

22 January 2026

Daniel Lamond
Douglas Shire Council
PO Box 723
Mossman QLD 4873

By email:
daniel.lamond@douglas.qld.gov.au

Dear Daniel

George Argyrou – Lot 5 RP 747684 – Information Request

Your ref: OP 2025_5862/1 (138049)

Our ref: 10421/HIC944-00001

We refer to the Council's Information Request dated 5 December 2025 in relation to the development application for operational works lodged on behalf of our client, George Argyrou, on 18 November 2025 and respond as follows.

1. Proposal Clarification (Item 1)

- 1.1 Guidance for the scope of the development application was taken from the Show Cause Notice issued by the Council on 22 November 2024. The Show Cause Notice states at paragraph 31 that the effect of the alleged development offences could be remedied by:
 - (b)carrying out necessary works to stabilise and revegetate the premises; and
 - (c) applying for any development permits necessary to carry out such works.
- 1.2 Accordingly, the development application has been framed as an application for earthworks and landscaping to remediate the land.
- 1.3 If the Council has determined that it is more appropriate to frame the application as a retrospective development permit for vegetation damage, please refer to the **enclosed** amended DA Form 1. However, we note that the material provided in the development application is more in line with landscaping and revegetation rather than vegetation damage (and that no other material is able to be provided that corresponds with 'vegetation damage').

2. Landscaping Plantings (Item 2)

- 2.1 **Enclosed** is a report prepared by Hortulus which includes a survey of the planting on the site.
- 2.2 The report confirms that the planting has been completed in accordance with the plans included in the development application save for some native species that were required to be substituted due to the availability of plants at the time planting occurred.
- 2.3 The report clarifies which landscaping plans were used for the planting and that they were discussed with Rebecca Taranto of the Council at a site meeting on 14 November 2024.
- 2.4 The plans were the subject of correspondence with Ms Rebecca Taranto of the Council and Hortulus as follows:

Cairns

Level 11, 15 Lake Street, Cairns Qld 4870
PO Box 5330, Cairns Qld 4870
t: +61 7 4256 0300 | f: +61 7 3016 5100 | www.sparkē.com.au
adelaide | brisbane | cairns | canberra | darwin | melbourne | newcastle | perth | sydney | upper hunter

- (a) On 17 December 2024 Mr Sullivan emailed Ms Taranto to respond to a request from Ms Taranto for a copy of the revegetation plan;
- (b) On 18 December 2024 Ms Taranto responded to Mr Sullivan and advised him that the landscaping documents had been sent to the nursery staff for their comment and that the most critical aspect of the landscaping design was for the species selected for planting to meet the Planning Scheme Policy on landscaping. The email advises that based on the site meeting that occurred, Ms Taranto believed that between Mr Sullivan and Ms Gould of GGI architects, that requirement would be met.

2.5 The relevant standards and requirements are outlined in the Hortulus report, being the Douglas Shire Planning Scheme with attention to SC6.6 Landscape Values, SC6.7 Landscaping, SC6.7.8.1 Plant Species Schedule and the Douglas Shire Council's Landscaping Code (Policy 4.6.3).

3. Erosion and Sediment Control (Item 3)

3.1 **Enclosed** is an RPEQ certified Erosion and Sediment Control Plan in accordance with IECA Best Practice Erosion and Sediment Control Document 2025 prepared by Copelin Civil.

4. Earthworks (Items 4 to 7)

4.1 We are unable to provide any written evidence pursuant to Item 4. However the matters the subject of this Item are sufficiently addressed by the response to Items 5 and 6.

4.2 In relation to Items 5 and 6, we **enclose** a slope stability assessment undertaken by Geo Design and a risk reassessment in accordance with AGS Guidelines.

4.3 In relation to Item 7, we **enclose** a detailed cut and fill plan displaying the final site geometry to date, completed by RPS Consulting.

