4-1 are found to be on the priority list of each Biosecurity Plan and has a specific Biosecurity Action Plan.

A detailed weed survey was not carried out during previous survey events, however general observations were made of weed and pest species within the project area. Weeds were noted in areas previously disturbed by storm events where tree canopy had been disturbed. In addition, information was sourced from the Wet Tropics Management authority website. The aim of this WPDMP is to prioritise management and control efforts in relation to statutory status of weeds in Table 4-1. Even though many weeds are mapped as occurring in the area based on MNES databases, using local Biosecurity information (Cairns Regional and Douglas Shire Council Biosecurity documents) and the online weed map distributed by the Department of Agriculture and Fisheries, weeds that are of local significance can be identified.

In the fourth column of Table 4-1, a ranking has been assigned to those weed species that are considered to have a greater impact on the existing environment based from the information

contained with the Douglas Shire Biosecurity Plan 2017 – 2021 and the Cairns Region Biosecurity Plan 2019 – 2024. The ranking has considered the following:

- potential to impact on native plants, animals, waterways, and ecosystem
- potential to impact on human health
- potential impact to community values and cultural values

The weed species that are considered to have major or significant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **high risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The weed species that are considered to have a moderate impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **medium risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The weed species that are considered to have a minor or insignificant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **low risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

In the fifth column of Table 4-1 weed species have been identified as either likely or unlikely to occur (but is present in surrounding areas) or unlikely to occur (due to a lack of suitable habitat and / or environmental conditions). The criteria used to determine this is outlined in Table 4-2. Some of these weeds are notifiable, meaning Biosecurity must be contacted within 24 hours of sighting on 13 25 23.

In the last column of Table 4-1 a ranking has been assigned to those weed species that require priority management (including monitoring, management and intervention).

Table 4-1 Invasive Plants identified in Wangetti South Section

Common Name	Scientific Name	Notifiable weed	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Miconia	<i>Miconia calvenscens</i>	✓	High	Medium	Medium
Limnocharis	<i>Limnocharis flava</i>	✓	High	Medium	Medium
Pond Apple	<i>Annona glabra</i>	×	Medium	Low	Low
Kudzu vine	<i>Pueraria montana var lobata</i>	×	Low	Low	Low
Parthenium Weed	<i>Parthenium hysterophorus</i>	×	Medium	Low	Low
Salvinia	<i>Salvinia molesta</i>	×	High	Low	Low

Common Name	Scientific Name	Notifiable weed	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Senegalia spp,	<i>Senegalia</i>	×	Low	Low	Low
Hymenachne	<i>Hymenachne amplexicaulis</i>	×	High	Low	Low
Glush weed	<i>Hygrophila costata</i>	×	High	Low	Low
Blue thunbergia	<i>Thunbergia grandiflora</i> syn. <i>T. laurifolia</i>	×	High	High	High
Water lettuce	<i>Pistia stratiotes</i>	×	Low	Low	Low
Mexican bean tree	<i>Cecropia pachystachya</i> , <i>C. palmata</i> and <i>C. peltata</i>	✓	Medium	Medium	Medium
Siam weed	<i>Chromolaena odorata</i>	×	High	Medium	Medium
Water hyacinth	<i>Eichhornia crassipes</i>	×	Medium	Medium	Medium
Brillantaisia	<i>Brillantaisia lamium</i>	×	High	Low	Low
Water mimosa	<i>Neptunia oleracea</i> and <i>N. plena</i>	✓	Medium	Medium	Medium
Lantana	<i>Lantana camara</i> and <i>L. montevidensis</i>	×	Medium	High	High
Giant rat's tail grass	<i>Sporobolus pyramidalis</i> and <i>S. natalensis</i>	×	Medium	High	High
Cabomba	<i>Cabomba caroliniana</i>	×	Medium	Low	Low
Amazon frogbit	<i>Limnobium laevigatum</i>	×	Medium	Low	Low

Common Name	Scientific Name	Notifiable weed	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Sickepods	<i>Senna obtusifolia</i>	×	High	High	High
Rubber Vine	<i>Cryptostegia grandiflora</i>	×	High	Low	Low
Cat's Claw Vine	<i>Dolichandra unguis-cati</i>	×	High	High	High
Prickly Pears	<i>Opuntia spp.</i>	×	Low	Low	Low
Hiptage	<i>Hiptage benhalensis</i>	×	Medium	Low	Low
Gamba grass	<i>Andropogon gayanus</i>	×	High	Low	Low
Invasive grasses such as thatch grass, guinea grass and molasses grass	<i>Megathyrsus maximus var maximus</i> , <i>Hyparrhenia rufa</i> and <i>Melinis minutiflora</i>	×	High	Medium	Medium
Venezualan pokeweed	<i>Phytolacca rivinoides</i>	×	Low	High	Low
Delta Arrowhead	<i>Sagittaria platyphylla</i>	×	Low	Low	Low
Ivy Gourd	<i>Coccinia grandis</i>	×	Low	Medium	Low
Tobacco weed	<i>Solanum mauritianum</i>	×	Low	High	Medium

Key to table: High = highest priority, Medium = medium priority, Low = lowest priority

Table 4-2 Risk category for onsite occurrence

Classification	Description
High risk	Priority ONE treatment The weed is known to be distributed in the project area or has been assessed as present on desktop mapping. It has been identified as a priority weed species by Cairns Reginal Council and Douglas Shire Council and listed as an undesirable plant in the Wet Tropics World Heritage.
Medium risk	Priority TWO treatment Unlikely to currently occur within the project area, but localised distribution is known to occur in surrounding areas. Increased surveillance and prevention methods would be required to prevent further infestation of these weeds. It has been identified as weed species by Cairns Reginal Council, Douglas Shire Council and Wet Tropics Management Authority. Increased on site vigilance is required.
Low risk	Priority THREE treatment Unlikely to occur due to a lack of suitable habitat and / or environmental conditions.

According to Table 4-1, the weed species that have a medium to high risk of occurring within Wangetti South Section and have a moderate to significant impact on the existing environment within Wangetti South Section include:

- Miconia
- Limnocharis
- Blue thunbergia
- Mexican bean tree
- Siam weed
- Water hyacinth
- Water mimosa
- Lantana
- Giant rat's tail grass
- Sickepods
- Cat's Claw Vine
- Invasive grasses such as thatch grass, guinea grass and molasses grass.
- Tobacco weed

To eliminate the risk of any of the weeds outlined in the Cairns Regional Council and the Douglas Shire Council's biosecurity information, site surveys in the project area would be

required. If treatment is required, methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the identification and treatment of high-risk weeds are provided in Section 5 and Appendix B.

4.3 Pest species

Table 4-3 summaries the pest species considered to be present or have the potential to occur within the Wangetti South Section project area. This information has been sourced from the EPBC Act PMST, WTMA website, discussions with WTMA and the DES WildNet database search that were completed for Wangetti South as part of the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD.

A detailed pest survey was not carried out during the three survey events in 2019, however general observations were made of weed and pest species within the project area. In addition, information was sourced from the Wet Tropics Management authority website.

Feral animals are known to have a negative impact on native flora and fauna, through competition for resources, killing of native fauna, or degradation and damage to fauna habitats. Yellow crazy ants, electric ants and Asian honey bees have all been discovered in the Wet Tropics since 2000 (WTMA, 2020) (refer to Appendix A). Yellow crazy ants can have severe impacts on native animals and plants and human health and quality of life. Checking for the presence of yellow crazy ants can help prevent further spread of this pest. Check the project area and any materials that could harbour yellow crazy ants. This includes soil, timber, timber products and other construction materials, and other potential vectors of spread.

