Memorandum

4 November 2019

To	Douglas Shire Council and Department of State Development, Manufacturing, Infrastructure and Planning		
From	Sarah Wilson - GHD	Tel	+61 7 5413 8133
Subject	Response to information request from Douglas Shire Council (DSC) and Development, Manufacturing, Infrastructure and Planning (DSDMIP) Wangetti Trail SP1 - Combined Development Application Response to request for information 1909-13127 SRA	Job no.	4132458

1 Introduction

We refer to the Development Application Council Ref: CA3212/2019 and SARA Ref:1909-13127 SRA associated with the proposed Wangetti Trail SP1 and provide responses to the information request issued by Douglas Shire Council (DSC) and Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) in accordance with Part 3, Section 13.1 of the Development Assessment Rules.

Through the development application process, DSDMIP has issued a formal information request for the development application:

- DSDMIP letter dated 16 October (Reference 1909-13127 SRA GE33-N) information request; and
- DSDMIP letter dated 16 October (Reference 1909-13127 SRA GE77-N) advice notice.

DSC has also issued an information request as part of the confirmation notice (reference 47/3212/2019 (913906).

This memorandum addresses the information request from DSDMIP and the information request from DSC in Section 2 below. In addition, this memorandum expands on the construction method proposed for the pedestrian bridge documented in the planning report for SP1 Wangetti Mowbray North prescribed tidal works and works within a coastal management district July 2019 and the planning report for operational works – SP1 marine plant disturbance July 2019. It provides information on the method of building and removing the temporary piling rig/crane platforms, the length of time the temporary piling rig/crane platforms will be in place, and that the temporary piling rig/crane platforms would not result in further impacts to the surrounding environment. This is discussed in Section 3.

2 Response to information request

Responses to DSDMIP's information request are provided in Section 2.1 and responses to DSDMIP's advice notice is provided in Section 2.2. Responses to DSC information request are provided in Section 2.3.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

2.1 Response to DSDMIP information request to address State Development Assessment Provisions (version 2.5), State Code 11: Removal, destruction or damage of marine plants

Item 1 Trail alignment and functional requirement

To demonstrate compliance with PO1 and PO2, DSDMIP has requested the following:

a) *Identify on scaled maps the trail alignment for Alternative A and Alternative B and provide the permanent and temporary marine plant disturbance areas in meters squares (m^2).*

b) *Demonstrate that no alternative trail alignments or construction alternatives exist that will avoid impacts on marine plants and fisheries resources (i.e. raised boardwalk).*

c) *Discuss why areas of cleared land, existing informal tracks and land above the level of HAT within Lot 90 on SR678, Lot 87 on SR370 and Lot 24 on SR423 and the road reserve of Captain Cook Highway have not been used for the trail alignment.*

Response to Item 1 (a) Identify on scaled maps the trail alignment for Alternative A and Alternative B and provide the permanent and temporary marine plant disturbance areas in meters squares (m^2).

As discussed in Section 3.3 of the SP1 Wangetti Mowbray North Marine Plant Report 2019, multiple alternatives were considered as part of the trail and boardwalk alignment. Alternative A and Alternative B are depicted on Figure 1. A description of the alternative alignments have been discussed in Table 1, including a breakdown of Permanent Marine Plant Disturbance (PMPD) and Temporary Marine Plant Disturbance (TMPD) for alternative alignments vs chosen alignment.

Table 1 Description of the alternative and impact to marine plants

Description of alternative alignments	Comments	TMPD based on footprint (m^2)	PMPD based on footprint (m^2)
Alignment Option 2017	This alignment was developed in 2017. The total length of the alignment is 7484.26 m. It is shown by the yellow line on Figure 1. This alignment was not selected due to the following reasons: • Alignment was located mostly along residential roads and outside of marine plant areas, however, the alignment did not have the look and feel that was proposed for the eco-tourism trail and therefore was not viable.	399.45	599.71

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Description of alternative alignments	Comments	TMPD based on footprint (m^2)	PMPD based on footprint (m^2)
	• Tourism Development Projects Division (DITID) were not able to secure land agreements for private properties for the location of the alignment.		
Alignment Option 2018 (referred to as Alternative A in the SP1 Wangetti Mowbray North Marine Plant Report 2019)	This alignment developed in 2018. The total length of the alignment is 6778.08 m. It is shown by the orange line on Figure 1. This alignment was not selected due to the following reasons: • Alignment intersected a large section of threatened ecological community (TEC) of Littoral rainforests and coastal vine thickets of eastern Australia • Alignment had larger looped areas through marine plants that were closer to the shoreline, creating a larger disturbance to marine plants and habitat	1388.19	4848.67
Alignment Option 2019 (referred to as Alternative B in the SP1 Wangetti Mowbray North Marine Plant Report 2019)	This alignment was developed in 2019. The total length of the alignment is 5249.31 m. It is shown by the green line on Figure 1. This alignment was not selected due to the following reasons: • There were constructability issues with the alignment along the Mowbray River that required the alignment to be amended, particularly south of Lot 87 SR370 and Lot 24 SR423. • The alignment east of Lot 901 SP274759 impacted on areas of TEC and an amendment was made to the alignment in this location. • DITID were not able to secure land agreements for private properties for the	2246.55	6780.35

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Description of alternative alignments	Comments	TMPD based on footprint (m^2)	PMPD based on footprint (m^2)
Final alignment	location of the alignment on Lot 87 SR370 and Lot 24 SR423.		
referred to as SP1 Mowbray North Total length of the SP1 including ancillary infrastructure is 5884.40 m. The alignment itself is 5,559m	This alignment was developed in 2019 and is a refined version of Alignment Option 2019 (B). The final alignment is shown on Figure 2 and is the focus of the development application.	3,064.60	5817.64

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Response to Item 1 (b) Demonstrate that no alternative trail alignments or construction alternatives exist that will avoid impacts on marine plants and fisheries resources (i.e. raised boardwalk

The current alignment was chosen as the best option for the project for the following reasons:

- The majority of the alignment is contained within State-owned and Council-managed land with a small section of the alignment intersecting private freehold land. The proposed trail and boardwalk are considered suitable for the tenure of the land as advised by Department of Natural Resources, Mines and Energy (DNRME) and DSC. In addition, Department of Innovation, Tourism Industry Development and the Commonwealth Games (DITID) has secured the agreements with the landholders of the impacted properties.
- The current alignment utilises area of previously cleared areas and existing access tracks where possible. The current alignment has been setback from the foreshore as far as possible, in order to reduce its impact on marine plants, tidal land and tidal movement. The chosen alignment has been designed to minimise impacts on the TEC - Littoral rainforests and coastal vine thickets of eastern Australia, which is protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The location of this TEC can be seen on Figure 2.
- The location of the trail and boardwalk has been selected based on the following:
  - Design advice received from experienced trail designers and builders was to develop a trail that provides walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas. Therefore, the trail has been partly located in a tidal area and it is expected that trail users may get wet feet or tyres, but this is in keeping with the minimalistic approach to the Wangetti Trail and the natural experience on offer. Additionally, new permanent structures (bridges and boardwalks) have been limited in the design. It is acknowledged that sections of the trail will not be able to be accessed during high tide events.
  - Ecological surveys have been undertaken on site and ecologists have mapped out state and nationally significant environmental features. The alignment has been designed to avoid traversing significant environmental areas where possible.
  - The trail has access to existing roads which can be used to transport material during the construction phase. The chosen alignment can be accessed by using existing access roads and local Council roads, which can be used during the construction phase.

Refer to the responses in Item 2 below regarding the reasons for selecting the location of the boardwalk and the location of the trail. Refer to the responses in Item 2 below for the reasons for selecting the material used for trail.

It is acknowledged that, unlike typical civil construction projects, design of a trail in the field is not an exact process and it is not possible or feasible to design the trail to the same degree of accuracy as would be done for a road or other civil construction project. Depending on the exact micro-alignment of the trail during construction phase, the length of a particular treatment section may need to be shortened or extended slightly. The nominated construction contractor will be responsible for the final

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

design of the alignment and ensuring that areas of environmental significance (e.g. if there is a nest, large tree, burrows etc) are avoided where possible and clearing is minimised in these areas.

Response to Item 1 (c) Discuss why areas of cleared land, existing informal tracks and land above the level of HAT within Lot 90 on SR678, Lot 87 on SR370 and Lot 24 on SR423 and the road reserve of Captain Cook Highway have not been used for the trail alignment.

The majority of the alignment is contained within State-owned land and Council-managed land with a small section impacting on private freehold land. The proposed trail and boardwalk are considered suitable for the tenure of the land by DNRME and DSC. DITID was able to secure an agreement to use part of the property for the trail on Lot 24 on SR423 and it has been included in the development application. Discussions with the landholder of Lot 24 on SR423 resulted in the trail being placed along the lot boundary to minimise impacts to the private usage of the lot.

Lot 90 on SR678 and Lot 87 on SR370 are both privately-owned properties that are generally cleared of vegetation. However, access to Lot 90 on SR678 and Lot 87 on SR370 were not able to be secured by DITID and therefore the alignment could not be placed within these properties. As a result, the alignment has been positioned as close as possible to the boundaries of these properties in order to reduce impacts to marine plants and fisheries habitat areas.

As discussed above, the location of the trail has been selected as it provides walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas, including mangroves areas. Therefore, parts of trail has been located in tidal areas and existing informal access tracks and previously cleared areas have been incorporated into the alignment where possible.

The alignment is located on land with an elevation ranging from approximately 1 m Australian height datum (AHD) to 3 m AHD with sections of the alignment above and below the highest astronomical tide level (HAT), which is at 1.857 m (AHD). The trail is almost entirely located above the mean high water spring (MHWS) which was determined to be 0.977 m (AHD)., with the exception of Bridge 38, Lot 161 on SR673, Lot 164 on SR673 and areas near Mowbray River Bridge, as shown in Figure 3. The trail has been located as far landward as possible near the boundary of the adjoining properties and near the edge of marine plant communities.

A small section of the trail is proposed within Andreassen Road reserve in order to minimise impacts to marine plants, to avoid conflicts with private landholders and because the integrity of the banks of the Mowbray River did not allow for safe trail construction in front of Lot 87 on SR370. By locating the trail entirely within cleared areas and within road reserves, the intent and wilderness experience attraction of the trail would be lost.

Item 2 Trail construction

To demonstrate compliance with PO1, PO4, PO6, PO7 and PO10 DSDMIP has requested the following information:

a) *Demonstrate why construction of a raised boardwalk is not viable in all locations below HAT.*

b) *Provide maps identifying all locations where the trail will be constructed within TEC communities.*

c) *Identify all locations where crushed rock will be used to construct the track and any creek crossings where rocks are proposed.*

d) *Provide detailed information of the compacted trail construction and the impacts it will have to the existing profiles of tidal land.*

e) *Demonstrate the compacted trail will not impact tidal flow and fragment tidal lands.*

f) *Provide information of the existing tidal land levels (i.e. contour lines).*

g) *Discuss the natural tidal inundation levels and connectivity of all adjacent habitat under elevated flow events. This discussion should include any impacts the proposed works will have on the existing connectivity.*

h) *Discuss all potential impacts the proposed works will have on marine plants and fisheries resources.*

Response

Item 2 (a) Demonstrate why construction of a raised boardwalk is not viable in all locations below HAT.

Design advice has been received from experienced trail designers and builders as part of the design phase of the trail to develop a trail that provides walkers and mountain bike riders with a unique experience to traverse through natural areas of north Queensland covering bushland and coastal areas. It has been partly located in tidal areas and it is expected that trail users may get wet feet or mountain bike tyres, but this is in keeping with the minimalistic approach to the Wangetti Trail and the earthy experience on offer. The single dual use trail has been designed to be narrow and wind around trees and avoid significant environmental features. It is acknowledged that sections of the trail may not be accessible during high tide events. As a result, new permanent structures (bridges and boardwalks) have been limited through the design of the trail.

Justification of the location of the trail in various locations rather than boardwalks has been explained further in Table 2 below and supported by photos.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Table 2 Justification for the location of the proposed trail

Location – proposed trail only	Photo of location	Comments
Nautilus Street to structure B38 	 	The section along Four Mile Beach will utilise the existing foreshore which can be easily accessed by trail users for the majority of the time (excluding king tide events) as shown in the photos below. Part of this section is at or above highest astronomical tide (HAT) level. This section is also setback from the mean high water spring (MHWS) level. Therefore, no permanent structures have been proposed along Four Mile Beach.

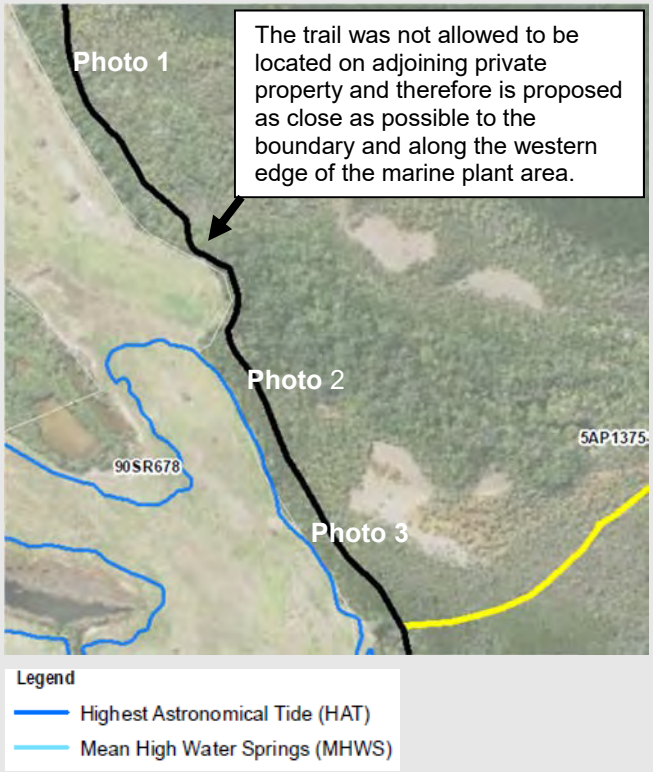
GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Location – proposed trail only	Photo of location	Comments
		

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Location – proposed trail only	Photo of location	Comments
Structure B38 to Lot 5 AP13754  	Photo 1  Photo 2  Photo 3 	Trail has been proposed in this section, as there are existing informal tracks that can be used which are in a suitable condition for a trail. This area is below HAT level and above the MHWS level. The alignment has been located as far landward as possible near the boundary of the adjoining property properties. The alignment is located on land with an elevation of approximately 1 m AHD. HAT has been determined to be at 1.857 m (AHD) with MHWS at 0.977 m (AHD). Furthermore, the trail has been proposed to be located on the edge of the marine plant area where possible.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Lot 5 AP13754 to Captain Cook Highway

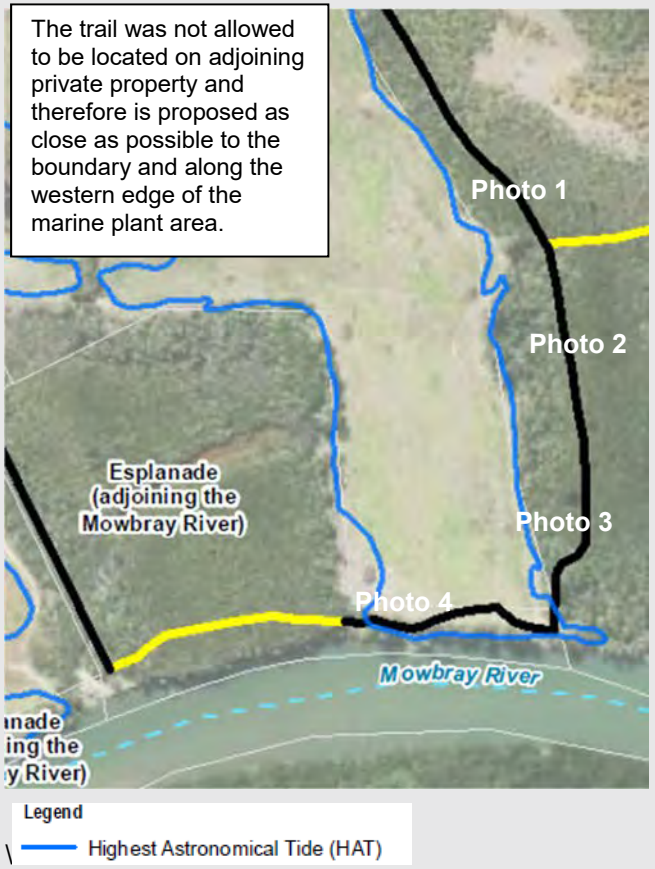


Photo 1

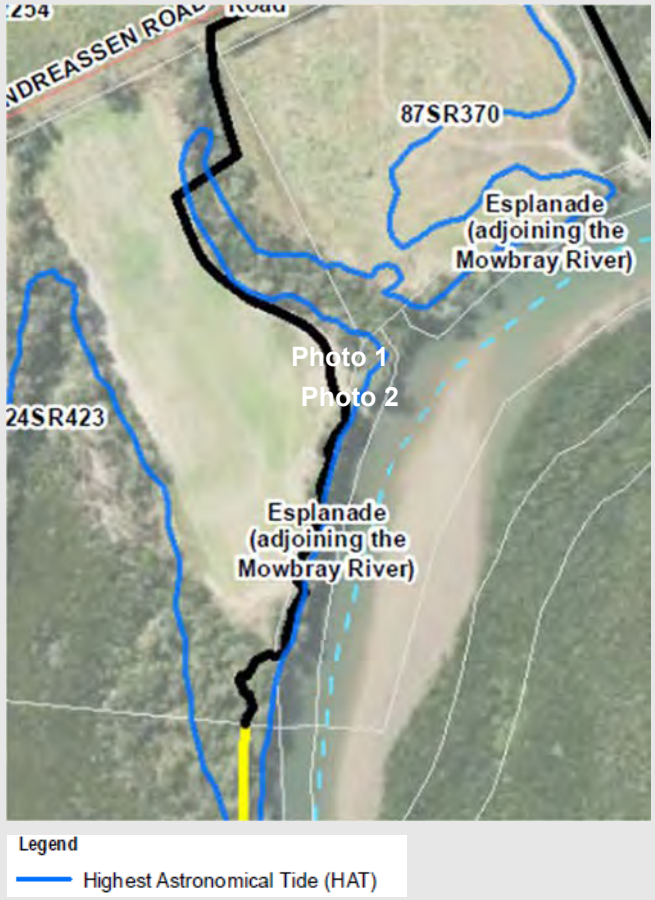
Photo 2

Photo 3

Trail has been proposed in this section, as there are existing cleared areas and access tracks through mangroves that can accommodate a trail. Sections of the trail have been located as far landward as possible near the boundary of the adjoining property properties. The alignment is located on land with an elevation of approximately 1 m to 3 m AHD. HAT has been determined to be at 1.857 m (AHD) with MHWS at 0.977 m (AHD). Furthermore, the trail has been proposed to be located on the edge of the marine plant area where possible