Yours faithfully



Partner responsible:
Vanessa Maruna
e: Vanessa.Maruna@sparke.com.au

Contact:
Sangeetha Badya, Senior Associate
t: +61 7 3001 9206
e: Sangeetha.Badya@sparke.com.au



Civil Engineering & Consultancy

EROSION & SEDIMENT CONTROL PLAN



16 MURPHY STREET PORT DOUGLAS | EROSION AND SEDIMENT CONTROL PLAN

1 SCOPE

George Arygrou has engaged Copelin Civil to develop a CPESC-RPEQ certified Erosion and Sediment Control Plan (ESCP) for the works at 16 Murphy Street, Port Douglas. This project involves clearing and grubbing, earthworks, and landscaping necessitating a detailed and compliant ESCP to manage and mitigate potential environmental impacts. The plan addresses both immediate and long-term measures to ensure the site remains stable and environmentally responsible throughout the development process.

1.1 GUIDELINES

This ESCP has been prepared in accordance with the following documents:

- Best Practice Erosion and Sediment Control (IECA, 2008)

1.2 CERTIFICATION

I, Leo Copelin, certify that this Erosion and Sediment Control Plan (16 Murphy Street, Port Douglas) has been developed in accordance with the IECA (2008) Best Practice Erosion and Sediment Control Guidelines. Adhering to this plan will assist the client fulfill their environmental responsibilities as outlined in the Environmental Protection Act (1994) – s440zg, and the Environmental Protection (Water) Policy (2009).

Signature

Leo Copelin

Name

9 January 2026

Date

LEO COPELIN

RPEQ 25992 | CPESC 16381



Civil Engineer (Civil Eng), Member of the Institute of Engineers Australia (MIEAust), Chartered Professional Engineer (CPEng), Registered Professional Engineer Queensland (RPEQ), National Engineering Register (NER), Certified Professional in Erosion and Sediment Control (CPESC)

Copelin Civil

E. leo@copelincivil.com.au P. 0473 667 228

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ABN: 15 673 741 234



1.3 REVISION

VERSION	Date	AUTHOR	APPROVED
1	9/01/2026	Leo Copelin	Leo Copelin

2 PROJECT DESCRIPTION

2.1 LOCATION

The project is located at 16 Murphy Street, Port Douglas.

The site location is shown below in Figure 1.