In the third column of Table 4-3, a ranking has been assigned to those pest species that are considered to have a greater impact on the existing environment based from the information contained with the Douglas Shire Biosecurity Plan 2017 – 2021 and the Cairns Region Biosecurity Plan 2019 – 2024. The ranking has considered the following:

- potential to impact on native plants, animals, waterways, and ecosystem
- potential to impact on human health
- potential impact to community values and cultural values

The pest species that are considered to have major or significant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **high risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The pest species that are considered to have a moderate impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **medium risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

The pest species that are considered to have a minor or insignificant impact to native plants, animals, waterways, and ecosystem, community values, cultural values and/or on human health have been flagged as **low risk** (Cairns Regional Council, 2019 and Douglas Shire Council, 2017).

In the fourth column of Table 4-3 pest species have been identified as either likely or unlikely to occur (but is present in surrounding areas) or unlikely to occur (due to a lack of suitable habitat and / or environmental conditions). The criteria used to determine this is outlined in Table 4-4.

In the last column of Table 4-3 a ranking has been assigned to those pest species that require priority management (including monitoring, management and intervention).

Table 4-3 Pest Species associated with the project area

Common Name	Scientific Name	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Common Myna	<i>Acridotheres tristis</i>	Low	High	Low
Mallard	<i>Anas platyrhynchos</i>	Low	Medium	Low
Domestic Cattle	<i>Bos taurus</i>	High	Low	Low
Domestic Dog	<i>Canis lupus familiaris</i>	Medium	High – known to occur within the WTWHA	High
Rock Pigeon	<i>Columba livia</i>	Low	High	Low
Horse	<i>Equus caballus</i>	Medium	Low	Low
Cat	<i>Felis catus</i>	Medium	High – known to occur within the WTWHA	Medium
Feral Deer species in Australia	<i>Feral deer</i>	High	Low – known to occur within the WTWHA	Low
Asian House Gecko	<i>Hemidactylus frenatus</i>	Low	High	Low
Mourning Gecko	<i>Lepidodactylus lugubris</i>	Low	High	Low
Nutmeg Mannikin	<i>Lonchura punctulata</i>	Low	High	Low
House Mouse	<i>Mus musculus</i>	Medium	High	Medium
Mozambique mouthbrooder	<i>Oreochromis mossambica</i>	Medium	Medium	Medium
Rabbit	<i>Oryctolagus cuniculus</i>	Medium	Low	Low
House Sparrow	<i>Passer domesticus</i>	Low	High	Low
Flowerpot Blind Snake	<i>Ramphotyphlops braminus</i>	Low	Low	Low

Common Name	Scientific Name	Potential impact/ consequences of invasion	Likelihood to occur on site	Overall priority for management (monitoring, management, intervention)
Brown Rat	<i>Rattus norvegicus</i>	Medium	High - known to occur within the WTWHA	Medium
Black Rat	<i>Rattus rattus</i>	Medium	High - known to occur within the WTWHA	Medium
Cane Toad	<i>Rhinella marina</i>	Medium	High	Medium
Spotted Turtle- Dove	<i>Streptopelia chinensis</i>	Low	High	Low
Common Starling	<i>Sturnus vulgaris</i>	Low	Low	Low
Pig	<i>Sus scrofa</i>	High	High – known to occur within the WTWHA	High
Spotted tilapia	<i>Tilapia mariae</i>	High	High – known to occur within the WTWHA	High
Yellow crazy ants	<i>Anoplolepis gracilipes</i>	High	Medium – known to occur within the WTWHA	High
Electric ants	<i>Wasmannia auropunctata</i>	High	Medium – known to occur within the WTWHA	High
Asian honey bees	<i>Apis cerana</i>	High	High – known to occur within the WTWHA	High

Key to table: High = highest priority, Medium = medium priority, Low = lowest priority

Table 4-4 Risk category for onsite occurrence

Classification	Description
High risk	<p>Priority ONE treatment</p> <p>The pest is known to be distributed in the project area or has been assessed as present on desktop mapping.</p> <p>Or,</p> <p>The pest is of high priority for eradication in the WTWHA and prevention and removal (if found) is paramount in keeping these invasive species controlled.</p>
Medium risk	<p>Priority TWO treatment</p> <p>Unlikely to currently occur within the project area, but localised distribution is known to occur in surrounding areas. Increased surveillance and prevention methods would be required to prevent further increase to the pest population.</p> <p>Increased on site vigilance is required.</p>
Low risk	<p>Priority THREE treatment</p> <p>Unlikely to occur due to a lack of suitable habitat and / or environmental conditions.</p>

According to Table 4-3, the pest species that have a medium to high risk of occurring within Wangetti South Section and have a greater impact on the existing environment within Wangetti South Section include:

- Common Myna
- Domestic Dog
- Cat
- House Mouse
- Mozambique mouthbrooder
- Rabbit
- Brown Rat
- Black Rat
- Cane Toad
- Pig
- Spotted tilapia
- Yellow crazy ants
- Electric ants
- Asian honey bees

If treatment is required methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the identification and treatment of pest species are provided in Section 5 and in Appendix B.

4.4 Diseases (pathogens)

There are three environmental diseases (pathogens) that pose a high risk to the Wangetti South project area from the information collected during the desktop environmental assessment for Wangetti South as part of the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD. In addition, information was sourced from the Wet Tropics Management authority website, QPWS and from the DAF biosecurity website.

- Myrtle rust (*Puccinia psidii*) – fungal disease affecting plants in the Myrtaceae family. This pathogen is known to be threat to WTWHA (WTMA, 2020). There are over 200 individual Myrtaceae species in the WTWHA. Some myrtaceous plant genera are represented in great abundance, for example, eucalypts, melaleucas and lillypillies (*syzygiums*) (WTMA, 2020). Some species are valued for being rare, endemic or endangered. Myrtle rust particularly affects new growth such as seedlings, leaf flushes and fruiting bodies. It may cause plant death (WTMA, 2020).
- Root rot fungus (*Phytophthora* fungus) – kills all plant species rooted in soil. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020). This pathogen has generally been associated with wet notophyll vine forests on acid volcanic soils above 700m (WTMA, 2020). If treatment of is required methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Information regarding the identification and management of this species is provided in Appendix B.
- Chytridiomycosis disease – frog disease caused by the chytrid fungus. Commonwealth listed 'key threatening process'. This pathogen is known to be threat to WTWHA (WTMA, 2020) Frog chytrid fungus has been identified as a primary cause of massive mortality of stream-dwelling frogs in the Wet Tropics bioregion (WTMA, 2020).

4.5 Biosecurity zones

There are several Queensland Biosecurity Zones which are mapped over the Wangetti South Section according to the Queensland Government -Business Queensland Maps of Queensland biosecurity zones (2020). Biosecurity zones have legal movement restrictions placed on them to limit the spread of pests and diseases within the state. Queensland has several biosecurity zones for different pests and disease:

- Electric ant biosecurity zone
- Asian honey bee infested area
- Northern banana biosecurity zone

The biosecurity zones for these pests are identified in Appendix A. This information has been sourced from the EPBC Act PMST and the DES WildNet database search that were completed for Wangetti South as part of the Wangetti South Section Baseline Ecology and Impact Assessment Report 2020 prepared by GHD. In addition, information was sourced from the Wet Tropics Management authority website and from the DAF biosecurity website.

4.6 Local Government Priorities

Review of local government biosecurity plans identified the management priority for each of the 11 weeds species likely or known to occur within the study area. Higher priority species are generally targeted with intensive management techniques compared with lower priority species. However, final control strategies are species specific. Management includes using one or more of the following strategies: prevention, eradication, reduction, containment, education and/or impact/asset protection.

5. Impact assessment and mitigation

5.1 Overview

This section provides a summary of potential impacts associated with biosecurity matters that could be generated by activities undertaken during the construction and operational phases of the project and could impact on the ecological values of the receiving environment.