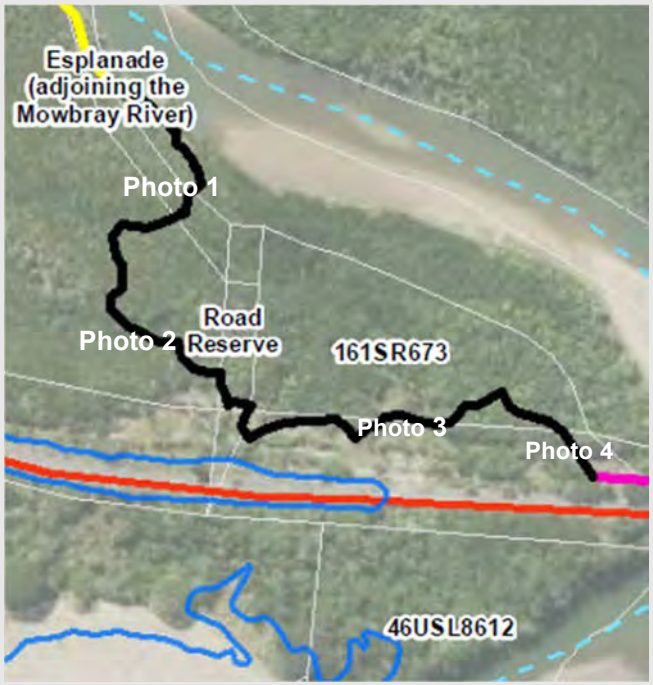
GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Location – proposed trail only	Photo of location	Comments
Lot 5 AP13754 to Captain Cook Highway  	Photo 1  Photo 2 	Trail has been proposed in this section, as there are existing informal tracks and cleared areas that are in a suitable condition to be used. This section is above the MHWS. This section of the trail is mostly located above the HAT level, with the exception of where it crosses the waterway on Lot 24 SR423. It has also been designed to have minimal impact on marine plant communities.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Location – proposed trail only	Photo of location	Comments
Lot 5 AP13754 to Captain Cook Highway 	Photo 1  Photo 2 	Trail has been proposed in this section, as there are existing informal tracks that can be used and are in a suitable condition and this was confirmed during site investigations of the area. The trail intersects State-owned land connecting to existing access tracks, which then lead towards the Captain Cook Highway road reserve and the Mowbray River. The alignment has been located as far landward as possible. The alignment is located on land with an elevation of approximately 1 m AHD and section of the trail is located below HAT level. Furthermore, the trail has been proposed to be located on the edge of the marine plant area where possible.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Location – proposed trail only	Photo of location	Comments
	Photo 3 Existing cleared area  Photo 4 Existing cleared understorey/groundcover 	

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Item 2 (b) Provide maps identifying all locations where the trail will be constructed within TEC communities

Figure 2 shows the location of the proposed trail and boardwalk and the location of threatened ecological community (TEC) - Littoral rainforests and coastal vine thickets of eastern Australia. The SP1 alignment has been designed to predominantly avoid areas of TEC, however the trail intersects with a small area of TEC, located approximately 600 m north of the Mowbray River. The TEC was not previously mapped in government databases and was recorded during the site investigation of the area. Based on the composition of the vegetation within the TEC area, it was determined not to contain high fisheries significant plants.

Item 2 (c) Identify all locations where crushed rock will be used to construct the track and any creek crossings where rocks are proposed.

Table 3 provides a description of the type of material that will be used to construct the track following advice provided by the design team and trail builders, who have previously undertaken surveys of the project area. It has been confirmed that fine crushed rock will not be used to construct the track or any creek crossings within SP1 and boulders will be not be used within waterways for SP1 project area. Where the contractor determines it to be appropriate, ballast rock will be utilised to create a firm foundation for the trail (refer to Plate 1). This will be placed under the existing surface level, leaving the final trail to be at surface level. Areas that require ballast rock will be determined on site by the contractor.

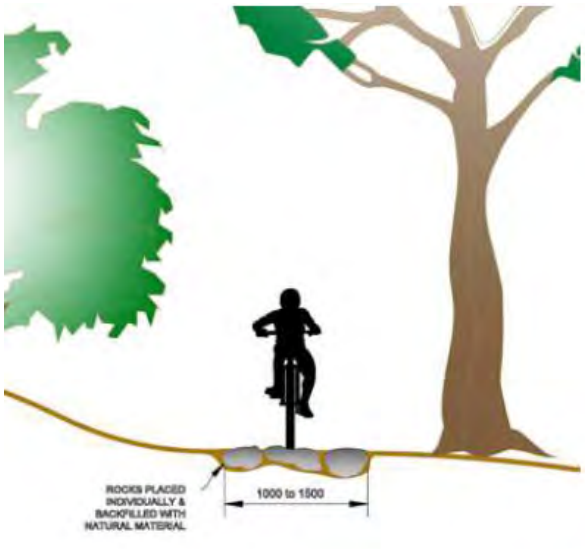
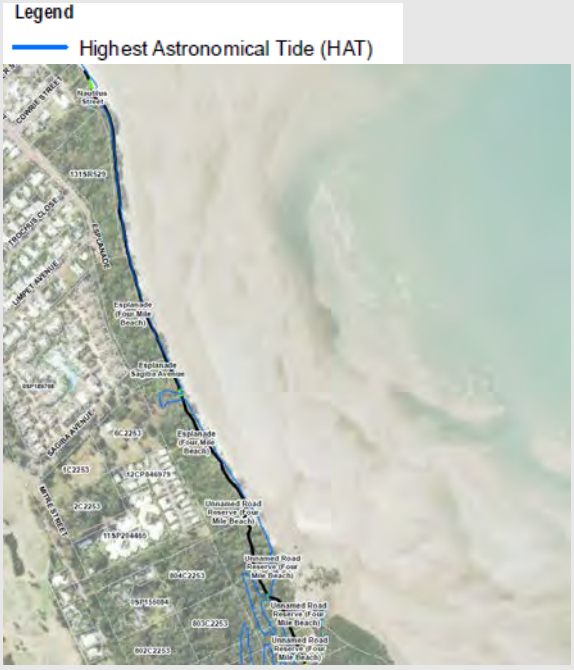


Plate 1 Example of ballast rock used to construct the trail

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Table 3 Description of the proposed construction of the trail

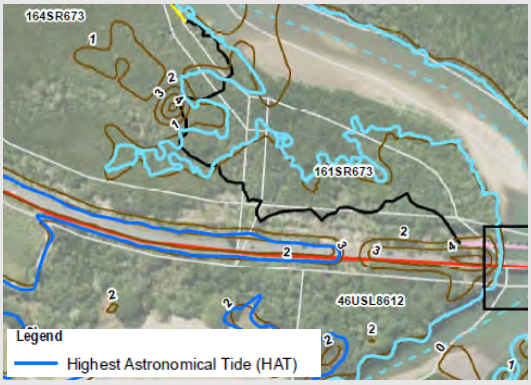
Location	Description of the proposed construction of the trail
Nautilus Street to structure B38 	The area along Four Mile Beach will use the existing foreshore that can be easily accessed by trail users for the majority of the time (excluding king tide events) as shown in the photos below. Therefore, no permanent structures has been proposed along Four Mile Beach.
Structure B38 to Lot 5 AP13754 	In this location it is anticipated that ballast rock may be used as a base course in low-lying wet areas or flat sandy areas, to provide a firm foundation. Ballast rock can vary in shape and size, but is generally a durable stone, free of impurities, weathering and organic materials. Igneous and metamorphic rocks such as granite, gneiss, and basalt make excellent ballast. Where the contractor determines appropriate, ballast rock will be utilised to create a firm foundation for the trail (refer to Plate 1 above). This will be placed under the existing surface level, leaving the final trail to be at surface level. Areas that require ballast rock will be determined on site by the contractor.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Location	Description of the proposed construction of the trail
Lot 5 AP13754 to Captain Cook Highway (part 1) 	In this location it is anticipated that ballast rock may be used as a base course in low-lying wet areas or flat sandy areas, to provide a firm foundation Ballast rock can vary in shape and size, but is generally a durable stone, free of impurities, weathering and organic materials. Igneous and metamorphic rocks such as granite, gneiss, and basalt make excellent ballast. Where the contractor determines appropriate, ballast rock will be utilised to create a firm foundation for the trail (refer to Plate 1 above). This will be placed under the existing surface level, leaving the final trail to be at surface level. Areas that require ballast rock will be determined on site by the contractor.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Location	Description of the proposed construction of the trail
Lot 5 AP13754 to Captain Cook Highway (part 2) 	Where the trail intersects Andreassen Road, the existing road reserve will be utilised, resulting in no additional material proposed over the surface. In the locations near the waterways, it is anticipated that ballast rock may be used as a base course in low-lying wet areas or flat sandy areas, to provide a firm foundation. Ballast rock can vary in shape and size, but is generally a durable stone, free of impurities, weathering and organic materials. Igneous and metamorphic rocks such as granite, gneiss, and basalt make excellent ballast. Where the contractor determines appropriate, ballast rock will be utilised to create a firm foundation for the trail (refer to Plate 1 above). This will be placed under the existing surface level, leaving the final trail to be at surface level. Areas that require ballast rock will be determined on site by the contractor.
Lot 5 AP13754 to Captain Cook Highway (part 3) 	In this location, it is anticipated that ballast rock may be used as a base course in low-lying wet areas or flat sandy areas, to provide a firm foundation. Ballast rock can vary in shape and size, but is generally a durable stone, free of impurities, weathering and organic materials. Igneous and metamorphic rocks such as granite, gneiss, and basalt make excellent ballast. Where the contractor determines appropriate, ballast rock will be utilised to create a firm foundation for the trail (refer to Plate 1 above). This will be placed under the existing surface level, leaving the final trail to be at surface level. Areas that require ballast rock will be determined on site by the contractor.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Item 2 (d) Provide detailed information of the compacted trail construction and the impacts it will have to the existing profiles of tidal land.

Table 3 above provides a description of the trail along various sections of the alignment in SP1 based on existing site conditions. The intent of the trail is to provide a coastal experience to both trail users by offering a variety of natural surfaces and retaining existing environmental features as they add a challenge to the journey of the trail users. The majority of the trail is located above MHWS (0.977 m (AHD)), with some area above and below HAT level. Given the majority of the trail is located within a tidal environment, no raised trail sections are proposed where it could impact on the movement of fish or tides.

Item 2 (e) Demonstrate the compacted trail will not impact tidal flow and fragment tidal lands

Item 2 (f) Provide information of the existing tidal land levels (i.e. contour lines)

Item 2 (g) Discuss the natural tidal inundation levels and connectivity of all adjacent habitat under elevated flow events. This discussion should include any impacts the proposed works will have on the existing connectivity.

This section provide responses to Item 2(e), 2(f) and 2(g).

Figure 3 shows the location of the proposed works for Wangetti Trail SP1 as well as the following additional information:

- Highest Astronomical Tide (HAT) = 1.857 m (AHD)
- Mean High Water Springs (MHWS) = 0.977 m (AHD)
- Contour lines - 1 m (DNRME, 2016)

Tide information has been sourced from Maritime Safety Queensland – Queensland Tide Tables Standard Port Tide Times for Port Douglas 2019. The Lowest Astronomical Tide (LAT) for Port Douglas is -1.643 m (AHD) and Mean Low Water Spring for Port Douglas is -0.863 m (AHD). This information has been used in the design of the proposed structures.

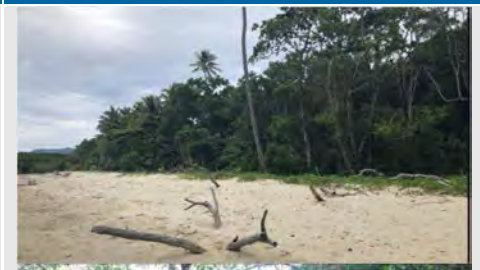
Table 4 below provides a description of the proposed works in various sections along SP1 alignment and demonstrates that the proposed works will not adversely impact upon tidal movement or tidal land.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Table 4 Discussion of the proposed works and tidal areas

Alignment	Photos	Comments
Nautilus Street to structure B38 	 	This section of the alignment along Four Mile Beach is located above the Mean High Water Springs (MHWS) = 0.977 m (AHD) with some areas at and above HAT (1.857 m (AHD)). The trail will be at bed level in these locations. The alignment has been chosen in this location as it avoid direct impacts to the recorded TEC (refer to Figure 2), which is protected under the EPBC Act, and has minimal impact on marine plants. The two bridges known as B38 and B39 are located within a tidal area and will be single span bridges with footings outside of the bed and banks of the waterways and above HAT. No specific clearing or construction is required for the trail along the foreshore area, as the beach will provide open trail access. An on-ground trail, that will be at the existing surface level, will be created within the beach scrub and, while moderate disturbance currently exists, some additional disturbance will be generated as a result of increased used from to opening of SP1. Furthermore, no significant infrastructure is planned, and the proposed works are not considered to adversely impact on the natural tidal movement or result in modifications to the tidal land.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Alignment	Photos	Comments
	  	
Structure B38 to Lot 5 AP13754 (part 1)	**Proposed laydown area**	This section of the alignment is located at bed level and is located mostly below HAT (1.857 m (AHD)) and above MHWS (0.977 m (AHD)) with some sections below HAT.

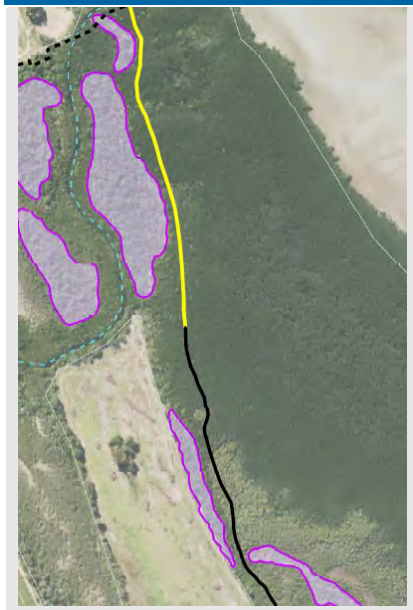
GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Alignment	Photos	Comments
		The SP1 trail extent, between B38 and the southern boundary of Lot 5 AP13754, is the initial area whereby the trail transitions from an open beach to an inland coastal environment. The SP1 trail will mostly be constructed of natural soils, aligned with the existing surface level, to avoid unnecessary environmental disturbance and emphasise a natural experience. Boardwalks will be constructed in areas that are frequently inundated with water.to enable greater visitor access and are not considered to impact on the tidal movement. The awarded contractor will determine areas that require ballast rock to create a firm foundation to enable for a stronger base for the trail, minimising erosion risk. This will be placed under the existing surface level, resulting in the trail being at surface level. Two areas of boardwalks will be constructed within the structure B38 to Lot 5 AP13754 area with a boardwalk proposed in the northern extent of the mangrove environment and a boardwalk trail to a coastal viewing area near the Mowbray River. Minimum clearing will be required for the construction of the trail and associated infrastructure. The location of the proposed works has been designed following numerous site investigations of the project area, discussions with landowners, stakeholders and input from the design team and the environment team. The

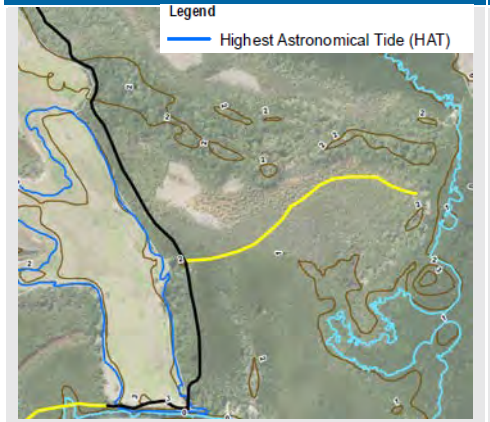
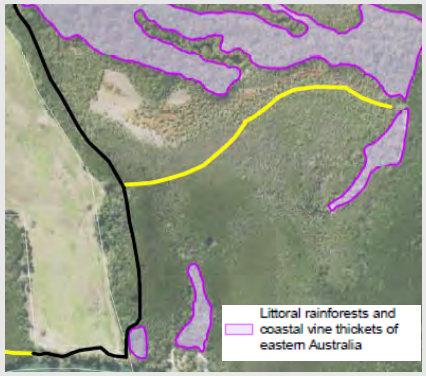
GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

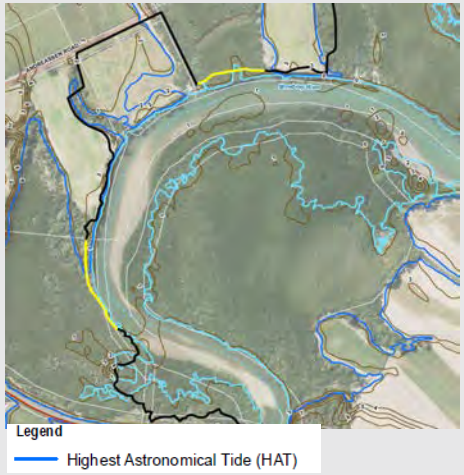
Alignment	Photos	Comments
	 	proposed works are not considered to significantly impact on the tidal areas in the project area due the minor nature of the works. Details of the construction of the trail in this section has been discussed in Table 3 above and are not considered to impede on tidal flow in this area. Furthermore, there are existing informal access tracks that can be used in this section and the alignment has been located as close as possible to the western boundary of Lot 5 AP13754 which is located adjacent to cleared land Lot 90 SR678. Given that the proposed works are located above the MHWS, located as close as possible to the HAT level, avoid areas of TEC, are located as close as possible to the western edge of marine plant area and are mostly setback from the foreshore they are not considered to adversely impact on the natural tidal movement or fragment tidal land.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Alignment	Photos	Comments
 	**Open disturbed grassland. Just under a metre of vine thicket adjacent to the grassland. Mangroves finish before vine thickets start.** 	

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Alignment	Photos	Comments
Lot 5 AP13754 to Captain Cook Highway (part 2)  	  	The trail between the southern boundary of Lot 5 AP13754 and the Captain Cook Highway is the initial area whereby the trail transitions from a densely vegetated inland coastal environment to a tidal estuary. This section of the alignment is partially below HAT (1.857 m (AHD)) and above MHWS (0.977 m (AHD)). Minimum clearing will be required for the construction of the trail and associated infrastructure. Permanent trail width is limited to 1.5 m, with temporary construction to 2.5 m. The location of the proposed works has been designed following numerous site investigations of the project area, discussions with landowners, stakeholders and input from the design team and the environment team. The proposed works are not considered to significantly impact on the tidal areas in the project area due the minor nature of the works. Details of the construction of the trail in this section has been discussed in Table 3 above and are not considered to impede on tidal flow in this area. Furthermore, there are existing access tracks in the area that can be used for the trail. Boardwalks are proposed in areas that are frequently inundated with water. Given the majority of the proposed works are located above the MHWS and HAT, minimised the area of marine plants to be impacted, and are mostly setback from the foreshore, they are not considered to adversely impact on the natural tidal movement or fragment tidal land.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Mowbray River

Carpark location - no marine plants in this area

Mowbray River section

The area surrounding the Mowbray River has been subjected to previous clearing and is a modified site with existing road infrastructure. This area of SP1 contains an on-ground trail along with a carpark, located on the northern side of the east bank of the Mowbray River. An observation viewing platform is also proposed for the area, located on the southern side of the east bank of the Mowbray River, to take advantage of crocodile and other fauna sightings.