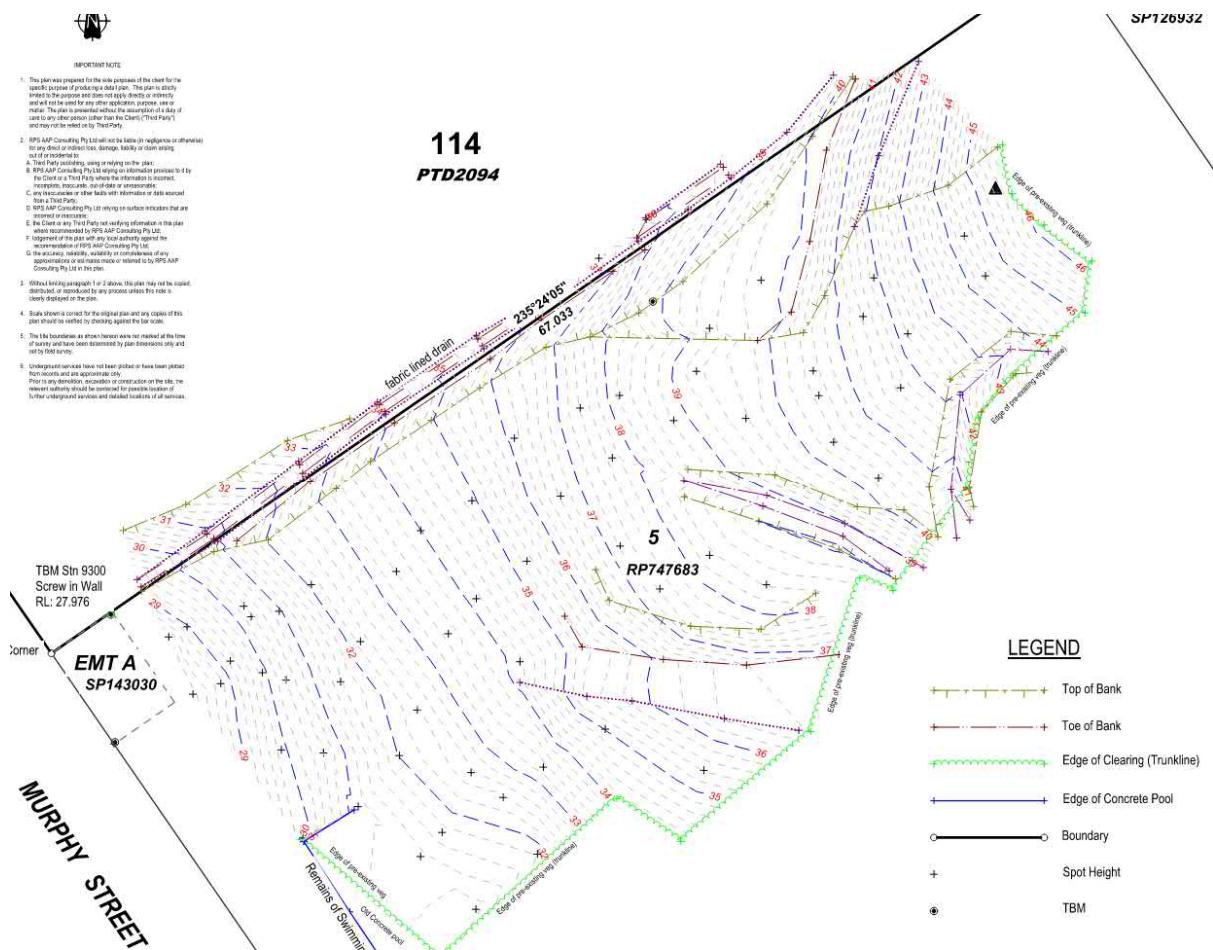


Figure 1 – Site Location (Source: RPS Drawing PTD17397-107)

2.2 SITE DESCRIPTION

The site at inspection was generally well vegetated with works being undertaken by Ergon from Murphy Street to the Electrical Padmount Station.



2.3 PROJECT SCOPE OF WORKS

The Contractor scope of works consists of:

Clearing and Grubbing

Earthworks

Landscaping

Refer below Figure 2 for Landscape Planting Plan.