This section also outlines the management strategy and the mitigation measures to prevent, reduce or control adverse environmental effects on MSES, MNES and the surrounding environment during the construction phase and operational phase.

5.2 Impact assessment

5.2.1 Construction phase

Construction activities have the potential to introduce and/or spread invasive pest and weed species, through the increased movement of people and machinery. This can cause substantial disruption to natural ecosystems by altering the balance of inter-species competition and predation.

Introduction and spread of weeds

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that earthworks and vehicle movements have the potential to facilitate the spread of weeds within the project area and export weeds to areas within the surrounding landscape. This can cause significant damage to Queensland's primary industries and undermine the ecological integrity of bushland remnants by competitively excluding native plant species that provide food, shelter and nesting resources for native wildlife. Southern cassowary habitat is likely to be particularly susceptible to impact from weed transmission, as this can reduce the quality and extent of available habitat (Commonwealth of Australia 2010c). Appropriate weed hygiene protocols will be required to control the introduction and spread of weeds during the construction period.

The spread of weeds, and specifically invasive grasses to the project area increases the biomass present. This will increase the fire hazard risk to the area if mitigation and control measures are not implemented. These measures are discussed in Table 5-1. If treatment of pest species is required methods used are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information on the identification and treatment of high risk weeds are also provided in Appendix B.

Section 5.3 identifies several construction activities that could result in adverse impacts to the project area by introducing or spreading of weeds. It also identifies the MSES and MNES within the project area that could be impacted by the introduction or spreading of weeds. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

Introduction and spread of pest fauna species

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that three pest fauna species are known to occur within the project area, including the cane toad (*Rhinella marina*), pig (*Sus scrofa*), and dog (*Canis lupus*).

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that construction activities can exacerbate the effects feral predators have on local wildlife communities. Inappropriate waste disposal has the capacity to attract higher local

concentrations of feral predators, increasing the predation pressures on local wildlife. Dog attacks on the southern cassowary are known to cause injury and mortality, and their presence can affect the cassowaries' feeding and movements. Feral pigs are supposedly known to destroy nests and eat the southern cassowary eggs, as well as degrade habitat and water quality by wallowing and rooting around watercourses (Latch 2007).

Construction activities also have the potential to increase local pest fauna densities through inappropriate waste disposal. This can increase food availability for opportunistic pests such as wild dogs and pigs and increase their ability to move by opening up corridors. Smaller pest fauna species particularly can be introduced via movement of construction vehicles and contaminated fill. As the receiving environment has a high availability of water and food resources, and the movement of vehicles will be limited by terrain, the risks will be relatively low. Nevertheless, measures should be taken to reduce the risk of introducing or spreading pest fauna species.

Section 5.3 identifies construction activities that could result in adverse impacts to the project area by assist in the movement of pest species within the WTWHA. It also identifies the MSES and MNES within the project area that could be impacted by the movement of pest species. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions. If treatment of pest species is required, methods are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information, regarding the identification and treatment of high risk fauna species are provided in Appendix B.

Introduction and spread of noxious diseases

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that the movement of machinery and plant has the potential to introduce or spread noxious diseases that can have adverse impacts on native flora and fauna or agricultural crops. Many Australian frog species have experienced significant declines and population crashes in recent decades due to the introduction and spread of the infectious disease Chytridiomycosis (Berger et al. 1998). This is spread via transmission of the Chytrid fungus (*Batrachochytridium dendrobatidis*), whose spores can be carried in infected water and soil (Berger et al. 1998; Longcore et al. 1999). Chytridiomycosis mostly affects amphibian species that breed in permanent waterbodies such as streams, moist bogs or soaks and ponds.

Myrtle rust (*Puccinia psidii*) is a fungal disease that attacks young, actively growing leaves, shoot tips and young stems, as well as fruits and flowers of plants of the Myrtaceae family (WTMA 2019). Myrtle rust produces a large number of spores that can be spread by the movement of contaminated plants and soils, and by wind, human activity and animals (Business Queensland, 2020). The long-term impact of myrtle rust is not well understood; however, it is known that some plant species are highly susceptible and are killed by the disease (Business Queensland, 2020).

Phytophthora cinnamomi is a soil borne disease causing death in susceptible plants and loss of habitat for animals (WTMA, 2020). The disease is known as a root-rot fungus, which can cause dieback amongst species of vegetation in rainforests and sclerophyll forests (WTMA, 2020) (refer to Appendix B). *Phytophthora cinnamomi* can be spread by the movement of soil and water, this includes the construction of roads and walking tracks as well as vehicles, bushwalkers and pigs (WTMA 2020).

Movement of soil during construction has the potential to introduce or spread noxious diseases throughout the project area. As a result, appropriate hygiene protocols and limiting movement of soil will be important to mitigate the spread of noxious diseases.

Section 5.3 below identifies construction activities that could result in adverse impacts to the project area by introducing or spreading of diseases. It also identifies the MSES and MNES within the project area that could be impacted by the introduction or spreading of diseases. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

5.2.2 Operational phase

During the operation phase, the project impact is expected to be relatively low for most environmental matters. Nevertheless, the project will pose a risk to the introduction and spread of invasive species and disease within the project area. Project operation has the potential for introduction and spread of invasive species through the ongoing movement of hikers and mountain bike riders. If treatment is required, methods are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information, regarding the identification and treatment of high risk weed, fauna and pest species are provided in Appendix B.

Introduction and spread of weed species

The Wangetti South Section Baseline Ecology and Impact Assessment Report (2020) noted that weed species have the potential to cause damage to the ecological integrity of bushland remnants by excluding native plant species that provide food, shelter and nesting resources for native wildlife. Hikers and mountain bike riders have the potential to spread weeds along the shared use trail and within Dark Jungle. Implementation of specific operational protocols can help limit the unintentional spread of weeds into and/or throughout the project area.

Introduction and spread of pest fauna species

Pest species that are likely to be relatively common and ubiquitous within the region include the cane toad, pig and dog. The proposed shared use trail has the potential to facilitate movement of feral predators, thereby increasing predation pressures on local wildlife. Although the receiving environment is already exposed to pest infestation, mitigation measures will be required to limit any spread of pest animals that could result from operational activities.

Section 5.3.5 below identifies a number of operational activities that could result in adverse impacts to the project area by assist in the movement of pest species within the project area. It also identifies the MSES and MNES within the project area that could be impacted by the moment of pest species. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

Introduction and spread of noxious diseases

The introduction and spread of noxious diseases can displace resident species and alter the local ecology. Soil from boots and mountain bike tyres can contain foreign diseases, such as Chytrid fungus, myrtle rust and Phytophthora. Movement of hikers and mountain bike riders have the potential to introduce or spread noxious diseases along the shared use trail and within Dark Jungle. As a result, appropriate hygiene protocols will be important to mitigate the spread of noxious diseases.

Section 5.3 below identifies a number of activities that could result in adverse impacts to the project area by introducing or spreading of diseases during the operational phase. It also identifies the MSES and MNES within the project area that could be impacted by the introduction or spreading of diseases. It assesses the risk of no control in place and when the mitigation measure is implemented and discusses the parties responsible for implementing the mitigation measure, how it is measured and any corrective actions.

5.3 Management strategy for construction and operational phases

An overarching weed, pest and diseases management strategy applicable to the Wangetti South Project area has been developed based on the following principles:

1. **Identify** – weeds and pest species and diseases
2. **Avoid** – traversing and placing infrastructure in areas of known infestation
3. **Prevent/Minimise** – the translocation/spread of pest and weed species by implementing sound work practices and promotion of risk awareness.
4. **Control** – Identified pest and weeds to contain, reduce or eradicate population as required.