The proposed works will be located above MHWS (0.977 m (AHD)) and will mostly be located within previously cleared areas. On this basis, the proposed alignment is not considered to impede on the movement of tidal water or fragment tidal land.

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Memorandum

Alignment	Photos	Comments
		

GHD Pty Ltd ABN 39 008 488 373
Level 13 203 Robina Town Centre Drive Robina Gold Coast Queensland 4226 Australia
T +61 7 5557 1000 **F** +61 7 5557 1099 **E** goldcoastmail@ghd.com **W** www.ghd.com

Item 2 (h) Discuss all potential impacts the proposed works will have on marine plants and fisheries resources.

Potential impacts to marine plants and fisheries resources has been adequately covered in Section 3.4 and in Table 3-3 of SP1 Wangetti Mowbray North Marine Plant Report, July 2019.

Item 3 Further information requested on Marine Plant disturbance

To demonstrate compliance with PO4 DSDMIP has requested the following information:

a) *Provide construction plans detailing the location and elevation of the mangrove experience board walk and observation deck.*

b) *Submit scaled drawings of the permanent and temporary disturbance areas for all ancillary infrastructure proposed at Mowbray River location.*

c) *Provide the individual marine plant disturbance area in meters squared (m_2) for each works component.*

d) *Provide updated marine plant disturbance areas accounting for high fisheries significant plants.*

Response

Item 3 (a) Provide construction plans detailing the location and elevation of the mangrove experience boardwalk and observation deck.

The location of the boardwalk has been depicted in the Environment Assessment Stage 2 Wangetti Trail Planning Report for Operational Work - SP1 Marine Plant Disturbance Report in Figure 1-2. Concept plans of the boardwalk have been prepared by GHD as part of the development application (refer to Drawing SK010 Wangetti Trail Concept Boardwalks GA –Option). The HAT level has been depicted in the drawing. A construction contractor will be nominated during the tender phase for the project to finalise the details of the boardwalk taking into account the boardwalk design parameters outlined below for the project:

- The boardwalk is to be designed to AS 2156.1 Walking track – part 1 Classification and signage and AS2156.2 Walking tracks – Infrastructure design.
- Boardwalk design is to minimise the environmental impact on the site by using black fibre composite technology pylons and black fibre reinforced plastic mini-mesh or similar decking to allow for at least 40% light seepage through to mangroves and other ground level habitat features.
- The height of the boardwalk is to be no greater than 990 mm above the ground level where possible to avoid handrails.
- Any innovative design or construction approach/method that the Supplier deems worthy are to be presented to the Project Team for consideration and approval.
- Gradients of 1:20 are the preferred maximum for general outdoor use. Absolute maximum of 1:14 is permissible.
- Boardwalks are to widen at key viewing areas.

- Metal components used in the design of the boardwalk shall be of marine-grade stainless steel.
- Metal components such as bolts, nuts, screws and or nails which may come in contact with the public are to be rebated.
- The design and the materials nominated must reflect a design life expectancy of 25 to 50 years for the boardwalk. Materials should be inert, blend with the surrounding environment and be selected for their longevity and ease of maintenance. It is preferred that the boardwalk be constructed progressively off the boardwalk decking and be designed to take construction loads so that no or minimal access to the sides of the boardwalk is required
- It is preferred that the boardwalk is designed and constructed to minimise disturbance to tidal areas and is preferable that the boardwalk is assembled in situ by hand (where possible).
- The proposed boardwalk will need to be evaluated for potential inundation depending on the level of tide at any particular point in time. The Supplier is to verify this data and make allowances for potential inundation throughout the design and design changes will occur where tidal inundation will influence the structure.

The location of the observation viewing platform is shown on Figure 1-2 and in Drawing Reference: 42-21067-S012 in Appendix B in Environment Assessment Stage 2 Wangetti Trail Planning Report for Operational Work - SP1 Marine Plant Disturbance Report. The observation viewing platform will be located 1.25 m above HAT (RL1.857).

Item 3 (b) Submit scaled drawings of the permanent and temporary disturbance areas for all ancillary infrastructure proposed at Mowbray River location.

Refer to Figure 2-1 in the Environment Assessment Stage 2 Wangetti Trail Planning Report for Operational Work - SP1 Marine Plant Disturbance Report for scaled drawings showing the permanent and temporary disturbance of marine plants for SP1.

Item 3 (c) Provide the individual marine plant disturbance area in meters squared (m2) for each works component.

A breakdown of the marine plant disturbance including temporary and permanent disturbance has been provided in Table 3-2 of the Environment Assessment Stage 2 Wangetti Trail Planning Report for Operational Work - SP1 Marine Plant Disturbance Report and is outlined in Table 5 below and shown in Figure 2.

Table 5 Breakdown of marine plant disturbance area for SP1

Component	Marine plant disturbance area (m^2)
Permanent footprint	
Trail/Boardwalk	5,682.78
Ancillary works:	
• Observation viewing platform	26.48
• Andreassen Road crossing	13.08
• Carpark and drain footprint	6.18
• Mowbray River Bridge and underpass	35.72
• Bridge B38	53.40
Permanent total	**5817.64**
Temporary footprint	
Trail	1792
Mowbray River Bridge	300
Ancillary works:	
• Mowbray River Bridge, carpark and drain footprint	309.84
• Crane pad near Mowbray River	25
• B38 access track	237.72
• B38 laydown area	400
Temporary total	**3064**
Total Disturbance Area	**8,882.20**

Response to Item 3 (d) Provide updated marine plant disturbance areas accounting for high fisheries significant plants.

As part of the ecological surveys completed for the project, it was determined that all marine plants found within the project area conform to the definition of 'high fisheries significance plants' in Fish Habitat Management Operational Policy FHMOP001 (Couchman and Beumer 2007). Refer to the response above and Table 5 for a breakdown of the marine plant disturbance including temporary and

permanent disturbance for SP1. The following parameters were considered during the ecological survey:

- plants below highest astronomical tide (HAT) unless listed as restricted invasive plants under the *Biosecurity Act 2014*; and
- plants that normally occur where there is some tidal influence (i.e. high fisheries significance plants).

The extent of marine plants are shown in Figure 2-1 of the Environment Assessment Stage 2 Wangetti Trail Planning Report for Operational Work - SP1 Marine Plant Disturbance Report.

The dominant marine plants recorded were mangroves, with a total of nine species represented. The most commonly recorded species were *Ceriops tagal*, *Rhizophora stylosa* and *Avicennia marina*. *Ceriops tagal* often occurred as dense monotypic stands and generally occupied the mid and upper tidal zones. *Rhizophora stylosa* also formed dense stands and typically occurred within the mid and lower tidal zones. *Avicennia marina* was dominant on tidal flats and can be easily depicted in aerial photography by the light green signature of its canopy. A list of additional marine plants recorded within the alignment during the survey is provided below:

- *Aegialitis annulata*
- *Aegiceras corniculatum*
- *Bruguiera sexangular*
- *Bruguiera gymnorhiza*
- *Clerodendrum inerme*
- *Excoecaria agallocha*
- *Lumnitzera littorea*
- *Sesuvium portulacastrum*
- *Sporobolus virginicus*
- *Xylocarpus granatum.*

Item 4 Further information required on temporary marine plant disturbance

To demonstrate compliance with PO4 DSDMIP has requested that the following information be provided:

a) *Discuss why areas within Lot 901 on SP274759 cannot be used to facilitate construction and laydown of materials for Bridge B38.*

Response to Item 4 (a) Discuss why areas within Lot 901 on SP274759 cannot be used to facilitate construction and laydown of materials for Bridge B38.

Lot 901 on SP274759 is a private property and cannot be used as a laydown area for construction material for bridge B38. DITID has undertaken discussions with the property holder regarding the project, however they were not able to secure land agreements. Therefore, a construction laydown area has been proposed on Lot 5 on AP13754.

The laydown area was chosen based on engineering feasibility investigations, which determined the chosen location was best for ease of access and constructability, as well as minimising impacts to TEC located in the area. The access track is proposed along the lot boundary of lot 901 on SP274759 to minimise impacts to surrounding vegetation.

Item 5 Further information required on the boardwalk construction

To demonstrate compliance with PO6 DSDMIP has requested the following information:

a) Provide the light penetration details (percentages) of the boardwalk surface and how it will meet this performance outcome.

Response Item 5 (a) Provide the light penetration details (percentages) of the boardwalk surface and how it will meet this performance outcome.

It has been confirmed that composite material will be used for the construction of the proposed boardwalk. The nominated construction contractor for the boardwalk will be required to utilise fibre reinforced polymer mini-mesh or similar decking, as this is considered to allow for at least 40% light seepage. A construction contractor will be nominated as part of the tender phase to design and construct the boardwalk for SP1 and will be required to comply with the list of the design parameters which have been developed for the proposed boardwalk. These are outlined below:

- The boardwalk is to be designed to AS 2156.1 Walking track – part 1 Classification and signage and AS2156.2 Walking tracks – Infrastructure design.
- Boardwalk design is to minimise the environmental impact on the site by using black fibre composite technology pylons and black fibre reinforced plastic mini-mesh or similar decking to allow for at least 40% light seepage through to mangroves and other ground level habitat features.
- The height of the boardwalk is to be no greater than 990 mm above the ground level where possible to avoid handrails.
- Any innovative design or construction approach/method that the Supplier deems worthy are to be presented to the Project Team for consideration and approval.
- Gradients of 1:20 are the preferred maximum for general outdoor use. Absolute maximum of 1:14 is permissible.
- Boardwalks are to widen at key viewing areas.
- Metal components used in the design of the boardwalk shall be of marine-grade stainless steel.
- Metal components such as bolts, nuts, screws and or nails which may come in contact with the public are to be rebated.
- The design and the materials nominated must reflect a design life expectancy of 25 to 50 years for the boardwalk. Materials should be inert, blend with the surrounding environment and be selected for their longevity and ease of maintenance. It is preferred that the boardwalk be constructed progressively off the boardwalk decking and be designed to take construction loads so that no or minimal access to the sides of the boardwalk is required

- It is preferred that the boardwalk is designed and constructed to minimise disturbance to tidal areas and is preferable that the boardwalk is assembled in situ by hand (where possible).
- The proposed boardwalk will need to be evaluated for potential inundation depending on the level of tide at any particular point in time. The Supplier is to verify this data and make allowances for potential inundation throughout the design and design changes will occur where tidal inundation will influence the structure.

Examples of the boardwalks using composite material within tidal areas that could be considered for SP1 are outlined in Table 6. The photos show light penetrating through the deck to the ground and marine plant species ground underneath the deck.

Table 6 Examples of boardwalks using composite material

Examples of boardwalks

Item 6 Matters of State Environmental Significance

It is noted, that as a result of the proposed development not all marine plant disturbance can be avoided. However, the development must first avoid and minimise all impacts to marine plants a Matter of State Environmental Significance (MSES).

Currently the application material does not demonstrate how impacts on MSES are:

- *avoided, by designing the trail alignment to avoid tidal land and marine plant disturbance were possible, and*
- *mitigated, by proposing lesser impact options to construct the trial over tidal land i.e. board walk.*

Offsets to counterbalance any significant residual impact on MSES and consequent compliance with PO31 are only applicable if appropriate avoidance, minimisation and mitigation efforts have been adequately pursued.

Provide information about the consideration of alternatives that avoid marine plants and the steps that minimise impacts.

Response to Item 6 (a) Provide information about the consideration of alternatives that avoid marine plants and the steps that minimise impacts.

Various trail alignments were considered to avoid and reduce impacts on marine plants and significant features protected under the EPBC Act. Alignments were initially considered through disturbed areas within private land holdings but permission to utilise such areas was not provided by the respective property owners. An alignment option through bushland adjacent to marine plant communities was also considered but was largely discounted following the identification of the 'Littoral rainforests and coastal vine thickets of eastern Australia' TEC along much of the alignment (as shown

on Figure 2). The final alignment was chosen following consideration of the aforementioned constraints and a preliminary design was developed.

The initial design incorporated a loop where the trail branches off the main trail within Lot 5 on AP13754 (Refer to **Figure 1**). This has been changed to a single branch to substantially reduce the area of impact on marine plants. Other design, maintenance and restoration measures proposed to minimise and mitigate impacts on marine plants are outlined below:

Design and construction measures

- The trail has been located to retain primary coastal buffers and the reduction of meandering pathways.
- The trail has been reduced to the smallest possible width compliant with safety requirements for dual use pathways.
- Natural surface profiles and existing hydrology will be maintained.
- In some areas of low-lying marine plants, a boardwalk is used rather than an on-ground trail; the elevated trail will reduce impact and disturbance to marine plants long-term by containing users to the trail and allow pneumatophores to re-establish under the boardwalk following construction. The elevated boardwalk also allows safe passage of users through tidal areas frequently inundated with water.
- The proposed bridge crossing and approaches over Mowbray River are located on the previously disturbed footprint of the old bridge crossing. The observation viewing platform also incorporates a cantilever deck design which will allow marine plants to establish below the viewing platform once construction is complete.
- The majority of the SP1 trail will be built 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.

Maintenance measures

With regards to plant trimming, the Department of Primary Industries conducted a research project to study the effects of pruning on growth rates and survival of selected mangrove species (Clarke and Johns, 2002). Two of the three most commonly encountered mangrove species along the trail, *Avicennia marina* and *Rhizophora stylosa,* were reported to be tolerant of moderate pruning (30% foliage removed) in both summer and winter (Clarke and Johns, 2002). The third commonly encountered species, *Ceriops tagal*, was not included in the trial but the closely related *Ceriops australis* was reported to be sensitive to pruning but more tolerant of summer pruning. *Bruguiera* species were reported to be the most sensitive species to pruning of those examined. Findings of this study have been considered in the proposed marine plant maintenance regime.

The following actions (adopted from the *Accepted Development Requirements for operational work that is the removal, destruction or damage of marine plants, 2017*) will be undertaken with regards to marine plant maintenance:

- Impacts to marine plants must be minimised

- Pruning and trimming works of most mangrove species will be undertaken during the dormant period (cooler months) to avoid the flowering and fruiting periods of most species present. Pruning of *Ceriops tagal* will be preferably undertaken in summer. Pruning of *Bruguiera* species will be avoided where possible with a preference for light pruning only.
- Mangroves will be pruned or trimmed by no more than a third of their height and no more than that required to maintain safety requirements.
- Sound horticultural pruning and trimming practices will be employed. Mangrove branches greater than 25 mm in diameter will be pre-cut underneath to prevent splitting.
- Cutting equipment will be kept sharp and clean at all times.
- Subsurface roots of mangroves where the trunk and branches have been removed will be left in-situ to minimise substrate disturbance.
- Invasive weeds are to be physically removed within the vicinity of the trail.
- Chemicals will not be permitted for use on marine plants.
- Marine plant material will not be burned.
- Works will be undertaken at times of limited tidal flow to limit suspension of sediment and increased turbidity.

Restoration measures

Disturbed tidal land will be restored to pre-works profiles to promote natural recruitment and establishment of marine plants. Active revegetation through seeding or planting is not anticipated to be required given the surrounding propagule source; however, if marine plants are failing to establish after three years and stem densities are unlikely to return to pre-existing over the longer term, a revegetation strategy will be prepared and implemented. The revegetation strategy will be developed with regards to the relevant principles outlined in the DAF guidelines, Restoration of fish habitats: Marine areas (FHG 002) and Mangrove nurseries: Construction, propagation and planting (FHG 004).

2.2 Response to DSDMIP Further Advice Notice to address constructing or raising waterway barrier work

Item 1 Trail construction

To demonstrate the proposed development do not involve waterway barrier works DSDMIP has requested the following information:

I. *Identify all locations where crushed rock will be used to construct the track and any creek crossings where rocks are proposed.*

II. *Provide detailed information of the existing tidal land levels (i.e. contour lines).*

III. *Discuss the natural tidal inundation levels of tidal land and connectivity of all adjacent habitat under elevated flow events.*

IV. *Provide details of the hard trail construction including elevations.*

If the proposed development does involve waterway barrier works, a missed referral notice will be issued by the department, and a response against the current State Development Assessment Provisions, State code 18: Constructing or raising waterway barrier work will be required

Response Item 1 (i)

Refer to the response provided to Item 2(c) in Section 2.1. Details have been provided in Table 3 of the type of material that will be used to construct the trail, following advice received from the design team and trail builders. Crushed rock will not be used to construct the track or any creek crossings within SP1. Where sections of the trail require vegetation clearing, ballast rock will be placed under the existing surface level to create a firm foundation for the trail as shown in Plate 1.

Response Item 1 (ii)

Refer to the response provided to Item 2 (f) in Section 2.1 and refer Figure 3, which identifies the location of the Wangetti Trail SP1, the existing tidal land levels and contour lines.

Response Item 1 (iii)

Refer to the response provided to Item 2(g) in Section 2.1.

Response Item 1 (iv)

Refer to the response provided to Item 2(d) in Section 2.1.

During the design phase of the project it was determined that the following proposed works for SP1 were not defined as 'waterway barrier works' under the *Fisheries Act 1994* following discussions with DSDMIP.

Pedestrian Bridge Mowbray River

Mowbray River is a tidal waterway. The proposed works is not considered to adversely impact on the fish passage as the Mowbray River Bridge is a multi-span bridge where both abutments are proposed outside of the high bank. The proposed bridge is therefore not considered to be a waterway barrier.