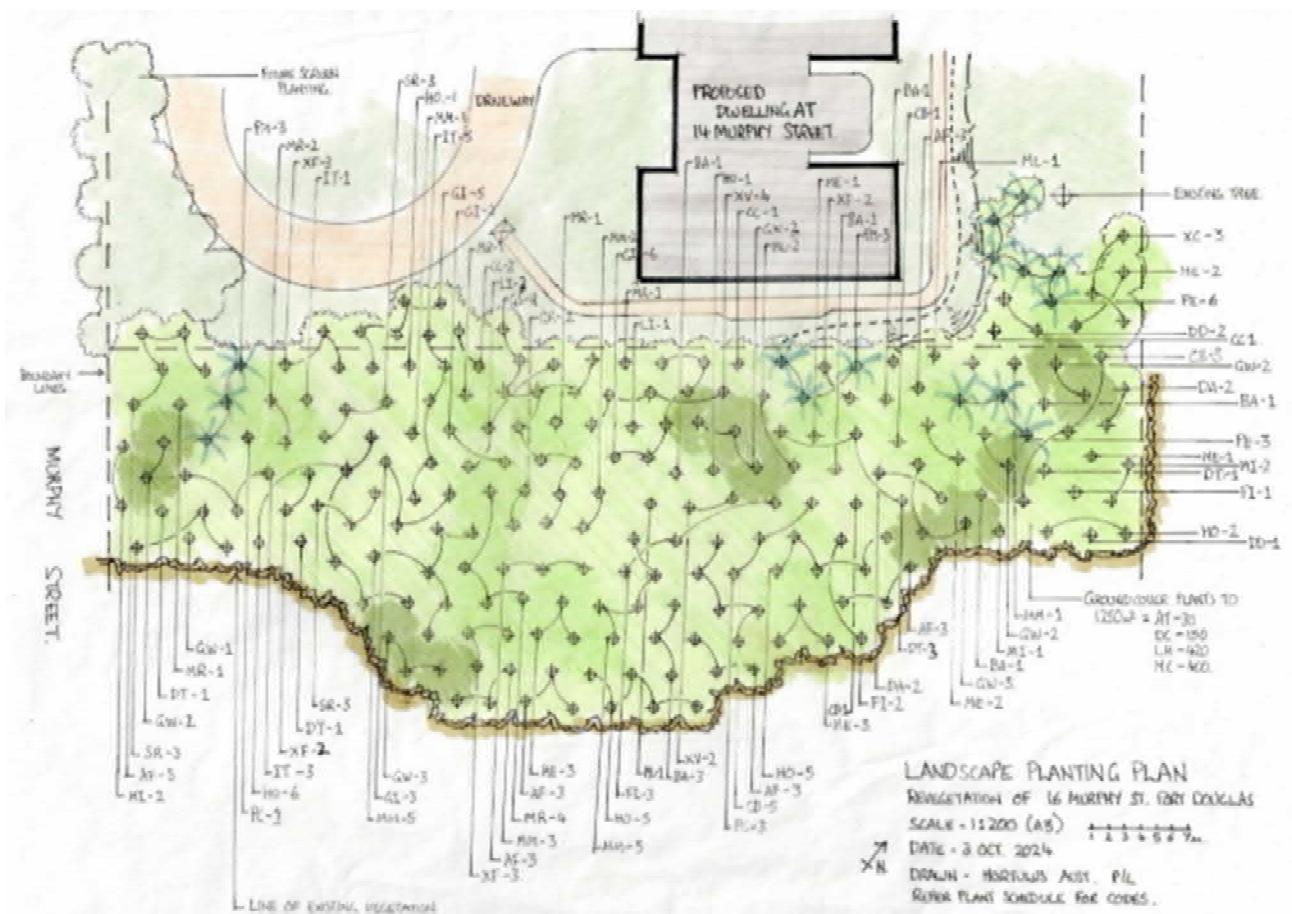
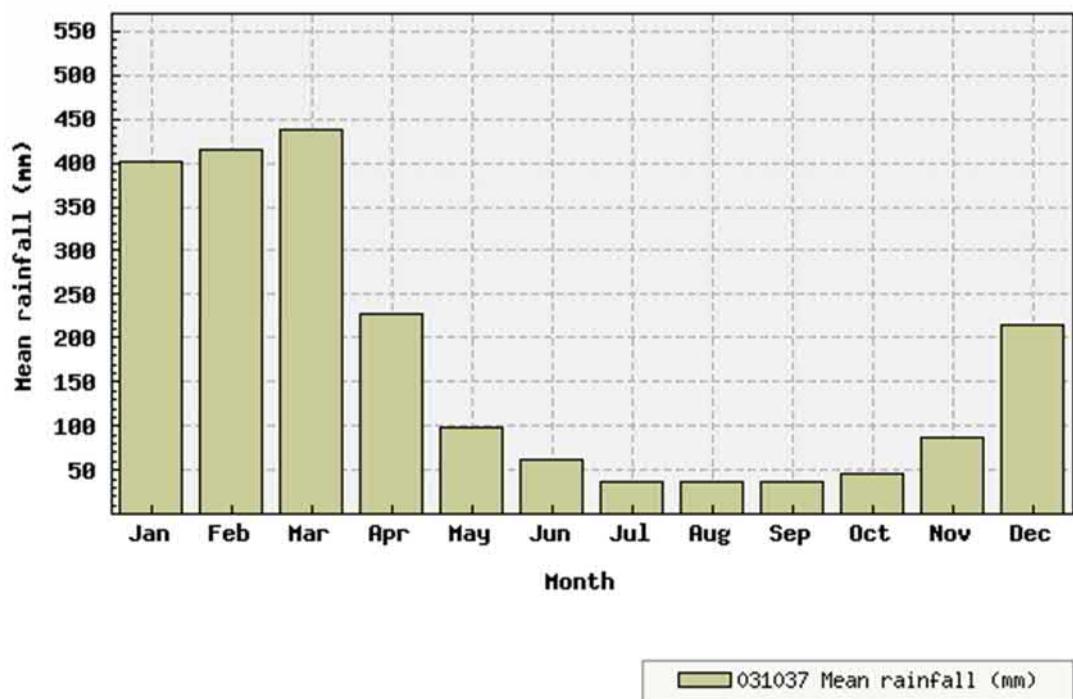