Each of these four principles are discussed in further detail in the following sections:

5.3.1 Identify

The proper identification of pest and weed species/infestation provides a basis to actively minimise, control and manage pests and weeds and outbreaks in the project area. Identification occurs at the following levels:

- Regional scale – identifying species that have the potential to/are known to occur within the project area by reviewing weed and pest distribution maps and plan created by DAF, WTMA, DES and local government.
- Local/ work area location – Identifying pests and weeds present within a work zone by conducting desktop assessments and reviewing information and photos collected during environmental surveys of the project area.

Pest, weed and disease identification will occur at the following phases of the project:

- During the Pre-Start Trail Review (PSTR) (World Trail Pty Ltd, 2020). The purpose of the PSTR is to review and inspect the proposed alignment of the trail with the TDPD Project Manager, prior to construction starting, to confirm the exact alignment within the groundtruthed corridor, identify any specific environmental values to be protected and to discuss and agree on specific construction treatments (World Trail Pty Ltd, 2020). Pre-clearance on-ground weed, and pest surveys will be undertaken by an appropriately skilled person to confirm biosecurity matters within the project area and this will assist with determining the appropriate treatments to be used to treat weeds and pests.
- At all other time of the project – this will be part of coordinated pest, weed and disease surveys, surveys in response to sightings and/or any identification by personnel during the everyday conduct of activities.

5.3.2 Avoid

Where pest and weed populations are identified as present in a proposed location for the project infrastructure or work zone, the infrastructure/work zone these areas will be recorded for treatment. Where the weed population covers a small area within the project area this area will be treated and vegetation clearing to occur.

Other avoidance measures to be carried out for the project are outlined in Section 5.3.5.

5.3.3 Prevent/Minimise

The prevention and/or minimisation of potential weeds, pests and diseases becoming established in the project area as a result of construction and operational activities, is most critical form of management. Land transportation currently present the highest risk of introducing

and spreading weeds, pests and diseases within the project area and therefore vehicle, equipment and machinery inspection and washdown is the primary prevention/minimisation measure.

All project vehicles must carry and be able to present a current Weed Hygiene Declaration at all times. Other prevention and minimisation measures to be carried out for the project are outlined in Section 5.3.5.

5.3.4 Control

Eradication

After prevention, eradication is the most preferable management strategy for pests, weeds and diseases. Eradication is the goal through all phase of the development in the Wangetti South project area, however this may only be feasible where there is a recent pest, weed or disease incursion, or there is only a small population of limited distribution. Eradication is highly dependent on early detection and requires cooperation between the following parties: TDPD, Construction Contractors, the Operator, DES/ QPWS, WTMA and landowners. The feasibility of an eradication program will be determined on a case-by base basis.

Contain, reduce and manage

Where eradication is not a feasible option for pest, weed and disease outbreaks, containment and treatment are the most appropriate measures to management and/or reduce a population. These will typically be ongoing measures to reduce the risk of further spreading the weed, pest and/or disease.

Site-based weed, pest and disease management programs will be developed for the project to ensure compliance with legal obligations and in consultation with TDPD, Construction Contractors, the Operator, DES/ QPWS, WTMA and landowners.

5.3.5 Mitigation measures

Mitigation measures have been developed for Wangetti South Section to prevent, reduce, or control adverse environmental effects on MSES and MNES and the surrounding environment during the construction phase. The mitigation measures are outlined in Table 5-1 and have considered the following principals: identify, avoid, precent/minimise and control. The mitigation measures have also considered the Commonwealth, State and Local government legislation and strategies applicable to the project area.

Table 5-1 to Table 5-6 are broken down into the following sections:

- identifies activities that can facilitate the introduction and/or spread of weeds, pest and diseases in the project area
- identifies the MSES and MNES impacted by the introduction and/or spread of weeds, pest and diseases in the project area
- identifies the initial risk to the project with no control in place and identifies residual risk within controls in place
- identifies the mitigation measures to be implement, their timing and the parties responsible for implementation the measures
- identifies performance indicators, corrective actions, and monitoring to measure the success the of implementing the mitigation measure.

Personnel involved in the construction and operational phases will need to incorporate these measures into the environmental management documents and systems developed for the project:

Construction phase

Table 5-1 Mitigation measures to be implemented for Wangetti South Section during construction phase for weeds

Factor – weeds
Construction activities resulting in adverse impacts to the project area
Introduction or spread of weeds from construction activities and/or introduction of construction material and equipment within the project area. High risk vectors for weeds, pests and diseases include building materials, soils, packing material, field gear and clothing.
Applicable MNES & MSES
<ul style="list-style-type: none"> Wet Tropics World Heritage Area and National Heritage Site <p>MNES and MSES bird species that are known likely or may occur:</p> <ul style="list-style-type: none"> <i>Casuarus casuarius</i> (Southern cassowary) Migratory birds (e.g. eastern curlew, great sand plover) Non-migratory species (e.g. masked owl) <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <i>Litoria dayi</i> (Australian lace lid) <i>Litoria nannotis</i> (Waterfall frog) <i>Litoria nyakalensis</i> (Mountain mistfrog) <i>Litoria rheocola</i> (Common mistfrog) <i>Litoria serrata</i> (Tapping green eyed frog) <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll) <i>Dasyurus hallucatus</i> (Northern quoll) <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo) <i>Hipposideros semoni</i> (Semon's leaf-nosed bat) <i>Phascolarctos cinereus</i> (Koala) <i>Pteropus conspicillatus</i> (Spectacled flying-fox) <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat) <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat) <i>Xeromys myoides</i> (Water mouse) <p>MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <i>Stiphodon semoni</i> (Opal cling goby)

Factor – weeds

- *Stiphodon rutilarueus* (Orange cling goby)
- *Stiphodon pelewensis* (Emerald cling goby)
- *Stiphodon surrufus* (Birdsong cling goby)

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toeckima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Targeted weeds	Timing	Party responsible
Undertake a pre-clearing weed survey treatment and management and report areas of existing weed infestation. Pre-clearance on-ground weed, and pest surveys will be undertaken by an appropriately skilled person to confirm biosecurity matters within the project area	Priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site	Prior to construction commencing	Contractor's Project Manager Site Supervisor

Factor – weeds			
and this will assist with determining the appropriate treatments to be used to treat weeds and pests. Treatment methods to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the treatment of high risk pest species is provided in Appendix B.	as outlined in Table 4-1.		
Equipment and shoe wash down areas will be in place prior entering the site (serves as a single entry point) to avoid the spread of weeds and pathogens. Construction crews required to disinfect clothing, footwear, equipment and other personal items through wash down areas. Signage will also be in place as a form of information dissemination to encourage the use of wash down areas. Wash down and disinfecting procedures will be included in the site induction training.	All weed species	At all times	All personnel
All machinery and vehicle hygiene protocols to be followed at all times to prevent the introduction of weeds and pathogens. Vehicles, plant and equipment to be used for the project would be required to be clean. Vehicles, plant and equipment to be inspected prior to being used to ensure they are clean. Disinfecting vehicles and machinery. This will be undertaken during the construction phase of the project and maintained throughout.	All weed species	Prior to construction commencing At all times during the construction phase	All personnel
Weed identification to be included in the site induction training and conducted by a suitably trained person.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	Prior to construction commencing	Contractor's Project Manager Site Supervisor

Factor – weeds			
Any significant weed populations identified during construction are to be marked on site and the location recorded for reporting	All weed species	Prior to construction commencing During pre-start	All personnel
Trail construction will minimise disruption of forest canopy wherever possible to avoid additional sunlight that can promote weed growth on forest floor.	All weed species	At all times	Contractor's Project Manager Site Supervisor
Toolbox talks with the construction crew will occur prior construction to educate them about the weeds, pests and diseases likely to be present in the area.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	Prior to Construction	TDPD Contractor's Project Manager Site Supervisor
Any weed infestation shall be treated at earliest stage while small and manageable. Treatment methods to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the treatment of high risk weed species is provided in Appendix B.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	At all times	Contractor's Project Manager Site Supervisor
Vehicle access will be restricted to existing roads and tracks.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
Weed material that is cleared within the project area must be disposed of appropriately. Any weed removal as part of the construction phase will be cleared and disposed of at an approved waste disposal facility. Any infestations that subsequently establish during the	All weed species.	At all times	Contractor's Project Manager Site Supervisor