Underpass under the Captain Cook Highway

The proposed underpass under the Captain Cook Highway is considered to be defined as a bank revetment. The main channel width of the Mowbray River is 52 m wide and the proposed underpass extends less than 10% of the width of Mowbray River (main channel width). Therefore, the proposed underpass is not considered to be a waterway barrier work according to DAF's definition of 'what is not a waterway barrier'. In addition, the structure will also be located above the HAT level.

Observation-viewing platform

The proposed observation-viewing platform proposed along the southern bank of the Mowbray River is also considered to be defined as a bank revetment. The main channel width of the Mowbray River is 52 m wide and the proposed structure extends less than 10% of the width of Mowbray River (main channel width). Therefore, the proposed underpass is not considered to be a waterway barrier work according to DAF's definition of 'what is not a waterway barrier'. In addition, the structure will also be located above the HAT level.

Bridges known as B38 and B39

The two bridges known as B38 and B39 are located within a tidal area, however they are not considered to be a waterway barrier given they are single-span bridges with footings outside of the bed and banks of the waterways.

Trail and the boardwalk

The trail is not raised and will be at the existing surface level. The trail and the boardwalk within the mapped tidal waterway area is not considered to be a waterway barrier as defined by DAF 'what is not a waterway barrier' factsheet as they do not act as a barrier to the movement of fish.

2.3 Response to the assessment manager (Douglas Shire Council) information request

Item 1 Carpark

Concern is raised with respect to the unsealed car parking and turn-around areas. It is noted that the balance of the carpark is sealed with 50 mm thick asphalt.

A suitably sealed surface compliant with FNQROC Development manual requirements is requested. Please provide an amended plan illustrating an alternative treatment to the car parking and turn-around areas.

Response

The carpark proposed within the Captain Cook Highway has been designed in accordance with the Department of Transport and Main Road (TMR) specifications. The concept design was agreed following ongoing discussions between GHD, DITID and TMR. Geotechnical investigations have also been undertaken to assist in characterising the subgrade condition and to inform the pavement design. Two pavement design options have been provided for the Mowbray River. A sealed option has been provided for the carpark entrance/exit and the bus set-down area due to the anticipated presence of heavy vehicle turning movements in the area. An unsealed option has been provided for the carpark as the area is anticipated to be a low speed environment with low vehicular movements.

Request is made to Council to condition the carpark, such that agreement between DTMR, DSC and DITID needs to be reached prior and any subsequent updated RPEQ plans being submitted for endorsement by Council prior to any construction activity commencing on the site for the carpark.

The elevated boardwalk sections has 2 basic design approaches being timber and composite materials. As council has agreed to become the asset owner on completion of the project, discussions to date have centred on the delivery of the boardwalk using composite material. Please provide details of the material to be used consistent with previous discussions and confirm expected design life.

Item 2 Boardwalk

Please provide details of the material to be used consistent with previous discussions and confirm expected design life.

Response

To satisfy Council's request, composite material will be used for the construction of the proposed boardwalk and type of composite material will be selected by the nominated contractor in consultation and joint approval by DITID and Council prior to construction.

Here is a list of the design parameters for the proposed boardwalk that will be required to be adopted by the nominated contractor:

- The boardwalk is to be designed to AS 2156.1 Walking track – part 1 Classification and signage and AS2156.2 Walking tracks – Infrastructure design.
- Boardwalk design is to minimise the environmental impact on the site by using black fibre composite technology pylons and black fibre reinforced plastic mini-mesh or similar decking to allow for at least 40% light seepage through to mangroves and other ground level habitat features.
- The height of the boardwalk is to be no greater than 990 mm above the ground level where possible to avoid handrails.
- Any innovative design or construction approach/method that the Supplier deems worthy are to be presented to the Project Team for consideration and approval.
- Gradients of 1:20 are the preferred maximum for general outdoor use. Absolute maximum of 1:14 is permissible.
- Boardwalks are to widen at key viewing areas.
- Metal components used in the design of the boardwalk shall be of marine-grade stainless steel.
- Metal components such as bolts, nuts, screws and or nails which may come in contact with the public are to be rebated.
- The design and the materials nominated must reflect a design life expectancy of 25 to 50 years for the boardwalk. Materials should be inert, blend with the surrounding environment and be selected for their longevity and ease of maintenance. It is preferred that the boardwalk be constructed progressively off the boardwalk decking and be designed to take construction loads so that no or minimal access to the sides of the boardwalk is required
- It is preferred that the boardwalk is designed and constructed to minimise disturbance to tidal areas and is preferable that the boardwalk is assembled in situ by hand (where possible).
- The proposed boardwalk will need to be evaluated for potential inundation depending on the level of tide at any particular point in time. The Supplier is to verify this data and make allowances for potential inundation throughout the design and design changes will occur where tidal inundation will influence the structure.

Item 3 Boardwalk

Please illustrate the levels of the boardwalk components and detail the extent of freeboard to be provided above HAT and storm surge considerations.

Response

Concept plans of the boardwalk has been prepared by GHD as part of the development application refer to Drawing SK010 WANGETTI TRAIL CONCEPT BOARDWALKS GA – OPTION. HAT level has been depicted in the drawing and the decking of the boardwalk is at 2.5 m. As discussed above, the nominated construction contractor for the boardwalk will be required to finalise the details of the boardwalk taking into account the boardwalk design parameters outlined above prior to any construction.

Item 4 Boardwalk

It is acknowledged and accepted that the boardwalk is not at the detailed design stage. However, if it is the intention to go to market with a design and construct tender package, then preparing this documentation with respect to materials to be used and design life is considered imperative for Council. Please provide further information with respect to addressing this concern and how council will be involved in the detailed design and delivery process to ensure the future donated asset is acceptable and fit for purpose.

Response

A construction contractor will be nominated as part of the tender phase to design and construct the boardwalk for SP1. In response to Council's request, a list of the design parameters have been developed for the proposed boardwalk that will need to be adopted by the nominated contractor.

These include:

- The boardwalk is to be designed to AS 2156.1 Walking track – part 1 Classification and signage and AS2156.2 Walking tracks – Infrastructure design.
- Boardwalk design is to minimise the environmental impact on the site by using black fibre composite technology pylons and black fibre reinforced plastic mini-mesh or similar decking to allow for at least 40% light seepage through to mangroves and other ground level habitat features.
- The height of the boardwalk is to be no greater than 990 mm above the ground level where possible to avoid handrails.
- Any innovative design or construction approach/method that the Supplier deems worthy are to be presented to the Project Team for consideration and approval.
- Gradients of 1:20 are the preferred maximum for general outdoor use. Absolute maximum of 1:14 is permissible.
- Boardwalks are to widen at key viewing areas.
- Metal components used in the design of the boardwalk shall be of marine-grade stainless steel.

- Metal components such as bolts, nuts, screws and or nails which may come in contact with the public are to be rebated.
- The design and the materials nominated must reflect a design life expectancy of 25 to 50 years for the boardwalk. Materials should be inert, blend with the surrounding environment and be selected for their longevity and ease of maintenance. It is preferred that the boardwalk be constructed progressively off the boardwalk decking and be designed to take construction loads so that no or minimal access to the sides of the boardwalk is required
- It is preferred that the boardwalk is designed and constructed to minimise disturbance to tidal areas and is preferable that the boardwalk is assembled in situ by hand (where possible).
- The proposed boardwalk will need to be evaluated for potential inundation depending on the level of tide at any particular point in time. The Supplier is to verify this data and make allowances for potential inundation throughout the design and design changes will occur where tidal inundation will influence the structure.

Item 5 Trail

It is noted that the project will include 3.95 km of dual use on grade pathways. There is no detail on the width of these dual use pathways. Council would prefer a minimum of 2 m and a preferred width of 2.5 m.

Response

The trail in SP1 is proposed to be single dual use track to accommodate both mountain bike users and hikers. The benefits of a single dual use trail is that it can wind around obstacles such as trees, large rocks, and bushes, it can blend into the surrounding environment, and disturbs much less ground, making it easier to maintain. The trail will be a linear alignment directing users from Port Douglas through to the Mowbray River (and visa-versa). The width of the trail has been determined using the trail specifications noted in the Australian Standards AS 2156.1-2001 and the International Mountain Bicycling Association Australia, Trail Difficulty Rating System, 2014, version 2.0.

For SP1 the trail will generally be 1.5 m wide, but will be restricted to a minimum of 1 m wide within areas of threatened ecological communities protected under the EPBC Act. The width of the trail has been kept under 2 m to reduce its impact on environmental features including marine plants protected under the *Fisheries Act 1994*, tidal areas protected under the *Coastal Protection and Management Act 1995* and mapped fauna habitat areas protected under the EPBC Act. The width will allow easy passing of users travelling in opposite directions. 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. Details of the trail have been provided in Section 3.2 of the Environment Assessment Stage 2 Wangetti Trail Development Application Material change of Use for Environmental Facility for the Wangetti Trail Project SP1 - Mowbray North Ref: 41-32458-03-SP1-RPT-0005.

3 Further information provided about the construction method proposed for the pedestrian bridge within the Mowbray River

This section builds up on the construction method proposed for the pedestrian bridge documented in the planning report for SP1 Wangetti Mowbray North prescribed tidal works and works within a coastal management district July 2019 and the planning report for operation works – *SP1 marine plant disturbance July 2019*. It provides information on the method of building and removing the temporary piling rig/crane platforms, the length of time the temporary piling rig/crane platforms will be in place, and that the temporary piling rig/crane platforms would not result in further impacts to the surrounding environment.

As noted in the construction method for the pedestrian bridge, temporary piling rig/crane platforms are proposed to be constructed to assist with the piling works associated with the new bridge. There are two options that DITID would like to propose for the set-up of the temporary piling rig/crane platforms and they are outlined below:

- The temporary piling rig/crane platform Option 1

  Option 1 rig/crane platform would be a temporary structure and installed from one bank to undertake piling of the piers and one abutment. Construction platform to consist of a geofabric base and clean rock/fill material and would extend from the bank of the Mowbray River into the waterway ensuring that >50% of creek cross-section is always clear.

  The nominated construction contractor will be required to undertake piling from most-distant pier working back to the bank followed by form and cast pilecaps. Then the temporary platform will be pulled back once piers are complete with all material removed from the river when complete, including all rock/fill and geofabric. This will be repeated from the other bank only once the construction platform is removed. The nominated construction contractor will be responsible for maintaining and repairing the platform as required.

  It would be designed, implemented and removed in accordance with the requirements for temporary structures within a tidal waterway as outlined in Section 7 and Section 4.3 of the DAF *Accepted development requirements for operational work that is constructing or raising waterway barrier works*, *2018*. The temporary platform will commence and finish within 180 calendar days.

  The indicative location of the temporary platform option 1 is shown in Figure 4.

- The temporary piling rig/crane platform Option 2

  Option 2 rig/crane platform would be the erection of a temporary bridge involves driving approximately 9 temporary piles (610 mm tube piles) into the river bed followed by construction of a steel structure that then supports the crane. This temporary bridge would be installed to undertake one half of the works (Cairns side of the river), and then relocated to undertake the other half (Port Douglas side of the river), and then completely removed from site.

  The nominated construction contractor will be responsible for maintaining and repairing the platform as required. It would be designed, implemented and removed in accordance with the requirements for temporary structures within a tidal waterway as outlined in Section 7 and Section 4.3 of the DAF *Accepted development requirements for operational work that is constructing or*

raising waterway barrier works, 2018. The temporary platform will commence and finish within 180 calendar days.

The indicative location of the temporary platform option 2 is shown in Figure 4.

DITID would like to request that the assessment manager and the referral agencies consider including a condition in the development permit that allows for either option to be developed. DITID has not yet appointed a construction contractor for the works with the Mowbray River and this option would allow the construction contractor to select the option based on current site conditions at the time of construction and availability of materials.

Both options for the temporary piling rig/crane platform have been assessed against State Development Assessment Provisions (SDAP) State Code 8 to demonstrate that the proposed temporary works would not adversely impact on coastal processes associated with the project area, will not restrict access to the Mowbray River and will not result in coastal erosion to surrounding areas. Refer to Attachment - assessment against State Code 8 for temporary rig/crane platform for option 1 and option 2.

Both options for the temporary piling rig/crane platform would be contained within the State-controlled road reserve and the Mowbray River and no further areas of marine plants will be disturbed by the temporary structures, other than the areas that have been documented in the planning report for operational works – *SP1 marine plant disturbance July 2019* and shown in Figure 2. The proposed temporary works would not change the appearance or scale of the proposed development, as they will be temporary in nature and would be removed once the new pedestrian bridge has been constructed.

Both options for the temporary piling rig/crane platform are not considered to introduce new impacts for the development, as the impacts have already been discussed in the development application package and the proposed development as it is temporary in nature and would be removed once the new pedestrian bridge has been constructed.

Both options for the temporary piling rig/crane platform would not result in an operational works waterway barrier work being triggered as both options will comply with the requirements for temporary structures within a tidal waterway as outlined in Section 7 and Section 4.3 of the DAF *Accepted development requirements for operational work that is constructing or raising waterway barrier works, 2018*. The temporary works will commence and finish within 180 calendar days.

For both options for the temporary piling rig/crane platform, the nominated construction contractor will be responsible for designing the temporary structure and providing RPEQ signoff for the drawings prior to construction works being endorsed by the relevant regulatory authority.

Prior to construction commencing on-site, a construction environmental management plan (CEMP) will be developed and implemented by the appointed construction contractor to manage potential environmental issues associated with the temporary piling rig/crane platform. A list of potential impacts associated with the construction activities and a list of measures to mitigate the impacts is outlined below in Table 7. The mitigation measures in Table 7 will be considered by the nominated construction contractor during the development of the CEMP.

Table 7 Summary of impacts and mitigation measures related to temporary rig/crane platform for option 1 and option 2

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
Landscape character and visual amenity	**Construction** Works proposed within rural and conservation zoning that does not currently contain any development may result in decreased landscape character	• Materials and machinery will be stored in previously cleared areas, wherever possible • Clearing of mature landscape trees and marine plants will be avoided, wherever possible, within temporary construction laydown areas not required for operation • Where appropriate, trail will be designed around mature landscape trees • Temporary barriers and traffic management signage will be removed as soon as practical after construction	✓
Surface hydrology	**Construction** Changes in water quality resulting from overland flow and stormwater run-off from exposes surfaces Pollution resulting from chemical or fuel sources	• Water quality during construction will be managed through a Water Quality Management Plan, which will include the following management measures: – Storing fuels, chemicals, wastes and other potentially environmentally hazardous substances in contained areas away from watercourses and managed through a Hazardous Substances Management Plan – Regular checks of vehicles and equipment for oil leaks – Development of a Waste Management Plan – Waterway profiles at temporary construction access roads and temporary construction facility areas will be reinstated and disturbed areas promptly stabilised following completion of construction works – Emergency spill response	✓
	Erosion and sedimentation from construction activities and vegetation clearing	• Erosion and sediment controls relevant to construction activities will be implemented and managed through the implementation of an ESCP • The extent and duration of soil exposure will be minimised as far as reasonably practicable • Water quality during construction will be managed through a Water Quality Management Plan	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
	Demolition of existing Old Mowbray Bridge piers and potential contamination of waterway with construction debris	• Contractor to undertake demolition works in accordance with environmental permits and approvals. • Contractor to create demolition methodology for removal of existing supports. Debris to be removed in manageable sizes for crane lifts • Erosion and sediment controls relevant to construction activities, particularly the Mowbray River bridge crossing, will be managed through the implementation of an ESCP	✓
	Impacts to local hydrology, drainage patterns and water quality of creeks and water bodies	• Maintain water quality and hydrological regime of the Project area • Comply with the requirements of Environment Protection (Water) Policy 2009 and catchment management plans prepared for local waterways	✓
Coastal processes	**Construction** Development within the Coastal Management District including tidal areas. **Operation** No impacts to coastal processes associated with operation of the SP1 Project.	• Maintaining coastal processes such as tidal flow and the flow of waterways through the inclusion of appropriately sized crossings • Avoiding reclamation in tidal areas. • Managing acid sulfate soils and coastal erosion through the development and implementation of an acid sulfate soils management plan • Developing and implementing sediment and erosion control plans for all cuts, fill and culverts in close proximity to or directly in a watercourse • Limiting the amount of temporary and permanent fill to be used in coastal management areas	✓
Groundwater	**Construction** Impacts to water quality may occur as a result of piling for bridge construction	• Contaminated groundwater will be captured and treated before release • Water quality during construction will be managed through a Water Quality Management Plan	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
Topography, geology and soils	**Construction** It is likely that the construction of the trail will result in some changes to the landscape that will potentially increase the risk of erosion, these include: • Clearing of vegetation • Construction of all SP1 infrastructure • Construction during high rainfall events	• The nominated design and construction contractor will responsible for developing an Erosion and Sediment Control Plan (ESCP) during the construction phase of SP1 in accordance with the Best Practice Erosion and Sediment Control Manual (IECA, 2008). • The ESCP will include mitigation measures such as: • No go areas to be marked with flagging tape to ensure that all work activities remain within the designated work site and areas of vegetation to be retained to be clearly marker to mitigate the risk of accidental clearing • Installation of sediment fencing along the downslope extent of works, particularly at bridge crossings and around the Mowbray River • Minimisation of construction footprint through staged clearing activities and utilisation of cleared or modified areas where possible • Stockpiling is to be located above tidal extents	✓
	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.	• The Construction Contractor will develop an Acid Sulfate Soil Management Plan as part of the Construction Environmental Management Plan (CEMP), in line with the *Queensland acid sulfate soils technical manual: soil management guidelines.*	✓
Terrestrial ecology	**Construction** Construction activities resulting in the removal of vegetation, including	• Design of the SP1 alignment has minimised the disturbance of TEC and marine pants, wherever possible	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
	areas of TEC, RE and marine plants.		
	Direst loss and disturbance of marine plants	• Development of offset strategy for marine plants	✓
	Construction activities may impact flora and fauna biodiversity in the area	• Minimisation of construction footprint through staged clearing activities and utilisation of cleared or modified areas where possible	✓
	Introduction or increase of invasive species as a result of construction related disturbance, transportation of seed material and additional waste	• Implement a vehicle wash down area during the construction of the trail to ensure that vehicles are cleaned of all potential weeds • CEMP to include measures to reduce introduction of weeds and pest • Trail construction will avoid disruption of forest canopy wherever possible to avoid additional sunlight that can promote weed growth on forest floor • General waste will be securely disposed of in provided bins	✓
	Development within Ecologically Significant Areas	• Design shall minimise encroachment into significant vegetation through the inclusion of exclusion zones along the alignment for areas of high ecological value. • Appropriate provision will be made for fauna passage and continuation of watercourses and overland flow paths • Environmental quality will be preserved through the inclusion of management requirements into the contract documentation for acid sulfate and contaminated soils	✓
	Injury or loss of native flora and fauna	• CEMP to include measures to reduce impacts on flora and fauna and maintain remaining vegetation through: • Nomination of no go zones	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
		• Fauna spotter/ catcher onsite during clearing • Retain habitat trees (e.g. trees with hollows) wherever practical • Traffic management	
	Weed infestation from trail users tracking in weed material on shoes, bikes and equipment	• Development of a weed and pest species management plan to mitigation spread of invasive species by trail users • Signage to encourage trail users to clean clothing, shoes and equipment before entering trail • Providing boot wash facility at both ends of the trail to ensure users do not track pest weeds onto the trail • Signage to discourage trail users from picking or carrying flowers or plants from one area to another	✓
	Food and water waste leading to increased pest activities	• Signage to encourage trail users to dispose of waste prior to entering trail, as well as providing bins at both ends of the trail	✓
	Trampling of plants as a result of trail users walking off track	• Providing guidelines to trail users around clearly walking on the trail	✓
	Interference of local wildlife by domestic animals	• Providing guidelines to trail users around not allowing domestic animals along the trail • Signage around awareness of protected species	✓
	Dangerous Fauna (Cassowary) inhabit the SP1 Project area. Animal interactions may result in injury/fatality from dangerous fauna	• To minimise the risks to public safety during this period, local education and community engagement will be used • Warning signage to notify trail users	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
Aquatic Ecology	**Construction** Introduction of additional sediment and materials to aquatic environment	• Water quality during construction will be managed through a Water Quality Management Plan • Storing fuels, chemicals, wastes and other potentially environmentally hazardous substances in contained areas away from watercourses and managed through a Hazardous Substances Management Plan • Regular checks of vehicles and equipment for oil leaks • Development of a Waste Management Plan • Waterway profiles at temporary construction access roads and temporary construction facility areas will be reinstated and disturbed areas promptly stabilised following completion of construction works • Emergency spill response • Appropriate permits and/or licences will be obtained for all water required during construction	✓
	Removal, destruction or damage of marine plants from construction activities	• Clearing of marine plants will be avoided, where possible, within temporary construction laydown areas not required for operation • No go areas to be marked with flagging tape to ensure that all work activities remain within the designated work site and areas of vegetation to be retained to be clearly marked to mitigate the risk of accidental clearing	✓
	Direst loss and disturbance of marine plants	• Development of offset strategy	✓
	Dangerous Fauna (Crocodiles) inhabit the SP1 Project area. Falls into water or any entry to the water could result in	• Contractor to implement JSEA safe work method statement	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
	injury/fatality from dangerous fauna		
	Injury or loss of native flora and fauna	CEMP to include measures to reduce impacts on flora and fauna and maintain remaining vegetation through: • Nomination of no go zones • Fauna spotter/ catcher onsite during clearing • Retain habitat trees (e.g. trees with hollows) wherever practical • Traffic management	✓
Air quality	**Construction** Generation of dust associated with machinery movement and construction of the SP1 alignment Generation of exhaust emissions associated with machinery and vehicles	• Implementation of dust suppression methods such as watering down of areas and mulching of cleared vegetation to use as ground cover • Avoidance or minimisation of dust generation during severe weather conditions i.e. minimising dust generation during periods of intense wind • Selection of machinery to be fit-for-purpose and low emission, wherever possible	✓
Noise and vibration	**Construction** Additional noise and vibration may negatively impact immediate and surrounding areas	• Impacts will be mitigated through a Construction EMP developed by the Construction Contractor • SP1 will abide by environmental impact best practice guidelines by using low impact construction methods • Prior and during the construction phase of SP1, provision of information to nearby residents regarding construction activities and timing should be undertaken, alongside information on who to contact if issues arise. • Construction activities will only occur during daytime hours, with no night time works proposed	✓
Waste	**Construction**	• Development of a Waste Management Plan	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
	Construction of the SP1 alignment may result in the introduction of waste material from construction workers	• Storing fuels, chemicals, wastes and other potentially environmentally hazardous substances in contained areas away from watercourses and managed through a Hazardous Substances Management Plan • General waste will be securely disposed of in provided bins	
Existing infrastructure	**Construction** Potential for earthworks to expose and damage existing buried services and plant collision with overhead services	• Contractor is to locate services on site prior to doing excavations and relocate services as required. Contractor to implement JSEA/SWMS for plant working near overhead utilities and use spotters as required	✓
	Mechanical excavation striking the fibre optic cable running through site	• Contractor to adhere to acceptable construction methods and times in accordance with environmental management plans	✓
	Damage to existing Road Bridge from construction activities within Mowbray River	• Contractor to implement JSEA safe work method statement. Contractor to implement access management plan for access to site of works	✓
Transport	**Construction** Increased traffic and road congestion as a result of workers and material deliveries	• Employ workers from within the local area and source materials locally, wherever possible • Appropriate scheduling of deliveries to reduce frequency • Construction traffic to use existing roads and/or gravel road surfaces wherever possible	✓
Greenhouse gasses	**Construction** Production of greenhouse gasses	• Selection of machinery to be fit-for-purpose and low emission, wherever possible	✓