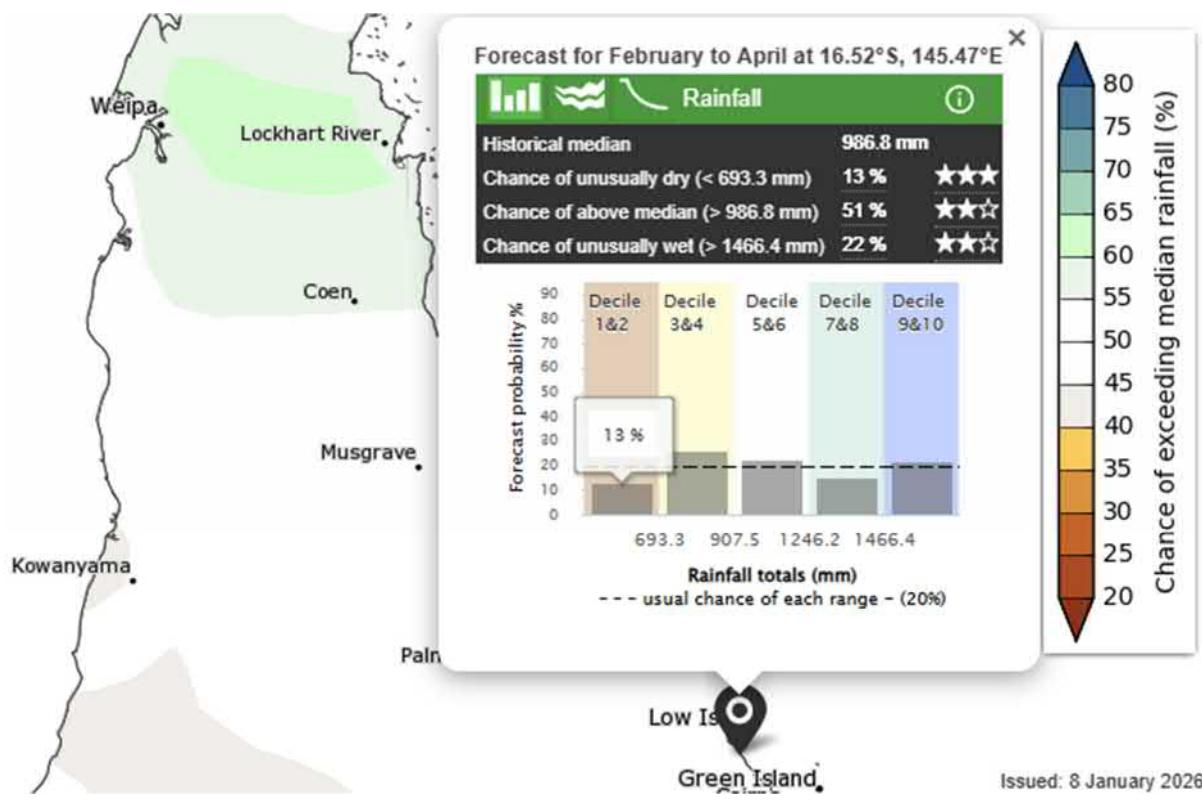