Factor – weeds			
construction period will be treated, and post-construction weed management of rehabilitated areas will be undertaken.			
Movement of vegetation and soils between the impacted areas and areas of significantly lower weed infestation will be avoided, where possible.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
At the outset of the construction phase, works should be undertaken to identify suitable surfacing materials that are locally available and that can be certified to weed/pathogen free status for land manager approval. Imported materials will only be used where absolutely required and materials cannot be found within the construction corridor. Imported materials are to be procured from a suitable supplier and check for weeds prior to importing to site. All material brought onto site must be accompanied by a certificate indicating that it is pathogen and weed free.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
No waste will be stockpiled during the construction phase and trail builders will be responsible for removing all of their own personal waste daily.	All weed species.	At all times	All personnel
Limit vegetation clearing, where practical to protect/improve habitat in the area and limit/avoid spread of weeds and pests.	All weed species.	At all times	Contractor's Project Manager Site Supervisor
Residual risk with control in place			
Implementation of recommended mitigation measures will not introduce and/or spread weeds within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
Performance indicator			
Existing weed species are identified and controlled onsite.			
No new weed outbreak on site.			
Corrective actions			
Weed outbreaks within the project area to be documented and reported to regulatory authority including WTMA, DES and QPWS and rectified immediately.			

Factor – weeds
Monitoring
All plant/machinery washdown checklists to be recorded. Records demonstrating that personnel associated with the construction and operational phases have undertaken weed, pest and pathogen induction training.
Daily visual weed and pest inspections within the works area under active construction. Monthly visual weed and pest inspections within the works area where works are completed.
Liaison with WTMA regarding existing monitoring strategies for weed species within the WTWHA
Completed construction segments to be monitored for weeds. Maintaining a register for weeds, pests and pathogens recorded within the project area.

Table 5-2 Mitigation measures to be implemented for Wangetti South Section during construction phase for pests

Factor – pests
Construction activities resulting in adverse impacts to the project area
<ul style="list-style-type: none"> • Introduction or spread of pests from construction activities and/or introduction of construction material and equipment within the project area. • The spread of pest Interference of local wildlife by domestic animals • Waste generation by construction crew within the project area providing food to pest species • Spread of pest species such as electric ants and yellow crazy ants within the project area from the movement of equipment, vehicle and material from affected areas outside of the project area leading to increase pest activities • When moving electric ant carriers (soil, gravel, mulch, etc.) from a property within the restricted zone to a property within the restricted zone to a property outside the restricted zone, Biosecurity Queensland dictates that operators must hold a biosecurity instrument permit.
Applicable MNES & MSES
<ul style="list-style-type: none"> • Wet Tropics World Heritage Area and National Heritage Site <p>MNES and MSES bird species that are known likely or may occur:</p> <ul style="list-style-type: none"> • <i>Casuarus casuaris</i> (Southern cassowary) • Migratory birds (e.g. eastern curlew, great sand plover) • Non-migratory species (e.g. masked owl) <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Litoria dayi</i> (Australian lace lid) • <i>Litoria nannotis</i> (Waterfall frog) • <i>Litoria nyakalensis</i> (Mountain mistfrog) • <i>Litoria rheocola</i> (Common mistfrog) • <i>Litoria serrata</i> (Tapping green eyed frog) <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll) • <i>Dasyurus hallucatus</i> (Northern quoll) • <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo) • <i>Hipposideros semoni</i> (Semon's leaf-nosed bat) • <i>Phascolarctos cinereus</i> (Koala) • <i>Pteropus conspicillatus</i> (Spectacled flying-fox) • <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat) • <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat) • <i>Xeromys myoides</i> (Water mouse)

Factor – pests

MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section

- *Stiphodon semoni* (Opal cling goby)
- *Stiphodon rutilarueus* (Orange cling goby)
- *Stiphodon pelewensis* (Emerald cling goby)
- *Stiphodon surrufus* (Birdsong cling goby)

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toechima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Pest species targeted	Timing	Party responsible
<p>The contractor will be required to complete a pre-clearing pest survey and report documenting areas of existing electric ant infestation and identifying treatment and management requirements.</p> <p>Pre-clearance on-ground pest surveys will be undertaken by an appropriately skilled person.</p>	<p>Common Myna</p> <p>Domestic Dog</p> <p>Cat</p> <p>House Mouse</p> <p>Mozambique mouthbrooder</p> <p>Rabbit</p> <p>Brown Rat</p>	<p>Prior to construction commencing</p> <p>During the construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>

Factor – pests			
Before starting construction, discussions with Wet Tropics Management Authority, Douglas Shire Council and Cairns Regional Council to be undertaken during the pre-start trail review to discuss and agree on specific treatments regarding pest species including but not limited to yellow crazy ants, electric ants, pigs and dogs. Information about treatments for pest species is included in Appendix B.	Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees		
Plant/machinery to be washed down at a commercial washdown facility or washdown facility at QPWS works depot prior to construction and if they used again for the different areas of the project area.	House Mouse Brown Rat Black Rat Cane Toad Yellow crazy ants Electric ants Asian honey bees.	Prior to construction commencing During the construction phase	Contractor's Project Manager Site Supervisor
At the outset of the construction phase, works will be undertaken to identify suitable surfacing materials that are locally available and that can be certified to pest free status. Imported materials will only be used where absolutely required and materials cannot be found within the construction corridor. Imported materials are to be procured from a suitable supplier and check for weeds prior to importing to site. All material brought onto site must be accompanied by a certificate indicating that it is free of pest species.	Yellow crazy ants and electric ants.	Prior to construction Construction phase	Contractor's Project Manager Site Supervisor
Site inductions and toolbox talks with the construction crew will occur prior construction to educate them about the weeds, pests and pathogens likely to be present in the area, the process of reporting infestations and the type of measures to prevent the introduction and spread within the project area.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants	Prior to Construction	Contractor's Project Manager Site Supervisor

Factor – pests			
	Asian honey bees		
Feeding of wildlife is prohibited and food scraps to be disposed of into bins with closed/secured lids and removed from site daily to minimise vermin infestations.	Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	All personnel
Vehicle access will be restricted to existing roads and tracks, where possible.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Site supervisor
Where trail builders are required to camp overnight along the trail due to the remoteness of the area they will be required to carry all rubbish out; bury human waste at least 100 m from streams and at least 15 cm deep, or carry it out. During construction phase the contractor to consider having a trailer mounted portable toilet or something similar to be able to service the construction crew. The setup of temporary amenities to be located in disturbed areas and outside of areas of high ecological significance.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig	At all times	All personnel Contractor's Project Manager Site Supervisor

Factor – pests			
	Spotted tilapia Yellow crazy ants Electric ants Asian honey bees		
Sightings or evidence of pest animals will be recorded. If increased densities of pest animals are observed, or new pest animals are identified, humane pest animal control will be used. Further information regarding the identification of pest species is provided in Appendix B.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager Site Supervisor
Limit vegetation clearing, where practical to protect/improve habitat in the area and limit/avoid spread of pests.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager Site Supervisor
No waste will be stockpiled during the construction phase and trail builders will be responsible for removing all of their own personal waste daily.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder	At all times	All personnel

Factor – pests			
	Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees		
Regular inspection of the trail and nodes to check for pest species.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager Site Supervisor
Minimise water ponding or build up on-site to reduce the likelihood of providing suitable environments for mosquito breeding.	All pest species including: Common Myna Domestic Dog Cat House Mouse Mozambique mouthbrooder Rabbit Brown Rat Black Rat Cane Toad Pig Spotted tilapia Yellow crazy ants Electric ants Asian honey bees	At all times	Contractor's Project Manager Site Supervisor

Factor – pests
Residual risk with control in place
Implementation of recommended mitigation measures will not introduce and/or spread pests within the project area, therefore have negligible impact on MNES and MSES species and their habitats.
Performance indicator
Existing pest species are identified and controlled onsite.
Corrective actions
Evidence of pests within the project area to be documented and reported to regulatory authority including and rectified immediately.
Monitoring
All excavator and other plant/machinery washdown checklists to be recorded.
Weekly inspection to include pests onsite
Maintaining a register for weeds, pests and pathogens recorded within the project area. Liaison with WTMA regarding existing monitoring strategies for pest species within the WTWHA.