Aspect	Impact	Mitigation Measure	Temporary structures within Mowbray River along the banks
	as a result of machinery use		
Social and economic environment	**Construction** SP1 has the potential to impact on native title	• SP1 will abide by environmental impact best practice guidelines to develop a project that is low impact • Where works are proposed in an area where native title exists, an indigenous land use agreement (ILUA) is likely to be required	✓
Cultural heritage	**Construction** Potential to find unrecorded cultural heritage	• CEMP to include procedure for discovery of unexpected cultural finds • Implementation of FIND-STOP-NOTIFY procedure	✓

4 Closing

We trust the above information is to DSC's and DSDMIP's satisfaction and welcome you to contact Sarah Wilson GHD on 07 5413 8133 or Sarah.Wilson@ghd.com should you have any queries in relation to this matter. On behalf of DITID, we thank you for your continued assistance on this project. Where it is possible to expedite development assessment timeframes, we ask that this occurs to ensure approvals are issued in a timely manner to enable construction to commence.

Attachment:

Figure 1 Map showing the alternative options considered for SP1

Figure 2 Marine Plant Disturbance

Figure 3 Locality SP1

Figure 4 Indicative location of the temporary rig/crane platform for option 1 and option 2

Assessment against State Code 8 for the temporary rig/crane platform for option 1 and option 2

Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Street/Local Road
- Cadastre

*The final alignment selected for SP1 is not shown on this plan, only the alternate alignments.

Paper Size ISO A3

0 30 60 90 120

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

DITID
Environment Assessment Stage 2 Wangetti Trail

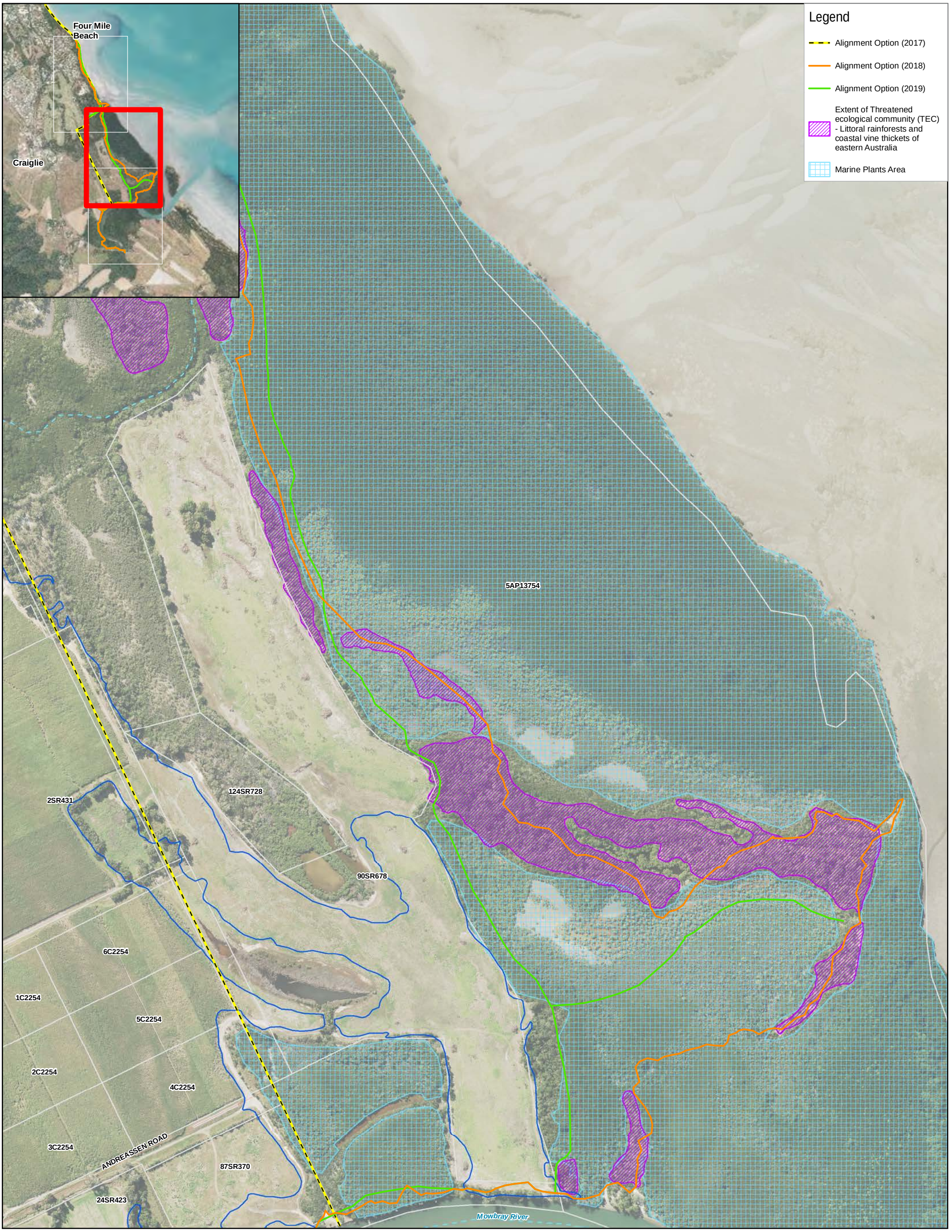
Marine Plant Disturbance - Alignment Options

Project No. 41-32458
Revision No. 0
Date 31/10/2019

FIGURE 1
Sheet 1 of 3

Data source: World Trail: Wangetti Trail Alignment (2017); DITID and GHD: Wangetti Trail Alignment (2018), (06/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_041_WT_SP1_MarinePlantsDisturbanceAlignmentOptions_Rev0.mxd
Print date: 31 Oct 2019 - 12:02



Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Street/Local Road
- Cadastre

*The final alignment selected for SP1 is not shown on this plan, only the alternate alignments.

Paper Size ISO A3

0 30 60 90 120

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

DITID
Environment Assessment Stage 2 Wangetti Trail

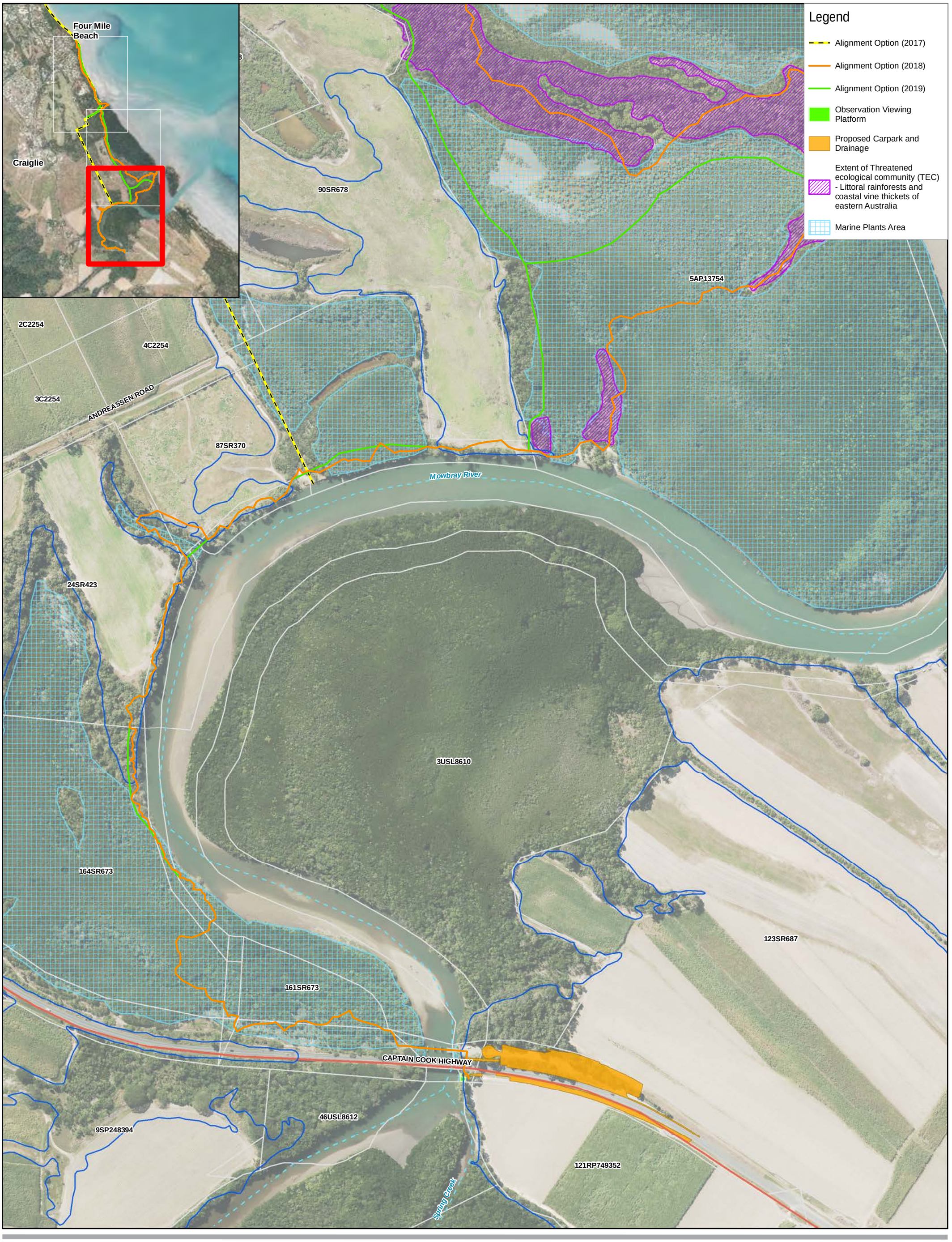
Marine Plant Disturbance - Alignment Options

Project No.	41-32458
Revision No.	0
Date	31/10/2019

FIGURE 1
Sheet 2 of 3

Data source: World Trail: Wangetti Trail Alignment (2017); DITID and GHD: Wangetti Trail Alignment (2018), (06/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_041_WT_SP1_MarinePlantsDisturbanceAlignmentOptions_Rev0.mxd
Print date: 31 Oct 2019 - 12:04



DITID
Environment Assessment Stage 2 Wangetti Trail

Marine Plant Disturbance - Alignment Options

Project No. 41-32458
Revision No. 0
Date 31/10/2019

FIGURE 1
Sheet 3 of 3

Data source: World Trail: Wangetti Trail Alignment (2017); DITID and GHD: Wangetti Trail Alignment (2018), (06/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_041_WT_SP1_MarinePlantsDisturbanceAlignmentOptions_Rev0.mxd
Print date: 31 Oct 2019 - 12:04

Four Mile Beach

Craiglie

13SP256619

6619

NAUTILUS STREET

16C22514

17C22514

50RP726589

51RP726589

131SR529

8RP726590

REEF STREET

9RP726590

7RP726590

10RP726590

11RP726590

5RP726590

25RP726590

26RP726590

13RP726590

24RP726590

TROCHUS CLOSE

14RP726590

23RP726590

27RP726590

15RP726590

22RP726590

28RP726590

0BUP100420

ESPLANADE

0BUP102768

40RP726590

20RP726590

30RP726590

41RP726590

31RP726590

19RP726590

LIMPET AVENUE

42RP726590

32RP726590

43RP726590

35RP726590

44RP726590

163SP189708

164SP189708

0SP189708

165SP189708

46RP726590

166SP189708

167SP189708

47RP726590

168SP189708

0SP199687

00000SP189708

169SP189708

00000SP189708

0SP189708

170SP189708

Legend

Wangetti Trail Alignment

- Trail
- Gully Crossing
- Extent of Threatened ecological community (TEC) - Littoral rainforests and coastal vine thickets of eastern Australia

Legend

- Highest Astronomical Tide (HAT)
- Street/Local Road
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

DITID
Environment Assessment Stage 2 Wangetti Trail

Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 1 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:14

Four Mile Beach

Craiglie

SAGIBA AVENUE

MARTIN SCULLEITT DRIVE

6C2253

1C2253

2C2253

11SP204465

12CP846979

12CP846979

804C2253

803C2253

3SP155084

2SP155084

0SP155084

0SP155084

Legend

Wangetti Trail Alignment

- Trail
- Gully Crossing
- Extent of Threatened ecological community (TEC) - Littoral rainforests and coastal vine thickets of eastern Australia
- Marine Plants Area

Legend

- Highest Astronomical Tide (HAT)
- Street/Local Road
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