Figure 2 – Landscape Planting Plan (Source: Hortulus Australia)

2.4 CLIMATE

The historic rainfall data for the region is shown below in Figure 3. The seasonal outlook in Figure 4 indicates a historic median rainfall of 986.8mm between February 2026 and April 2026, with a forecast indicating a 51% likelihood of above median rainfall during this period.



Location: 031037 LOW ISLES LIGHTHOUSE

Figure 3 – Historic Rainfall (Source: BOM)

Figure 4 – Seasonal Outlook (Source: BOM)


2.5 TOPOGRAPHY AND DRAINAGE

The site surface is relatively steep running downhill from northeast to southwest with an estimated overall average slope surface of approximately 30%. Refer Figure 5 for photo of site.



Figure 5 – Site Overview

2.6 SOILS

No soil investigations have been undertaken by Copelin Civil for the purpose of this erosion and sediment control plan, nor were confirmation geotechnical soil types made available.

Copelin Civil have relied on soil mapping information contained within the *Atlas of Australian Soils* (Northcote et al, 1960-1968) published by CSIRO to gain an understanding of the soil conditions on site.

The site is approximately located within the area mapped as LN1 elevated hills which may have steep sections. LN1 soils are described as horizon pedal, smooth-faced, with yellowish red friable loams.



3 EROSION RISK ASSESSMENT

An erosion risk assessment has been performed using the Revised Universal Soil Loss Equation (RUSLE). The calculated soil loss helps determine the necessary level of sediment control, as well as stabilisation and staging requirements.

$$A = K * R * LS * P * C \text{ (IECA 2008)}$$

- **A (predicted soil loss per hectare per year):** This represents the estimated amount of soil that is expected to be lost from the site, measured in tons per hectare per year. It provides an overall assessment of the potential erosion risk for the area.
- **K (soil erodibility factor):** This factor quantifies the susceptibility of soil particles to detachment and transport by rainfall and runoff. It is influenced by soil properties such as texture, structure, organic matter content, and permeability. Higher K values indicate greater soil erodibility.
- **R (rainfall erosivity factor):** This factor measures the impact of rainfall on soil erosion. It accounts for the amount and intensity of rainfall, with higher values indicating greater potential for erosion due to more intense or frequent rain events.
- **LS (slope length/gradient factor):** This factor combines the effects of slope length and slope steepness on erosion. Longer and steeper slopes tend to increase the velocity of runoff, thereby enhancing the soil's erosion potential. The LS factor adjusts for these topographic influences.
- **P (erosion control practice factor):** This factor reflects the effectiveness of erosion control practices implemented on the site. Practices such as contour ploughing, terracing, and the use of sediment barriers can reduce erosion. The P factor adjusts the predicted soil loss based on the presence and efficiency of these practices.
- **C (ground cover and management factor):** This factor represents the influence of ground cover (such as vegetation, mulch, or crop residues) and management practices on soil erosion. Effective ground cover and good land management practices reduce soil exposure to erosive forces, thereby lowering the C factor.

3.1 K- FACTOR – SOILS

A K factor of 0.040 has been adopted based on the soil information in section 2.6.

3.2 R-FACTOR – RAINFALL

An annual erosivity factor of 16,980 has been calculated for the site based on a 2-year, 6-hour rainfall intensity of 23.4 mm/hr.

3.3 LS – SLOPE LENGTH

The LS factor for the site has been determined based on nominal slope of 30% over 50m.



3.4 COVER (C) AND PRACTICE (P) FACTORS

A C factor of 0.4 has been determined based on use of jute matting over the exposed surface prior to planting. A default P factor of 1.3 have been adopted for across the site, in accordance with IECA 2008.

3.5 ESTIMATED SOIL LOSS

The erosion risk assessment was undertaken for the site catchment based on the entire disturbed area for construction. The results estimate soil loss at 2,822t/ha/yr. Although results of the soil loss estimation are not an accurate representation of actual soil loss it does provide a basis for the erosion risk assessment and support the general understanding that project works present an **Extreme** erosion risk depending on the staging of works.