Table 5-3 Mitigation measures to be implemented for Wangetti South Section during construction phase for pathogens

Factor – pathogens (disease)
Construction activities resulting in adverse impacts to the project area
Introduction or spread of pathogens from construction activities and/or introduction of construction material and equipment within the project area.
Applicable MNES & MSES impacted
<ul style="list-style-type: none"> Wet Tropics World Heritage Area and National Heritage Site <p>MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:</p> <ul style="list-style-type: none"> <i>Archontophoenix myolensis</i> (Myola palm) <i>Anoectochilus yatesiae</i> (Marbled jewel orchid) <i>Canarium acutifolium</i> <i>Dendrobium fellowsii</i> <i>Dendrobium mirbelianum</i> (Dark-stemmed antler orchid) <i>Diplazium cordifolium</i> <i>Diplazium pallidum</i> <i>Myrmecodia beccarii</i> (Ant plant) <i>Phaius pictus</i> <i>Phalaenopsis amabilis</i> subsp. <i>rosenstromii</i> (Native moth orchid) <i>Polyscias bellendenkerensis</i> <i>Randia audasii</i> <i>Rhomboda polygonoides</i> <i>Toechima pterocarpum</i> (Orange tamarind) <i>Vappodes lithocola</i> (Dwarf butterfly orchid) (Also known as <i>Dendrobium lithocola</i>, and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>) <i>Zeuxine polygonoides</i> (Velvet jewel orchid) (Also known as <i>Rhomboda polygonoides</i>) <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <i>Litoria dayi</i> (Australian lace lid) <i>Litoria nannotis</i> (Waterfall frog) <i>Litoria nyakalensis</i> (Mountain mistfrog) <i>Litoria rheocola</i> (Common mistfrog) <i>Litoria serrata</i> (Tapping green eyed frog)
Initial risk with no control
In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Factor – pathogens (disease)			
Mitigation measure	Pest species targeted	Timing	Party responsible
<p>All machinery and vehicle hygiene protocols to be followed at all times to prevent the introduction of weeds and pathogens. Vehicles, plant and equipment to be used for the project would be required to be clean with Weed and Seed Hygiene Declaration certificates. Vehicles, plant and equipment to be inspected prior to being used to ensure they are clean.</p> <p>Disinfecting vehicles and machinery. This will be undertaken during the construction phase of the project and maintained throughout.</p> <p>Chytrid fungus Spores of the chytrid fungus are transported in water and wet soil. The fungus appears to be more virulent at lower temperatures.</p> <p>Phytophthora Phytophthora is a soil-borne organism which is spread by the movement of soil and water. Information regarding the management of dieback as a result of this pest is provided in Appendix B.</p> <p>Myrtle rust Myrtle rust spreads easily through windblown spores</p>	<p>Myrtle rust (<i>Puccinia psidii</i>), root rot fungus (<i>Phytophthora fungus</i>) and Chytridiomycosis disease</p>	<p>Prior to construction commencing</p> <p>During the construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>Plant/machinery to be washed down at a commercial washdown facility or washdown facility at QPWS works depot prior to construction and if they used again for the different areas of the project area.</p>	<p>Myrtle rust, root rot fungus and Chytridiomycosis disease</p>	<p>Prior to construction commencing</p> <p>During the construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>At the outset of the construction phase, works should be undertaken to identify suitable surfacing materials that are locally available and that can be certified to pathogen free status for land manager approval.</p>	<p>Myrtle rust, root rot fungus and Chytridiomycosis disease</p>	<p>Prior to construction</p> <p>Construction phase</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>
<p>Imported materials will only be used where absolutely required and materials cannot be found within the construction</p>	<p>Myrtle rust, root rot fungus and</p>	<p>Prior to construction</p>	<p>Contractor's Project Manager</p> <p>Site Supervisor</p>

Factor – pathogens (disease)			
corridor. Imported materials are to be procured from a suitable supplier and check for pathogens prior to importing to site.	Chytridiomycosis disease	Construction phase	
All material brought onto site must be accompanied by a certificate indicating that it is free of pathogens, unless the source has been agreed to by the TDPD Project Manager.	Myrtle rust, root rot fungus and Chytridiomycosis disease	Prior to construction Construction phase	Contractor's Project Manager Site Supervisor
Equipment and shoe wash down areas will be in place prior entering the site to avoid the spread pathogens.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	All personnel
Vehicle access will be restricted to existing roads and tracks, where possible.	Myrtle rust (, root rot fungus and Chytridiomycosis disease	At all times	Site supervisor
Undertaking site inductions and toolbox talks with the construction crew prior and during construction to educate them about pathogens including the <i>chytrid</i> fungus, myrtle rust and root rot fungus.	Myrtle rust (, root rot fungus and Chytridiomycosis disease	At all times	All personnel
Residual risk with control in place			
Implementation of recommended mitigation measures will not introduce and/or spread pathogens within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
Performance indicator			
Existing pathogens are identified and controlled onsite.			
Corrective actions			
Disease outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
Monitoring			
All excavator and other plant/machinery washdown checklists to be recorded.			
Weekly inspection on site			
Maintaining a register for weeds, pests and pathogens recorded within the project area.			
Liaison with WTMA regarding existing monitoring strategies for pathogens within the WTWHA			

Operational phase

Table 5-4 Mitigation measures to be implemented for Wangetti South Section during operational phase for weeds

Factor – weeds
Operational activities resulting in adverse impacts to the project area
Introduction or spread of weeds from operational activities. High risk vectors for weeds, include soils, vehicles (including bicycles) and clothing.
Applicable MNES & MSES impacted
<ul style="list-style-type: none"> Wet Tropics World Heritage Area and National Heritage Site <p>MNES and MSES bird species that are known likely or may occur:</p> <ul style="list-style-type: none"> <i>Casuarus casuarius</i> (Southern cassowary) Migratory birds (e.g. eastern curlew, great sand plover) Non-migratory species (e.g. masked owl) <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <i>Litoria dayi</i> (Australian lace lid) <i>Litoria nannotis</i> (Waterfall frog) <i>Litoria nyakalensis</i> (Mountain mistfrog) <i>Litoria rheocola</i> (Common mistfrog) <i>Litoria serrata</i> (Tapping green eyed frog) <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll) <i>Dasyurus hallucatus</i> (Northern quoll) <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo) <i>Hipposideros semoni</i> (Semon's leaf-nosed bat) <i>Phascogale cinereus</i> (Koala) <i>Pteropus conspicillatus</i> (Spectacled flying-fox) <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat) <i>Saccolaimus saccolaimus nudiclunatus</i> (Bare-rumped sheath-tailed bat) <i>Xeromys myoides</i> (Water mouse) <p>MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> <i>Stiphodon semoni</i> (Opal cling goby) <i>Stiphodon rutilarueus</i> (Orange cling goby) <i>Stiphodon pelewensis</i> (Emerald cling goby) <i>Stiphodon surrufus</i> (Birdsong cling goby)