DITID
Environment Assessment Stage 2 Wangetti Trail

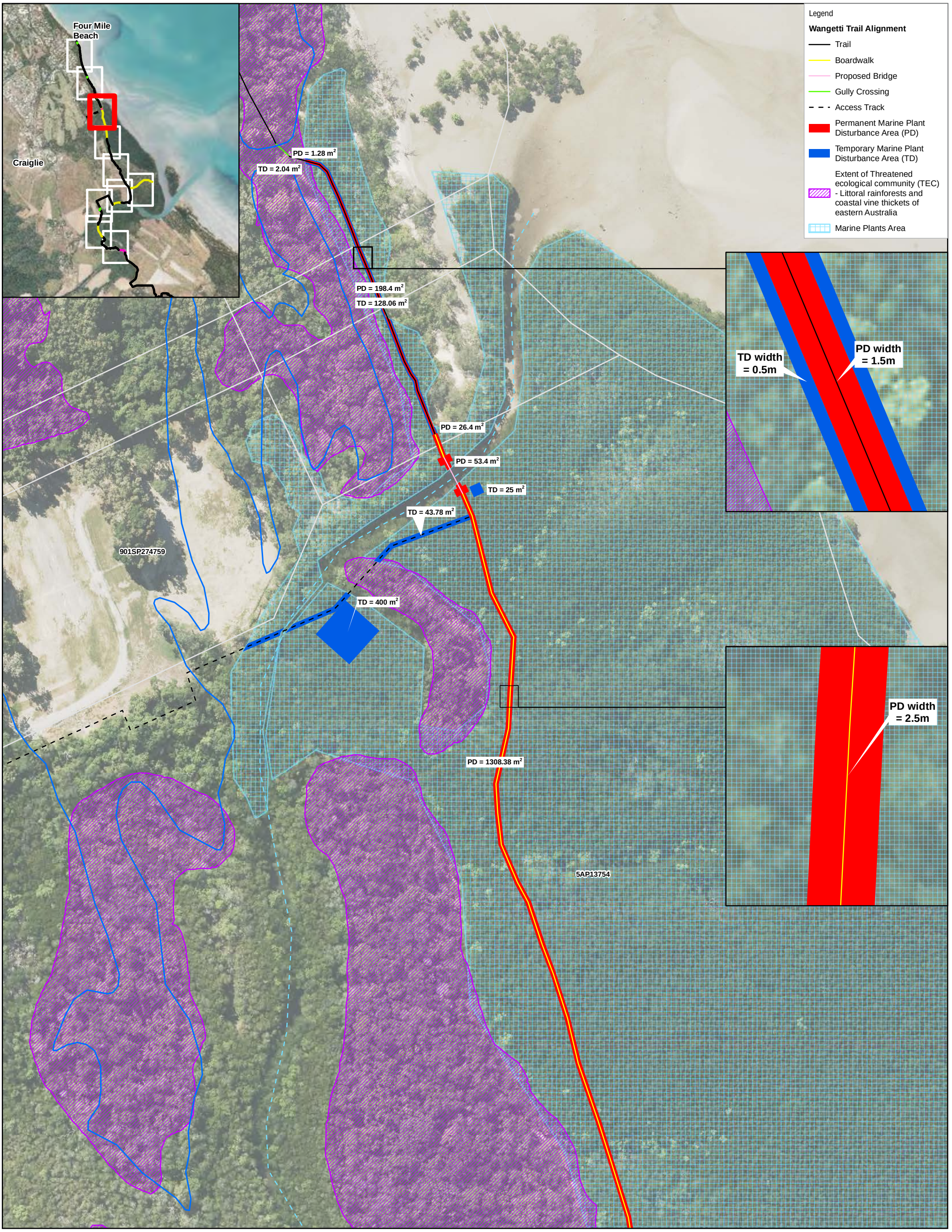
Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 2 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:15



Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

DITID
Environment Assessment Stage 2 Wangetti Trail

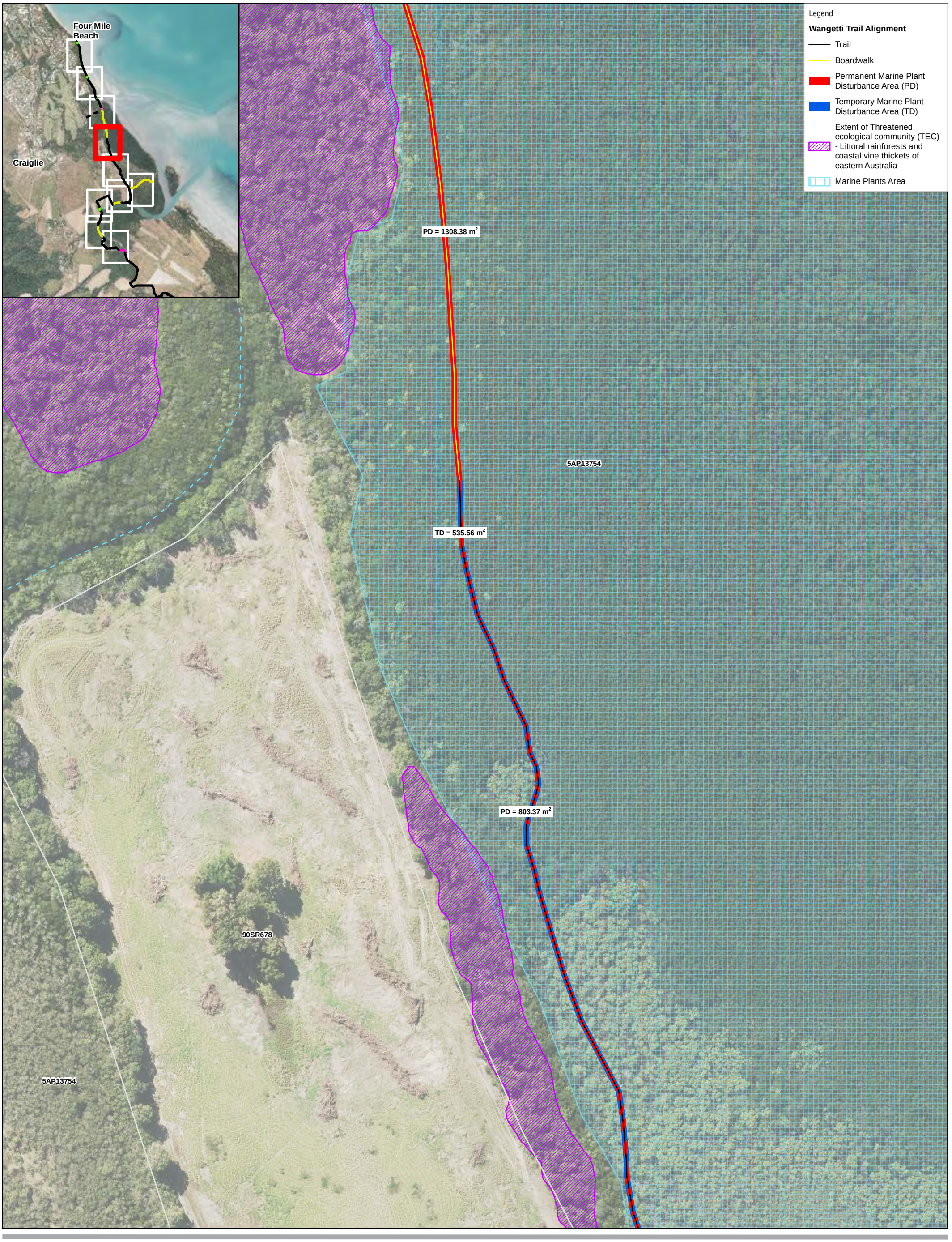
Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 3 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 13:06



Legend

- Minor Watercourse
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

DITID
Environment Assessment Stage 2 Wangetti Trail

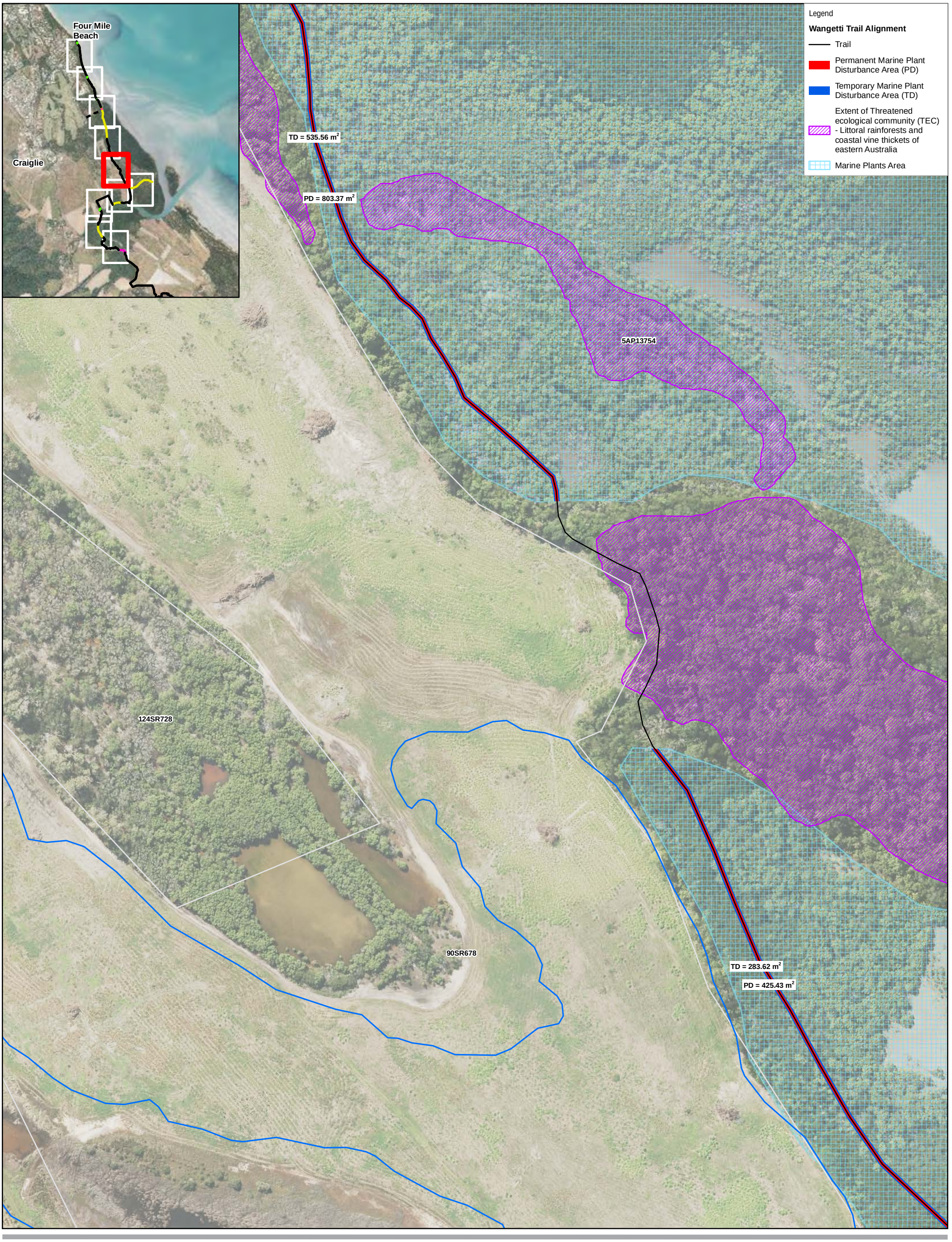
Marine Plant Disturbance

Project No.	41-32458
Revision No.	2
Date	31/10/2019

FIGURE 2
Sheet 4 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019), Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:17



Legend

Highest Astronomical Tide (HAT)

Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

DITID
Environment Assessment Stage 2 Wangetti Trail

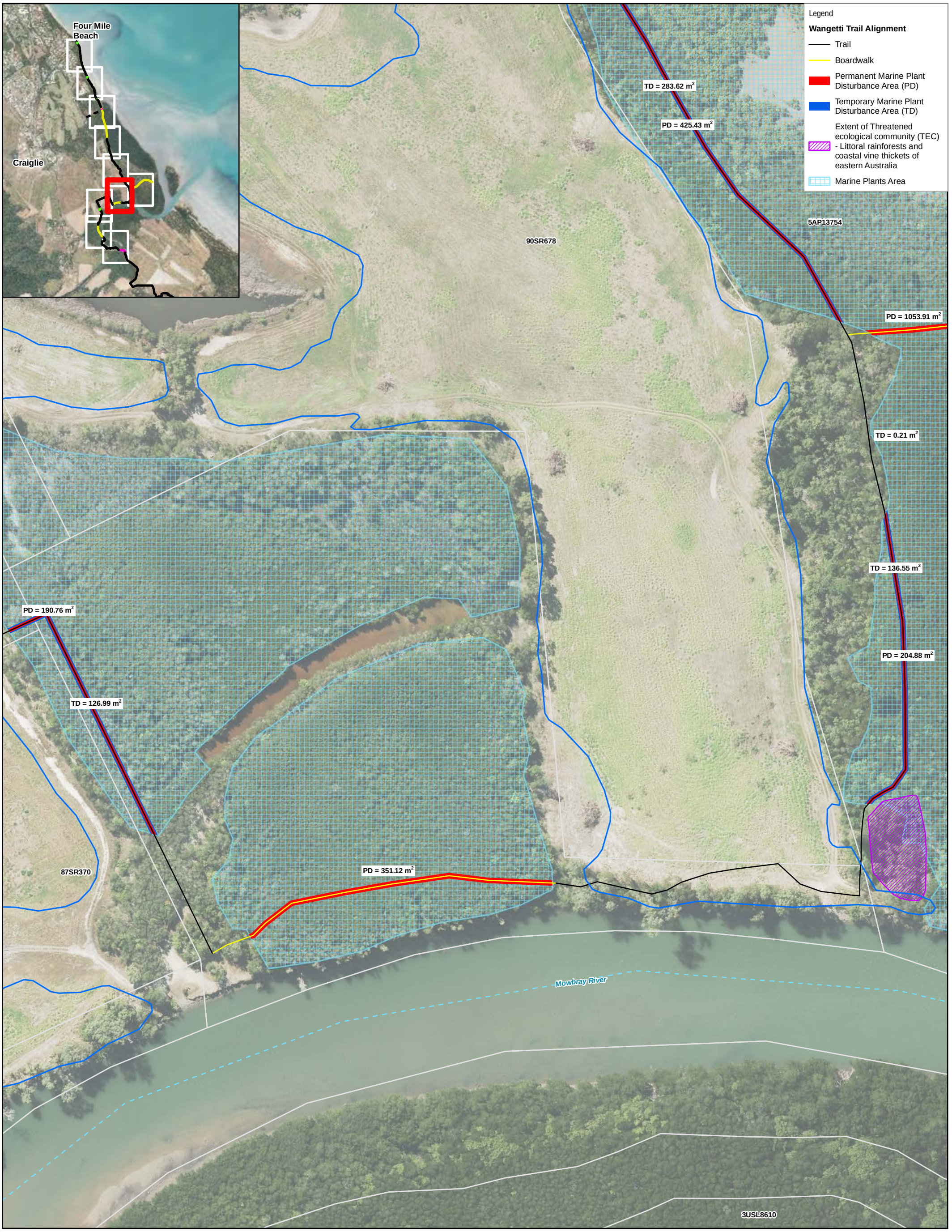
Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 5 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019), Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:18



Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Street/Local Road
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

DITID
Environment Assessment Stage 2 Wangetti Trail

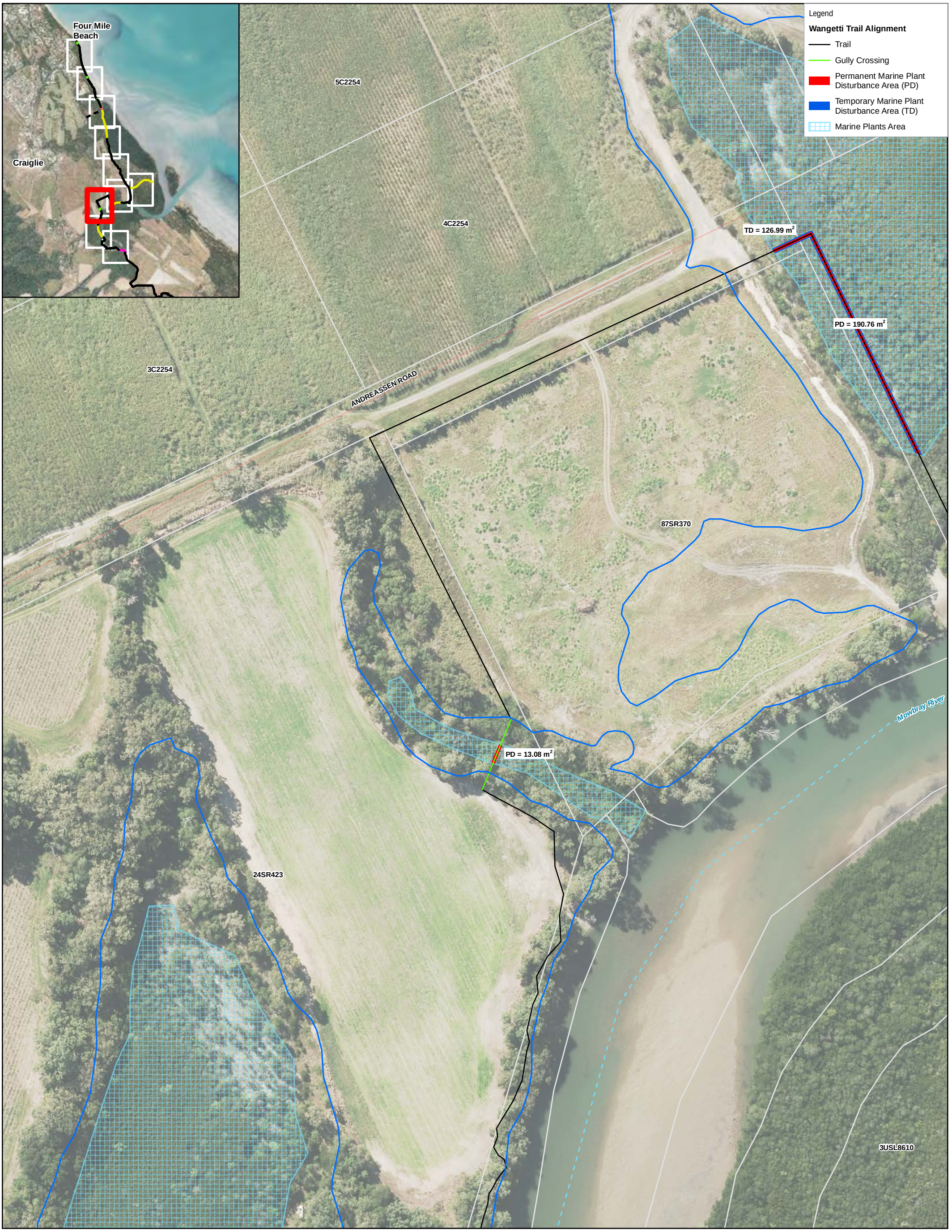
Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 7 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:19



Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Street/Local Road
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