CATCHMENT ID	AREA (HA)	R	K	SLOPE LENGTH (m)	SLOPE (%)	LS	P	C	A (t/ha/yr)	A (t/yr)	CONTROL
Entire Site	0.12	16980	0.04	50	30	7.99	1.3	0.4	2822	339	TYPE 2

Table 1 – Summary of RUSLE Assessment

4 SEDIMENT CONTROL

Effective sediment control is crucial to minimising the environmental impact of construction activities. The following sediment control strategy has been particularly designed to comply with the Best Practice Erosion and Sediment Control guidelines set forth by the International Erosion Control Association (IECA, 2008). These measures are essential to manage sediment on-site and prevent its migration to surrounding environments and waterways, thereby safeguarding natural habitats and maintaining water quality.

The calculated soil loss and associated erosion risk based on the entire site being disturbed determines a minimum of type 2 sediment controls.

A range of practical measures are considered acceptable to ensure best practice:

- Mulch filter berms (type 2 control)
- Sediment fence (type 3 control)
- Revegetation (stabilisation)
- Turfing to exposed surface along driveway (stabilisation)

The minimum sediment controls are based on the RUSLE Assessment prior to plant revegetation. At time of inspection, it was noted that the surface area was well vegetated. Typically, the mulch filter berms and sediment fence would be implemented prior to planting with removal of these controls after suitable growth.

5 DRAINAGE CONTROL

Effective drainage control is essential for managing water flow on construction sites, thereby reducing erosion and preventing sediment from being carried off-site. This section outlines a comprehensive approach to drainage control, which is founded on three main principles: diverting external flow before it enters the site, directing site runoff to appropriate sediment control measures, and ensuring that runoff is conveyed in a non-erosive manner.

By implementing these principles, we can minimise the potential for erosion and sedimentation, protect water quality, and comply with regulatory requirements. The following strategies and measures have been carefully designed to manage both temporary and permanent drainage needs throughout the construction process,



ensuring that water is effectively controlled and directed in a way that maintains site stability and environmental integrity.

Clean Water Diversion

Clean water diversion drains are generally required at the upstream end of site to capture surface runoff and direct around the site during construction. At time of inspection works had been completed and the entire area revegetated.

6 EROSION CONTROL

Erosion control is a critical aspect of site management, aimed at preventing soil loss and maintaining site stability. This section presents a range of erosion management techniques tailored to various erosion risk ratings, following the guidelines set forth by the International Erosion Control Association (IECA, 2008).

The site is considered an **Extreme** erosion risk in accordance with Table 2. Table 2 provides detailed information on these techniques, offering practical solutions to effectively mitigate erosion based on the assessed risk levels. By implementing these strategies, we can ensure that exposed soils are protected, runoff is managed, and the environmental impact of construction activities is minimised.

Erosion Risk Rating	Soil Loss Rate (t/ha/yr)	Advance Clearing (Weeks Work)	Max. Days to Stabilisation	Stockpiles Stabilised
Very Low	0 to 150	8	30 (60%)	
Low	151 to 225	8	30 (70%)	
Moderate	226 to 500	6	20 (70%)	
High	501 to 1500	4	10 (75%)	✓
Extreme	> 1500	2	5 (80%)	✓

Table 2 – Erosion Risk Rating Based on Soil Loss and Required Management (modified from Table 4.4.7 IECA 2008)

Stabilisation of disturbed surfaces should be undertaken as soon as practical. The Hortulus revegetation site survey dated 15 December 2025 notes that following the inspection 12 months post revegetation the growth rates have been good, and the biodiversity is superior to that previous of the site disturbance.

At time of inspection Ergon were undertaking works from Murphy Street to the Electrical Padmount Easement. After completion of these works by Ergon the area should be appropriately stabilised with use of topsoil and turf. Refer Figure 6 for photo of Ergon works.





Figure 6 – Ergon Works



7 ROLES AND RESPONSIBILITIES

By clearly defining these roles and responsibilities, all project personnel can effectively contribute to the successful implementation and maintenance of ESC measures, ensuring compliance and minimising environmental impacts.