Factor – weeds

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toeckima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Weed species targeted	Timing	Party responsible
All machinery and vehicle hygiene protocols to be followed at all times to prevent the introduction of weeds and pathogens. Operational staff and maintenance staff disinfecting clothing, footwear, equipment and other personal items. Disinfecting vehicles during the operational phase of the project and maintained throughout.	All weed species.	At all times	Operator in Partnership with DES/ QPWS

Factor – weeds			
Vehicle access will be restricted to existing roads and tracks, where possible.	All weed species.	During operational phase	Operator in Partnership with DES/ QPWS
Providing boot wash facility at both ends of the trail to ensure users do not track pest weeds onto the trail.	All weed species.	During operational phase	Operator in Partnership with DES/ QPWS
Regular inspection of the trail and nodes, as per existing QPWS procedures (Operational policy QPW/2013/746 v1.03 - Pest plant and pathogen spread prevention) during operation.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	During operational phase	Operator in Partnership with DES/ QPWS
Recreational users of the trail will be educated on the sensitive nature of the local landscape and the importance of avoiding introduction and spread of weeds through the use of appropriate signage.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	During operational phase	Operator in Partnership with DES/ QPWS
Signage to encourage trail users to clean clothing, shoes and equipment before entering trail.	All weed species, particularly priority invasive plant species rated medium to high and that have a	During operational phase	Operator in Partnership with DES/ QPWS

Factor – weeds			
	medium to high risk of occurring on site as outlined in Table 4-1.		
Signage to discourage trail users from picking or carrying flowers or plants from one area to another.	All weed species	During operational phase	Operator in Partnership with DES/ QPWS
Providing pamphlets and information on the booking website as part of booking paperwork to hikers and mountain bikers using the trail and operation staff to educate them about pathogens, weeds and pests within Wangetti Trail.	All weed species, particularly priority invasive plant species rated medium to high and that have a medium to high risk of occurring on site as outlined in Table 4-1.	During operational phase	Operator in Partnership with DES/ QPWS
Residual risk with control in place			
Implementation of recommended mitigation measures will not introduce and/or spread weeds within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
Performance indicator			
Existing weed species are identified and controlled onsite.			
No new weed outbreak on site.			
Corrective actions			
Weed outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
Monitoring			
Regular inspections to include weeds onsite and to target high risk areas.			
All maintenance vehicle washdown checklists to be recorded. Records demonstrating that personnel associated with the operational phases have undertaken weed, pest and pathogen induction training.			

Factor – weeds

Liaison with WTMA regarding existing monitoring strategies for weed species within the WTWHA

Maintaining a register for weeds, pests and pathogens recorded within the project area.

Table 5-5 Mitigation measures to be implemented for Wangetti South Section during operation phase for pests

Factor – pests
Operational activities resulting in adverse impacts to the project area
<ul style="list-style-type: none"> • Introduction or spread of pests from operational activities within the project area. • Interference of local wildlife by domestic animals • Waste generation by users of the trail within the project area providing food to pest species • Spread of pest species within the project area from the movement of equipment, vehicle and material from affected areas outside of the project area leading to increase pest activities
Applicable MNES & MSES impacted
<ul style="list-style-type: none"> • Wet Tropics World Heritage Area and National Heritage Site <p>MNES and MSES bird species that are known likely or may occur:</p> <ul style="list-style-type: none"> • <i>Casuaris casuaris</i> (Southern cassowary) • Migratory birds (e.g. eastern curlew, great sand plover) • Non-migratory species (e.g. masked owl) <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Litoria dayi</i> (Australian lace lid) • <i>Litoria nannotis</i> (Waterfall frog) • <i>Litoria nyakalensis</i> (Mountain mistfrog) • <i>Litoria rheocola</i> (Common mistfrog) • <i>Litoria serrata</i> (Tapping green eyed frog) <p>MNES and MSES mammal species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Dasyurus maculatus gracilis</i> (Spotted-tailed quoll) • <i>Dasyurus hallucatus</i> (Northern quoll) • <i>Dendrolagus lumholtzi</i> (Lumholtz's tree-kangaroo) • <i>Hipposideros semoni</i> (Semon's leaf-nosed bat) • <i>Phascolarctos cinereus</i> (Koala) • <i>Pteropus conspicillatus</i> (Spectacled flying-fox) • <i>Rhinolophus robertsi</i> (Large-eared horseshoe bat) • <i>Saccolaimus saccolaimus nudicluniatus</i> (Bare-rumped sheath-tailed bat) • <i>Xeromys myoides</i> (Water mouse) <p>MNES and MSES aquatic species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Stiphodon semoni</i> (Opal cling goby) • <i>Stiphodon rutilarueus</i> (Orange cling goby)

Factor – pests

- *Stiphodon pelewensis* (Emerald cling goby)
- *Stiphodon surrufus* (Birdsong cling goby)

MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:

- *Archontophoenix myolensis* (Myola palm)
- *Anoectochilus yatesiae* (Marbled jewel orchid)
- *Canarium acutifolium*
- *Dendrobium fellowsii*
- *Dendrobium mirbelianum* (Dark-stemmed antler orchid)
- *Diplazium cordifolium*
- *Diplazium pallidum*
- *Myrmecodia beccarii* (Ant plant)
- *Phaius pictus*
- *Phalaenopsis amabilis* subsp. *rosenstromii* (Native moth orchid)
- *Polyscias bellendenkerensis*
- *Randia audasii*
- *Rhomboda polygonoides*
- *Toeckima pterocarpum* (Orange tamarind)
- *Vappodes lithocola* (Dwarf butterfly orchid) (also known as *Dendrobium lithocola*, and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Vappodes phalaenopsis* (Cooktown orchid) (Also known as *Dendrobium phalaenopsis* and the Queensland Flora Census 2019 groups this species into *Dendrobium biggibum*)
- *Zeuxine polygonoides* (Velvet jewel orchid) (also known as *Rhomboda polygonoides*)

Initial risk with no control

In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.

Mitigation measure	Pest species targeted	Timing	Party responsible
Feeding of wildlife is prohibited and food scraps to be disposed on into bins at the camp area with closed/secured lids and removed from site regularly to minimise vermin infestations.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	At all times	Operator in Partnership with DES/ QPWS
General waste will be removed from the project camp area.	All pest species in particular yellow crazy ants, electric	During operational phase	Operator in Partnership with DES/ QPWS

Factor – pests			
	ants, cats, pigs, and dogs		
Users of the trail will be educated about not feeding the wildlife through 'no feeding wildlife' signage.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	During operational phase	Operator in Partnership with DES/ QPWS
Recreational users of the trail will be educated on the sensitive nature of the local landscape and the importance of avoiding introduction and spread of pests through the use of appropriate signage.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	During operational phase	Operator in Partnership with DES/ QPWS
Regular inspection of the trail and nodes, to check for pests.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	During operational phase	Operator in Partnership with DES/ QPWS
Providing pamphlets and information on the booking website as part of booking paperwork to hikers and mountain bikers using the trail and operation staff to educate them about pathogens, weeds and pests within Wangetti Trail.	All pest species in particular yellow crazy ants, electric ants, cats, pigs, and dogs	At all times	Operator in Partnership with DES/ QPWS
Residual risk with control in place			
Implementation of recommended mitigation measures will not introduce and/or spread pests within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
Performance indicator			
Existing pest species are identified and controlled onsite.			
No new pests species recorded on site.			
Corrective actions			
Pest outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
Monitoring			
Weekly inspection to include pests onsite			
Maintaining a register for weeds, pests and pathogens recorded within the project area. Liaison with WTMA regarding existing monitoring strategies for pest species within the WTWHA.			