DITID
Environment Assessment Stage 2 Wangetti Trail

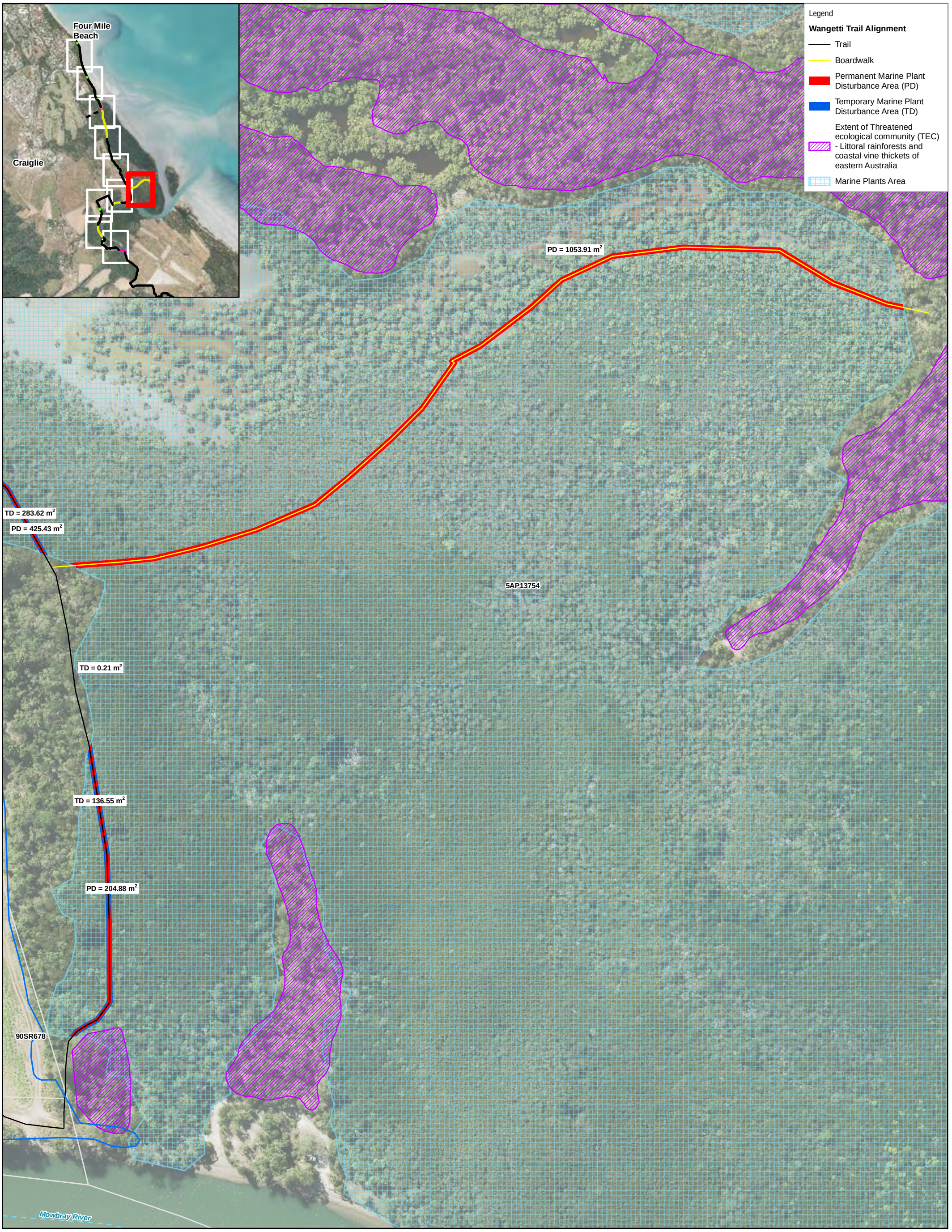
Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 8 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019), Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:21



Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

DITID
Environment Assessment Stage 2 Wangetti Trail

Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 6 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:22

Legend

Wangetti Trail Alignment

- Trail
- Boardwalk
- Permanent Marine Plant Disturbance Area (PD)
- Temporary Marine Plant Disturbance Area (TD)
- Marine Plants Area

Four Mile Beach

Craiglie

24SR423

3USL8610

PD = 3.51 m^2

164SR673

PD = 240.57 m^2

Mowbray River

TD = 581.16 m^2

161SR673

PD = 874.79 m^2

11USL8612

CAPTAIN COOK HIGHWAY

9SP248394

Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Highway
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

DITID
Environment Assessment Stage 2 Wangetti Trail

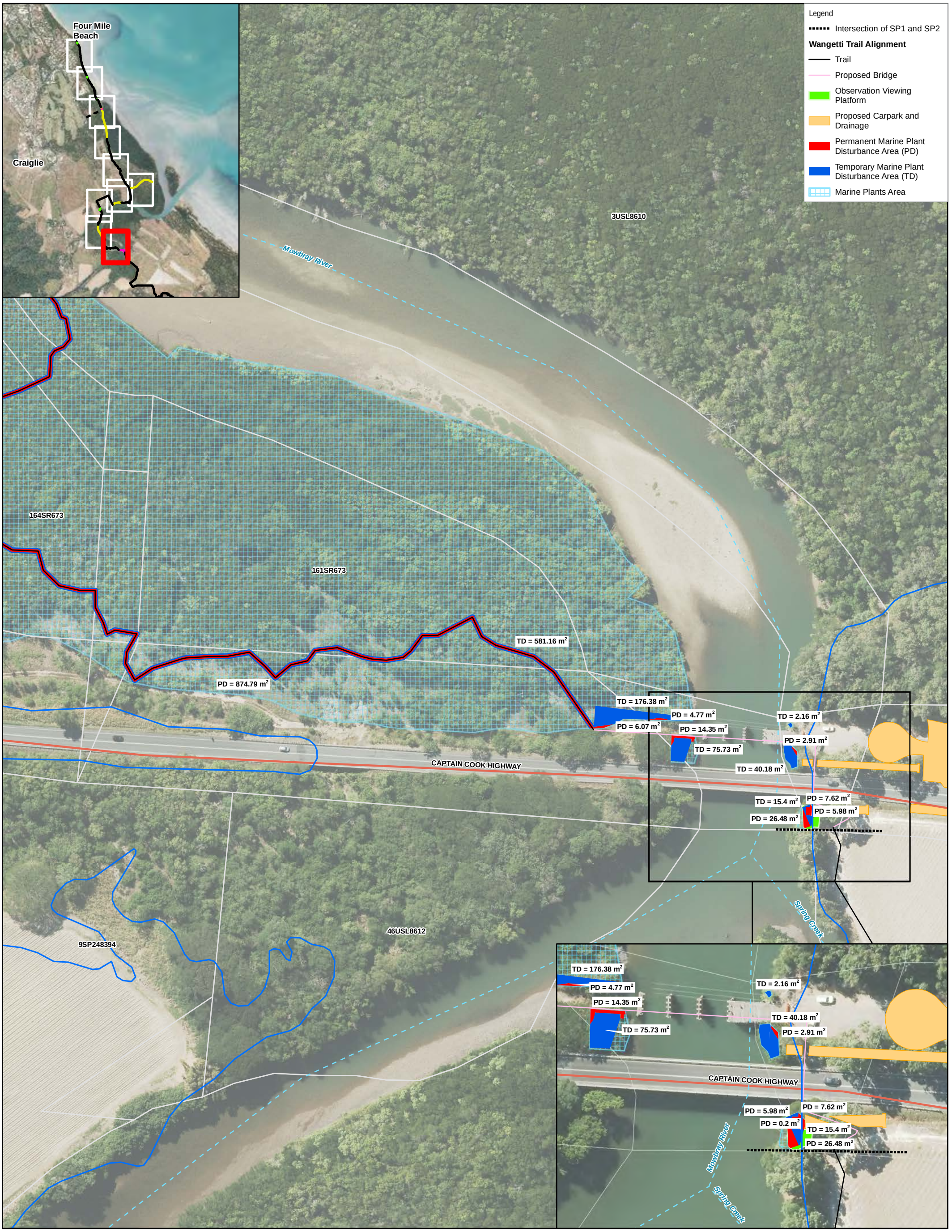
Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 9 of 10

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Termporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:23



Legend

- Minor Watercourse
- Highest Astronomical Tide (HAT)
- Highway
- Cadastre

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

DITID
Environment Assessment Stage 2 Wangetti Trail

Marine Plant Disturbance

Project No. 41-32458
Revision No. 2
Date 31/10/2019

FIGURE 2
Sheet 10 of 10

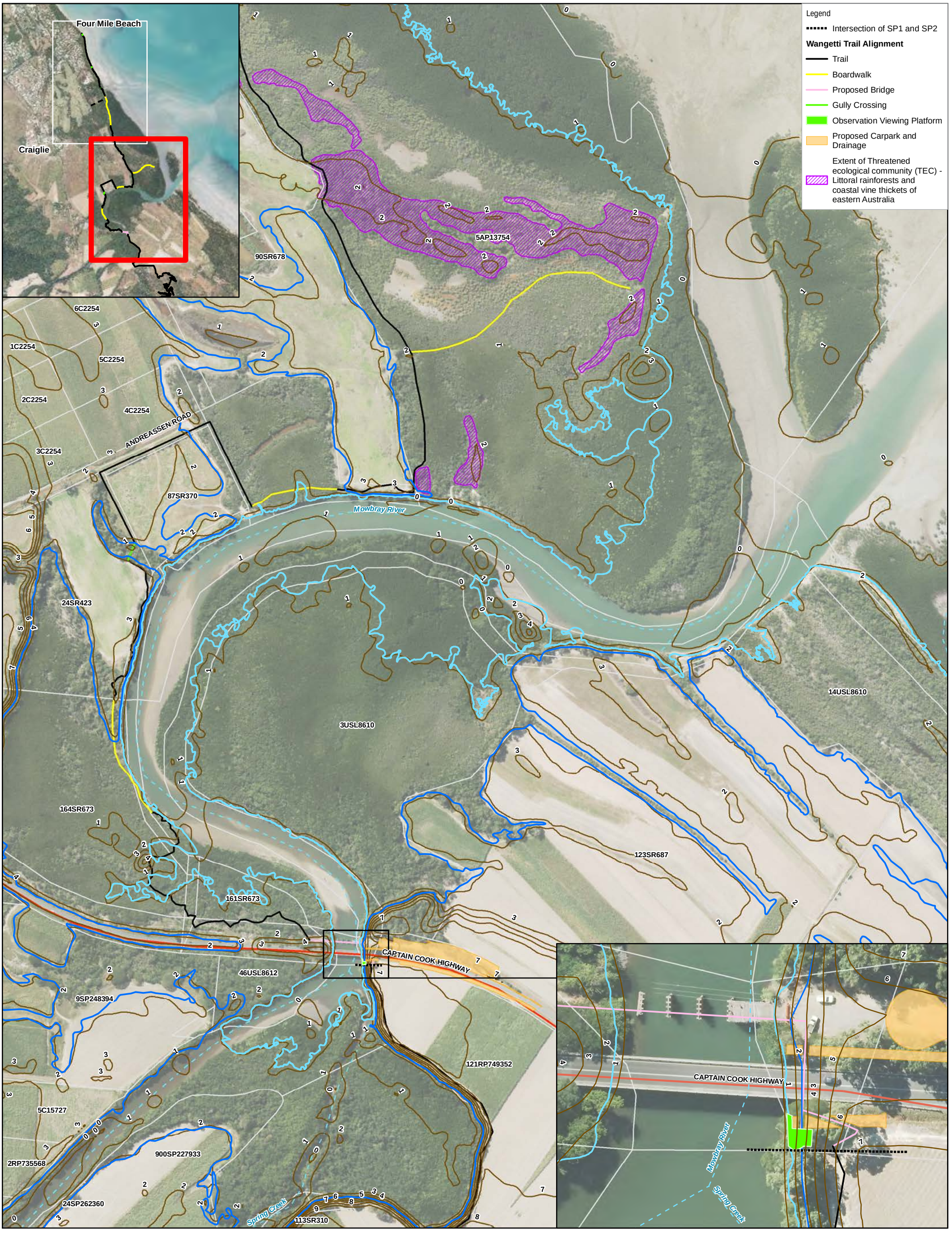
G:\41\32458\GIS\Maps\MXD\4132458_035_WT_SP1_OW_MarinePlantDisturbance_MultiPg_Rev2.mxd
Print date: 31 Oct 2019 - 12:54

Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Name Gazetteer (2019). Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (HAT) (2019); GHD: Proposed Carpark and Drainage (2019), Proposed observation viewing platform (2019), Permanent and Temporary Marine Plant Disturbance Areas (2019), Marine Plant Areas (2019), TEC (2019) . Created by: knoble

Four Mile Beach
Craiglie
Legend
Wangetti Trail Alignment
Trail
Boardwalk
Proposed Bridge
Gully Crossing
Access Track
Extent of Threatened ecological community (TEC) - Littoral rainforests and coastal vine thickets of eastern Australia
131SR529
125SR730
6C2253
1C2253
12CP846979
2C2253
11SP204465
804C2253
0SP155084
803C2253
802C2253
901SP274759
20SP144728
5AP13754
90SR678
119SP276040
ESPLANADE
NAUTILUS STR
LIMPET AVENUE
SAGIBA AVENUE
MITRE STREET
MARTIN SCULLETT DRIVE
ROUNDABOUT
DOWNING STREET
BEOR STREET
MILMAN DRIVE
Legend
Minor Watercourse
Highest Astronomical Tide (HAT)
Mean High Water Springs (MHWS)
Contour 1m
Street/Local Road
Cadastre
Paper Size ISO A3
0 50 100 150 200
Metres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55
N
DITID
Environment Assessment Stage 2 Wangetti Trail
Locality SP1 - North
Project No. 41-32458
Revision No. 0
Date 31/10/2019
FIGURE 3
(sheet 1 of 2)

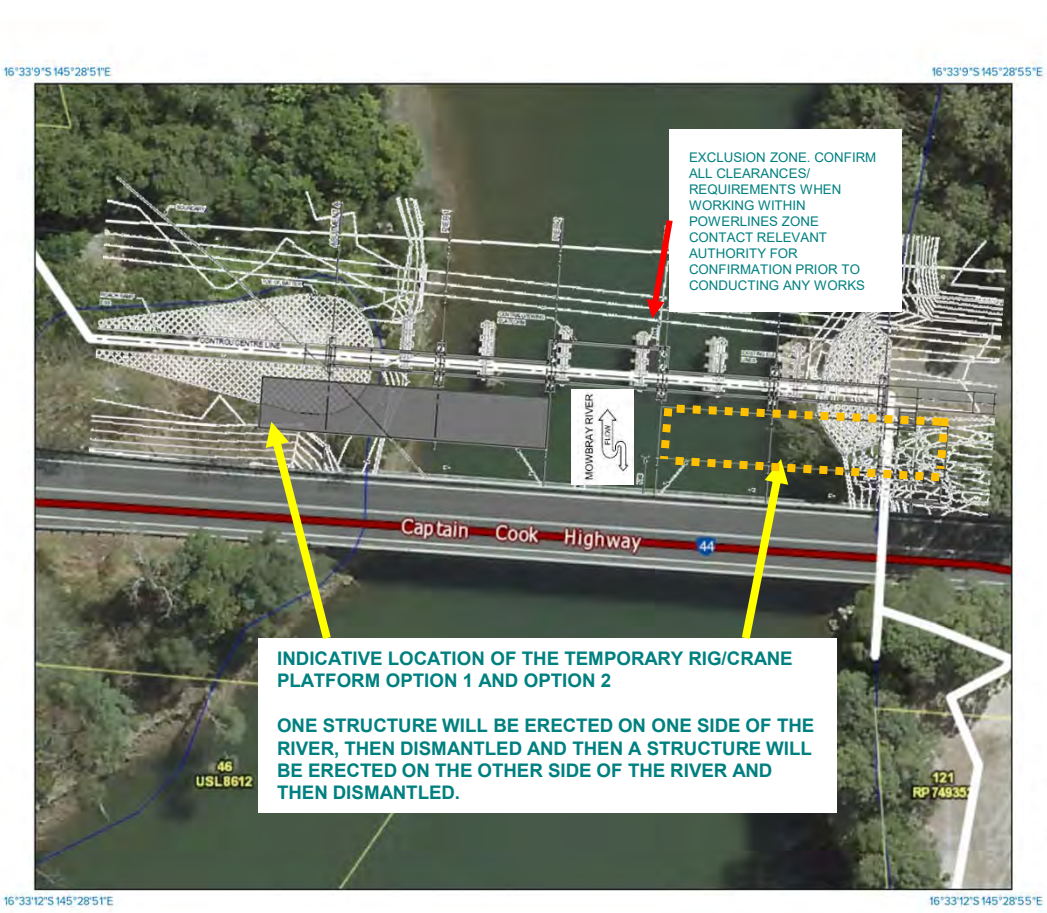
Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Names Gazetteer (2019), Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (2013); Qld Government/GHD: Mean High Water Springs (2019); GHD: Contours 1m (2019) Proposed Carpark (2019), Proposed observation viewing platform (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_037_WT_SP1_OW_TidalWorks_Locality_Rev2.mxd
Print date: 31 Oct 2019 - 12:31



Data source: DITID and GHD: Wangetti Trail Alignment (07/2019); DNRME: Place Names Gazetteer (2019), Cadastre (Jan 2019), Roads (2016), Watercourse (2014), Imagery (2015), Highest Astronomical Tide (2013); Qld Government/GHD: Mean High Water Springs (2019); GHD: Contours 1m (2019) Proposed Carpark (2019), Proposed observation viewing platform (2019), TEC (2019) . Created by: knoble

G:\41\32458\GIS\Maps\MXD\4132458_037_WT_SP1_OW_TidalWorks_Locality_Rev2.mxd
Print date: 31 Oct 2019 - 12:43



A product of Queensland Globe

Figure 4 Indicative location of the temporary rig/crane platform for option 1 and option 2

N

0 10 metres

Scale: 1:600

Printed at: A4
Print date: 31/10/2019
Datum: Geocentric Datum of Australia 1994
Projection: Web Mercator EPSG 102100

For more information, visit https://qldglobe.information.qld.gov.au/help-info/Contact-us.html

Queensland Government
Department of Natural Resources, Mines and Energy

Legend

Wangetti_Trail_Alignment_DITID_GHD_UPDA TED_20190815.zip - line

Highest astronomical tide

Land parcel

Parcel

Land parcel label

Road Crossing

Bridge

Tunnel

Road

Highway

Main

Local

Private

Railway

Attribution

State code 8: Coastal development and tidal works

Table 8.2.1: All development

Performance outcomes	Acceptable outcomes	Response
Development in the erosion prone area		
PO1 Development does not occur in the erosion prone area unless the development: 1. is one of the following types of development: **a.** coastal-dependent development; or **b.** temporary, readily relocatable or able to be abandoned; or **c.** essential community infrastructure; or **d.** redevelopment of an existing permanent building or structure that cannot be relocated or abandoned; and 2. cannot feasibly be located elsewhere.	No acceptable outcome is prescribed.	Complies with PO1. Option 1 and Option 2 of the temporary piling rig/crane platform will be located within an erosion prone area and option 1 and option 2 will be temporary structures that will be removed following the construction of the proposed permanent works within Mowbray River for the SP1 project. The appointed construction contractor will prepare an Erosion and Sediment Control Plan in accordance with the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control. Option 1 and Option 2 of the temporary piling rig/crane platform will be designed, implemented and removed in accordance with the requirements for temporary structures within a tidal waterway as outlined in Section 7 and Section 4.3 of the DAF accepted development requirements for operational work that is constructing or raising waterway barrier works, 2018. The temporary platform will commence and finish within 180 calendar days.
PO2 Development other than coastal protection work: 1. avoids impacting on coastal processes; and 2. ensures that the protective function of landforms and vegetation is maintained. Note: In considering reconfiguring a lot applications, the state may require land in the erosion prone area to be surrendered to the State for coastal management purposes under the *Coastal Protection and Management Act 1995*.	No acceptable outcome is prescribed.	Complies within PO2. Option 1 and Option 2 of the temporary piling rig/crane platform will be designed to limit impact to the environment avoid changes to natural processes. Option 1 and option 2 will be temporary structures that will be removed following the construction of the proposed permanent works within Mowbray River for the SP1 project. The appointed construction contractor will prepare an Erosion and Sediment