Table 5-6 Mitigation measures to be implemented for Wangetti South Section during operation phase for pathogens

Factor – pathogens
Operational activities resulting in adverse impacts to the project area
<ul style="list-style-type: none"> • Introduction or spread of pathogens from operational activities within the project area. • Spread of pathogens within the project area from the movement of equipment, vehicle and material from affected areas outside of the project area.
Applicable MNES & MSES impacted
<ul style="list-style-type: none"> • Wet Tropics World Heritage Area and National Heritage Site <p>MNES and MSES flora species that are known, likely or may occur in the Wangetti South Section:</p> <ul style="list-style-type: none"> • <i>Archontophoenix myolensis</i> (Myola palm) • <i>Anoectochilus yatesiae</i> (Marbled jewel orchid) • <i>Canarium acutifolium</i> • <i>Dendrobium fellowsii</i> • <i>Dendrobium mirbelianum</i> (Dark-stemmed antler orchid) • <i>Diplazium cordifolium</i> • <i>Diplazium pallidum</i> • <i>Myrmecodia beccarii</i> (Ant plant) • <i>Phaius pictus</i> • <i>Phalaenopsis amabilis</i> subsp. <i>rosenstromii</i> (Native moth orchid) • <i>Polyscias bellendenkerensis</i> • <i>Randia audasii</i> • <i>Rhomboda polygonoides</i> • <i>Toecharia pterocarpum</i> (Orange tamarind) • <i>Vappodes lithocola</i> (Dwarf butterfly orchid) (also known as <i>Dendrobium lithocola</i>, and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>) • <i>Vappodes phalaenopsis</i> (Cooktown orchid) (Also known as <i>Dendrobium phalaenopsis</i> and the Queensland Flora Census 2019 groups this species into <i>Dendrobium biggibum</i>) • <i>Zeuxine polygonoides</i> (Velvet jewel orchid) (also known as <i>Rhomboda polygonoides</i>))))) <p>MNES and MSES amphibian species that are known, likely or may occur in the Wangetti South Section</p> <ul style="list-style-type: none"> • <i>Litoria dayi</i> (Australian lace lid) • <i>Litoria nannotis</i> (Waterfall frog) • <i>Litoria nyakalensis</i> (Mountain mistfrog) • <i>Litoria rheocola</i> (Common mistfrog)

Factor – pathogens			
<ul style="list-style-type: none"> <i>Litoria serrata</i> (Tapping green eyed frog) 			
Initial risk with no control			
In the absence of project-specific mitigation measures, major but recoverable impacts to a factor of significance are likely.			
Mitigation measure	Targeted pathogens	Timing	Party responsible
Providing boot/ bike wash facilities at both ends of the trail to ensure users do not track pest weeds onto the trail.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
Signage to be placed at entrances to national parks informing users of the chytrid fungus.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
<p>Educating trail users about Phytophthora Dieback Management Procedures through:</p> <ul style="list-style-type: none"> appropriate signage; installing signposted clean-down points at appropriate points on the track (including the start of the track) encouraging trail users to carry a hard brush and bottle of methylated spirits to use in cleaning and disinfecting boots. <p>Treatment methods are to be approved by WTMA, DES, TDPD and QPW, as applicable. Further information regarding the treatment and management of dieback is provided in Appendix B.</p>	Root rot fungus	At all times	Operator in Partnership with DES/ QPWS
Providing pamphlets and information on the booking website as part of booking paperwork to hikers and mountain bikers using the trail and operation staff to educate them about pathogens, weeds and pests within Wangetti Trail.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
Recreational users of the trail will be educated on the sensitive nature of the local landscape and the importance of avoiding introduction	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS

Factor – pathogens			
and spread of disease through the use of appropriate signage.			
Regular inspection of the trail and nodes, as per existing QPWS procedures during operation.	Myrtle rust, root rot fungus and Chytridiomycosis disease	At all times	Operator in Partnership with DES/ QPWS
Residual risk with control in place			
Implementation of recommended mitigation measures will not introduce and/or spread pathogens within the project area, therefore have negligible impact on MNES and MSES species and their habitats.			
Performance indicator			
Existing pathogens are identified and controlled onsite.			
No new pathogens are introduced to the project area.			
Corrective actions			
Disease outbreaks within the project area to be documented and reported to regulatory authority including and rectified immediately.			
Monitoring			
Maintaining a register for weeds, pests and pathogens recorded within the project area.			
Liaison with WTMA regarding existing monitoring strategies for pathogens within the WTWHA			

5.4 Induction training

All personnel working during the construction and operational phases of the Wangetti South Project will be required to undergo site specific induction which includes an outline of pest and weed prevention, minimisation and management requirements (other environmental sites) on site. Appropriate training as part of inductions suiting the different roles and responsibilities is to be undertaken in accordance with appropriate standards and conditions of approvals as advised by DES, QPWS, WTMA and TDPD, and other regulatory authorities.

Regulator toolbox meetings and pest and weed awareness sessions are also conducted. Topics addressed by these sessions include key weed, pest and disease management principles to maintain compliance with regulatory requirements and to reinforce solutions or increase awareness or any pest and weed-related issues that arise during the course of construction and operations.

Identification material provided by DES, QPWS, WTMA relating to weeds, pests and disease that may be present within the project area will be made available to all personnel working during the construction and operational phases of the Wangetti South Project including trail users.

5.5 Monitoring

Monitoring is an essential component of any WPDMP as it provides a means of identifying the following:

- Changes in the extent of weed population and pest population
- Changes in the cover density of weed populations
- Any new weed, pests and disease that may become established
- Documentation of any unexpected impacts of weeds, pests and disease control activities (i.e. unplanned damage to native vegetation)
- Changes in the extent and condition of native vegetation
- Changes in any conditions that have the potential to impact on site restoration works
- How well control methods are working

Personnel will be nominated during the construction phase and the operational phases of the project to undertake visual inspections and to identify any weeds, pests or disease in accordance with an established schedule for the project.

5.6 Corrective actions

The Project Manager during each phase (construction and operational) is responsible for ensuring that on receipt of a weed/pest/pathogen notification form or trail inspections relating to weeds or pests, an investigation should be undertaken promptly, and appropriate actions undertaken. Additionally, following identification of restricted/declared weeds and pests, a revision to this management plan should be undertaken, and further controls implemented as necessary. Corrective action controls may include the use of contracted licensed weed eradicator or pest exterminator. All corrective actions will be implemented to meet the required outcomes of the Administering Authorities.

6. Reporting, auditing and review

6.1 Reporting and auditing

Reporting incidents relating to weed, pests and diseases are the responsibility of all personnel onsite at all times and are to be recorded and managed in a complaints register with the corrective actions undertaken. The contractor in the construction phase and operational phase will be required to develop a complaints management system and register and seek approval from TDPD, DES and QPWS.

As part of an onsite environmental workplace inspection program, an environmental workplace inspection is to be carried out to assess environment performance and weed management. Records and related documents will be audited periodically to ensure that work that has been laid out in this plan has been undertaken and captured. Management documentation, for example plans and procedures, will be reviewed periodically to ensure that they remain applicable to current operations and compliant with requirements set by regulatory authorities.

6.2 Review

WPDMP is a living document and shall be reviewed against the following performance criteria to determine the effectiveness of this procedure:

- No introduction or spread of new (declared) weeds and pests.
- No complaints are received from regulatory authorities or the community.
- Works undertaken in accordance with the Biosecurity Act
- All machinery to have a certified weed hygiene certificate issued by an authorised person/department.
- No new pest/weed species introduced and no increase to existing pest/weed species abundance and distribution
- Site rehabilitated after construction
- No unapproved clearing to occur beyond the required limits for construction
- Identified sensitive areas are demarcated and managed appropriately with minimal impacts
- No incidents of death or injury to native fauna

It should also be reviewed if any of the following occur:

- The WPDMP is not adequately managing the issue
- Legislative requirement changes
- A previously unidentified declared or weed species if found within the area of activity
- New procedures relating to weed, pest and disease management are developed.

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