Performance outcomes	Acceptable outcomes	Response
Where the planning chief executive receives a copy of a land surrender requirement under the *Coastal Protection and Management Act 1995*, this must be considered in assessing the application.		Control Plan in accordance with the IECA Best Practice Erosion and Sediment Control. Option 1 and Option 2 of the temporary piling rig/crane platform will be designed, implemented and removed in accordance with the requirements for temporary structures within a tidal waterway as outlined in Section 7 and Section 4.3 of the DAF accepted development requirements for operational work that is constructing or raising waterway barrier works, 2018. The temporary platform will commence and finish within 180 calendar days.
PO3 Development is located, designed and constructed to minimise the impacts from coastal erosion by: 1. locating the development as far landward as practicable; or 2. where it is demonstrated that 1 is not feasible, mitigate or otherwise accommodate the risks posed by coastal erosion.	No acceptable outcome is prescribed.	Complies with PO3 Option 1 and Option 2 of the temporary piling rig/crane platform will be erected on the northern side of the existing Captain Cook Highway bridge between the existing redundant piers to allow for the construction of the new bridge within Mowbray River. The location has been selected as close as possible to the work area to avoid impacting on existing overhead powerlines and the existing Captain Cook Highway bridge. Furthermore, the temporary platforms are proposed in previously disturbed area on the banks of Mowbray River. The appointed construction contractor will prepare an Erosion and Sediment Control Plan in accordance with the IECA Best Practice Erosion and Sediment Control. Option 1 and Option 2 of the temporary piling rig/crane platform will be designed, implemented and removed in accordance with the requirements for temporary structures within a tidal waterway as outlined in Section 7 and Section 4.3 of the DAF accepted development requirements for operational work that is constructing or raising waterway barrier

Performance outcomes	Acceptable outcomes	Response
		works, 2018. The temporary platform will commence and finish within 180 calendar days.
PO4 Development does not significantly increase the risk or impacts to people and property from coastal erosion.	No acceptable outcome is prescribed.	Complies with PO4 Option 1 and Option 2 of the temporary piling rig/crane platform are proposed to be erected on the northern side of the existing Captain Cook Highway bridge and on the southern side of the existing redundant piers to allow for the construction of the new bridge within Mowbray River. The location has been selected as close as possible to the work area to avoid impacting on existing overhead powerlines and the existing Captain Cook Highway bridge. Tidal water will continue to flow through the main channel of the Mowbray River during the construction works as the temporary platform will only be constructed on one side, then dismantled and constructed on the other side and then dismantled. Due to the temporary nature of option 1 and option 2 the works are not considered to be increase the risk or impacts to people of properties.
PO5 Development other than coastal protection work avoids directly or indirectly increasing the severity of coastal erosion either on or off the site.	No acceptable outcome is prescribed.	Complies with PO5 The proposed temporary platform option 1 and option 2 are not considered to directly or indirectly increase the severity of coastal erosion. The proposed works are minor and temporary in nature and where works are proposed, erosion and sediment control measures will be implemented. The location has been selected as close as possible to the work area to avoid impacting on existing overhead powerlines and the existing Captain Cook Highway bridge. Tidal water will continue to flow through the main channel of the Mowbray River during the construction works as the temporary platform will only be constructed on one side, then dismantled and constructed on the other side and then dismantled.

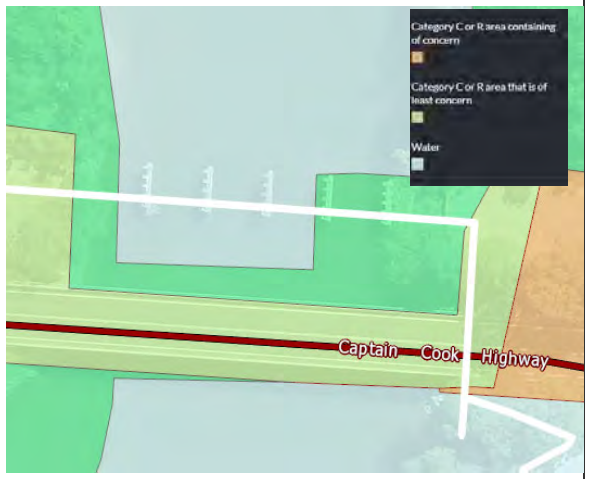
Performance outcomes	Acceptable outcomes	Response
PO6 In areas where a coastal building line is present, building work is located landward of the coastal building line unless coastal protection work has been constructed to protect the development.	No acceptable outcome is prescribed.	Not applicable. The works are not proposed in an area where a coastal building line is present.
Artificial waterways		
PO7 Development of artificial waterways, canals and dry-land marinas minimises impacts on coastal resources by: 1. maintaining the tidal prism volume of the natural waterway to which it is connected 2. demonstrating a whole-of-life strategy for the disposal of dredged material.	No acceptable outcome is prescribed.	Not applicable. No artificial waterway area proposed.
Coastal protection work		
PO8 Works for beach nourishment minimise adverse impacts on coastal processes and avoid any increase in the severity of erosion on adjacent land by: 1. sourcing sand from an area that does not adversely impact on the active beach system 2. ensuring imported sand is compatible with natural beach sediments and coastal processes of the receiving beach.	No acceptable outcome is prescribed.	Not applicable
PO9 Erosion control structures are only constructed where there is an imminent threat to buildings or infrastructure of value, and there is no feasible option for either: 1. beach nourishment; or 2. relocation or abandonment of structures. Note: The monetary value of buildings or infrastructure should be more than the cost of associated erosion control structures.	No acceptable outcome is prescribed.	Complies with PO9 Erosion control structures are not proposed as part of SP1 project, other than grouted rock pitching protection and retaining wall along the banks of the Mowbray River and temporary erosion and sediment control measures to be implemented during the construction phase along the Mowbray River. The location of the temporary platform option 1 and option 2 have been selected as close as possible to the work area to avoid impacting on existing overhead powerlines and the existing Captain Cook Highway bridge. Tidal water will continue to flow through the main channel of the Mowbray River during the construction works as the temporary platform will only be constructed on one side, then dismantled and constructed on the other side and then dismantled.

Performance outcomes	Acceptable outcomes	Response
PO10 Erosion control structures minimise interference with coastal processes, or any increase to the severity of erosion on adjacent land by: 1. locating the erosion control structure as far landward as practicable and directly adjacent to the structure it is intended to protect 2. where required and feasible, importing sand to the site to mitigate any increase in the severity of erosion 3. the design of the structure.	No acceptable outcome is prescribed.	Complies with PO9 Erosion control structures are not proposed as part of SP1 Project, other than grouted rock pitching protection and retaining wall along the banks of the Mowbray River and temporary erosion and sediment control measures to be implemented during the construction phase along the Mowbray River.
Water quality		
PO11 Development: 1. maintains or enhances environmental values of receiving waters 2. achieves the water quality objectives of Queensland waters 3. avoids the release of prescribed water contaminants to tidal waters. Note: See Environmental Protection (Water) Policy 2009 for the relevant water quality objectives.	No acceptable outcome is prescribed.	Complies with PO11 Mitigation measures to address water quality for the project area discussed in Section 3.8 of the planning report for operational works application – prescribed tidal works and works within a coastal management district July 2019 and include: Water quality during construction will be managed through a Water Quality Management Plan, which will include the following management measures: • Storing fuels, chemicals, wastes and other potentially environmentally hazardous substances in contained areas away from watercourses and managed through a Hazardous Substances Management Plan • Regular checks of vehicles and equipment for oil leaks • Development of a Waste Management Plan • Waterway profiles at temporary construction access roads and temporary construction facility areas will be reinstated and disturbed areas promptly stabilised following completion of construction works

Performance outcomes	Acceptable outcomes	Response
		• Emergency spill response Erosion and sediment controls relevant to construction activities will be implemented and managed through the implementation of an Erosion and Sediment Control Plan. The extent and duration of soil exposure will be minimised as far as reasonably practicable. Contractor to create demolition methodology for removal of existing supports. Debris to be removed in manageable sizes for crane lifts. Maintain water quality and hydrological regime of the Project area and comply with the requirements of Environment Protection (Water) Policy 2009 and catchment management plans prepared for local waterways. Maintaining coastal processes such as tidal flow and the flow of waterways through the inclusion of appropriately sized crossings and avoiding reclamation in tidal areas. Manage acid sulfate soils and coastal erosion through the development and implementation of an acid sulfate soils management plan. Develop and implement sediment and erosion control plans for all cuts, fill and culverts in close proximity to or directly in a watercourse. The nominated construction contractor will be responsible for adopting the mitigation measures to develop and implement a construction environmental management plan during the construction phase to ensure water quality objectives are maintained.

Performance outcomes	Acceptable outcomes	Response
		Development does not include release of prescribed water contaminants anywhere on site.
Category C and R areas of vegetation		
PO12 Development: 1. avoids impacts on category C areas of vegetation and category R areas of vegetation; or 2. minimises and mitigates impacts on category C areas of vegetation and category R areas of vegetation after demonstrating avoidance is not reasonably possible.	No acceptable outcome is prescribed.	Complies with PO12 Both option 1 and option 2 does not impact on area of category C or R on the western side of Mowbray River. Works proposed on the eastern side of the Mowbray River impact a small area of Category R. Vegetation clearing has been minimised within Category R areas and mitigation measures have been developed and are discussed in Section 3.8 of the planning report for operational works application – prescribed tidal works and works within a coastal management district July 2019.
Public use of and access to state coastal land		
PO13 Development maintains or enhances public use of and access to and along state coastal land (except where this is contrary to the protection of coastal resources or public safety).	No acceptable outcome is prescribed.	Complies with PO13. Option 1 and option 2 temporary structures are not considered to restrict public access to coastal land, as the nominated option will be dismantled following the construction of the proposed pedestrian bridge. Access along the Mowbray River by the public will be maintained as the temporary structures would only occupy one side of the river at any one time during the construction of the permanent structures.
PO14 Private marine development ensures that works: 1. are used for marine access purposes only 2. minimise the use of state coastal land 3. do not interfere with access between navigable waterways and adjacent properties.	No acceptable outcome is prescribed.	Not applicable.
PO15 Development ensures erosion control structures are located within the premises they are intended to protect unless there is no feasible alternative.	No acceptable outcome is prescribed.	Complies with PO15. Erosion control structures are not proposed as part of SP1 project, other than grouted rock pitching protection and retaining wall along the banks of the Mowbray River and temporary erosion control

Performance outcomes	Acceptable outcomes	Response
		structures proposed to be implemented during the construction phase.
Matters of state environmental significance		
PO16 Development: **1.** avoids impacts on matters of state environmental significance; or **2.** minimises and mitigates impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and **3.** provides an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development results in an acceptable significant residual impact on a matter of state environmental significance. Statutory note: (3) only applies to development on Brisbane core port land within the area identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the Brisbane Port LUP precinct plan. For the Brisbane Port LUP, see www.portbris.com.au. Note: Guidance for determining if the development will have a significant residual impact on the matter of state environmental significance is provided in the Significant Residual Impact Guideline, Department of State Development, Infrastructure and Planning, 2014. Where the significant residual impact is considered an acceptable impact on the matter of state environmental significance and an offset is considered appropriate, the offset should be delivered in accordance with the *Environmental Offsets Act 2004*.	No acceptable outcome is prescribed.	Option 1 and option 2 temporary structures are partial temporary barriers only and would only occupy less than 50% of the width of the Mowbray during the construction phase. This would allow continued water exchange and fish movement throughout construction works. The waterway will be restored to its existing condition immediately upon completion of the works. The SP1 project is exempt from triggering an operational work involving clearing native vegetation under Schedule 10, Part 3, Division 4, Table 1, Item 1, as the proposed works is considered to meet the definition of government supported transport infrastructure. 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. Schedule 5 of the Planning Regulation 2017 covers transport infrastructure, including transport infrastructure stated in schedule 2 of the Act, definition development infrastructure. Given that SP1 work involves developing infrastructure for pedestrian and cyclists is it considered to be a 'public cycleway'. Therefore, SP1 project is exempt from the clearing of

Performance outcomes	Acceptable outcomes	Response
		remnant Category B, Category C and Category R vegetation. Category R area impacted for SP1 Project area: • Area of Proposed Bridges (B38 and Mowbray) and Underpasses permanent disturbance 729.77 m^2 • Carpark and Mowbray River Bridge –Temporary disturbance 2517.07 m^2  As part of SP1 project, some clearing will be required to establish the alignment however it will be less than 10 m wide and does not result in exceeding the vegetation clearing thresholds as identified Queensland Environmental Offsets Policy -Significant Residual Impact Guideline. Furthermore, mitigation measures for vegetation clearing will be implemented as of the project and they are outlined in Section 3.8. No significant residual impact is anticipated.

Performance outcomes	Acceptable outcomes	Response
		Essential habitat and wildlife habitat areas mapped within the SP1 project area and they associated with the following fauna species: • Southern cassowary (southern • population) • Estuarine crocodile • Eastern curlew • Bar-tailed godwit • Lesser sand plover • Greater sand plover An ecological survey has been completed by ecologists for SP1 Project area and this is discussed further in Section 2 of the planning report for operational works application – prescribed tidal works and works within a coastal management district July 2019. Mitigation measures have been developed to manage potential impacts to fauna habitat and are discussed in Section 3.8 of the planning report for operational works application – prescribed tidal woks and works within a coastal management district July 2019. However, taking into consideration the low-impact nature of the proposed works together with the sub-optimal characteristics of the impacted habitat, no significant residual impact to the species within the area because of SP1 proposed works. SP1 permanent impact to essential habitat is 8,031 m^2. However, vegetation clearing not required

Performance outcomes	Acceptable outcomes	Response
		for the full extent of the area as the trail. The benefits of a single track trail is that it can wind around obstacles such as trees, large rocks, and bushes, it can blend into the surrounding environment, and disturbs much less ground, making it easier to maintain. As part of SP1 project, some clearing will be required to establish the alignment however it will be less than 10 m wide and does not result in exceeding the vegetation clearing thresholds as identified Queensland Environmental Offsets Policy -Significant Residual Impact Guideline. Furthermore, mitigation measures for vegetation clearing will be implemented as of the project and they are outlined in Section 3.8. No significant residual impact is anticipated. Marine Plants Marine plants are present within SP1 project area and they have been confirmed via ecological survey. SP1 project will require the permanent and temporary disturbance of marine plants and triggers referral to SARA for operational works for disturbance/ damage to marine plants. A marine plant report has been prepared and included in the development application package. DITID will address an offset for marine plant disturbance. Refer to the SP1 planning report for marine plants disturbance July 2019. Waterways SP1 project area intersects the following mapped Department of Agriculture and Fisheries (DAF) waterways: • Mowbray River is a tidal waterway. The proposed temporary structures described as option 1 and option 2 are not considered to adversely impact on the fish passage as the Mowbray River as the

Performance outcomes	Acceptable outcomes	Response
		structures will be designed in accordance with the Section 7 and Section 4.3 of the DAF accepted development requirements for operational work that is constructing or raising waterway barrier works, 2018. The proposed works are not considered to result in a significant residual impact for the following reasons: • The project will adopt a number of mitigation measures to reduce impact on water quality within wetland areas. • Erosion and sediment control measures will be implemented during the construction phase. • The proposed works will not impact on groundwater and no surface water will be taken doing the construction and operational phases. • An environmental management plan will be developed and implemented on site during the construction phase to manage flora and fauna pest species.

Table 8.2.2: All operational work

Performance outcomes	Acceptable outcomes	Response
Private marine development		
PO17 Private marine development does not require the construction of coastal protection work, shoreline or riverbank hardening or dredging for marine access purposes.	No acceptable outcome is prescribed.	Not applicable
Disposal of solid waste or dredged material from artificial waterways		

Performance outcomes	Acceptable outcomes	Response
PO18 Solid waste from land and dredged material from artificial waterways is not disposed of in tidal water unless it is for beneficial reuse.	No acceptable outcome is prescribed.	Not applicable
Disposal of dredged material other than from artificial waterways		
PO19 Dredged material is returned to tidal water where this is needed to maintain coastal processes and sediment volume.	No acceptable outcome is prescribed.	Not applicable
PO20 Where it is not needed to maintain coastal processes and sediment volume, the quantity of dredged material disposed to tidal water is minimised through beneficial reuse or disposal on land.	No acceptable outcome is prescribed.	Not applicable
All dredging and any disposal of dredged material in tidal water		
PO21 All dredging and any disposal of dredged material in tidal water is: 1. demonstrated to be safe with regard to protection of the marine environment and by meeting the National Assessment Guidelines for Dredging 2009, Department of Environment and Energy, 2009, or later version; and 2. supported by a monitoring and management plan that protects the marine environment and that complies with the National Assessment Guidelines for Dredging 2009, Department of Environment and Energy, 2009, or later version.	No acceptable outcome is prescribed.	Not applicable
Reclamation		
PO22 Development does not involve reclamation of land below tidal water, other than for the purposes of:	No acceptable outcome is prescribed.	Not applicable

Performance outcomes	Acceptable outcomes	Response
1. coastal-dependent development, public marine development or community infrastructure; or 2. strategic ports, priority ports, boat harbours or strategic airports and aviation facilities, in accordance with a statutory land use plan or master plan, where there is a demonstrated net benefit for the state or region and no feasible alternative exists; or 3. coastal protection work or work necessary to protect coastal resources or coastal processes.		

Table 8.2.3: Operational work which is not assessed by local government

Performance outcomes	Acceptable outcomes	Response
PO23 Works are located and designed such that they continue to operate safely during and following a defined storm tide event.	AO23.1 Tidal work is designed and located in accordance with the Guideline: Building and engineering standards for tidal works, Department of Environment and Heritage Protection, 2017.	Not applicable