ROLE	RESPONSIBILITIES
Project Manager	<p>Primary Responsibility: Ensure the overall implementation of ESC measures.</p> <p>Compliance Notification: Inform the Administrator of any non-compliance with the ESCP.</p> <p>Mitigation Measures: Ensure prompt implementation of measures to mitigate erosion and sediment generation.</p> <p>Consultant Coordination: Notify the ESC Consultant when controls are implemented as per the plan for site inspection and certification. Notify the ESC Consultant prior to the decommissioning of basins (conversion to bio basins) to confirm that adequate upslope catchment stabilization has been achieved.</p>
Site Supervisor/Foreman	<p>Inspection: Conduct inspections of all control measures, discharge points, and site boundaries as per the inspection requirements.</p> <p>Rainfall Monitoring: Monitor daily rainfall.</p> <p>Runoff Notification: Inform the Environmental Advisor/Consultant if runoff-generating rainfall occurs within the previous 24 hours.</p> <p>Record Keeping: Maintain up-to-date records of rainfall, storage volumes, water quality, treatment practices, and discharge volumes (as appropriate).</p> <p>ESC Maintenance: Oversee the installation and maintenance of ESC measures.</p>
Project Team	<p>Design Support: Provide design information as required.</p> <p>Monitoring and Sampling: Conduct in-situ monitoring and collect samples for laboratory analysis as needed.</p> <p>Reporting: Collate results and prepare necessary reports.</p> <p>Inspections and Audits: Conduct site inspections and audits as required.</p> <p>ESC Oversight: Inspect the installation and maintenance of ESC measures.</p> <p>Impact Assessment: Inspect and manage offsite impacts.</p> <p>Advisory Role: Offer advice on improving ESC at the site as necessary.</p>
All Personnel	<p>Damage Reporting: Report any damage to ESC devices.</p> <p>Environmental Harm Notification: Report any potential or actual environmental harm in accordance with the duty to notify requirements under the Environmental Protection Act.</p>



8 SITE INSPECTIONS AND MONITORING

Site inspections and monitoring must be conducted in accordance with Sections 6.17 and 7.4 of the Best Practice Erosion and Sediment Control Document (IECA, 2008). These plans should be treated as live documents, subject to review and updates as site conditions evolve or if existing measures do not meet the required standards.

When an inspection identifies a significant failure in the ESC measures, it is essential to report the issue, investigate the cause, and make the necessary amendments to both the site and the ESCP.

Daily Inspections (during rainfall):

- Check all drainage, erosion, and sediment control measures.
- Identify and document any excessive sediment deposition, both on-site and off-site.
- Inspect all site discharge points, including dewatering activities as applicable.

Weekly Inspections (regardless of site activity):

- Examine all drainage, erosion, and sediment control measures.
- Look for excessive sediment deposition, on-site and off-site.
- Inspect for construction materials, litter, or sediment that has been placed, deposited, washed, or blown from the site, including those caused by vehicular movements.
- Check litter and waste receptors.
- Inspect oil, fuel, and chemical storage facilities.

Pre-Rainfall Inspections (within 24 hours of expected rainfall):

- Review all drainage, erosion, and sediment control measures.
- Inspect all temporary flow diversion and drainage works.

Post-Rainfall Inspections (within 18 hours of a runoff-producing rainfall event):

- Assess all drainage, erosion, and sediment control measures.
- Document any excessive sediment deposition, on-site and off-site.
- Check for construction materials, litter, or sediment that has been placed, deposited, washed, or blown from the site, including those resulting from vehicular movements.
- By adhering to this inspection and monitoring schedule, you can ensure that erosion and sediment control measures remain effective and compliant with regulatory standards.





APPENDIX A:

EROSION AND SEDIMENT CONTROL MARKED UP DRAWINGS

COPELIN CIVIL



16 Murphy Street - Marked Up Erosion and Sediment Control Plan



IMPORTANT NOTE

1. This plan was prepared for the sole purposes of the client for the specific purpose of producing a detail plan. This plan is strictly limited to that purpose and does not apply directly or indirectly and will not be used for any other application, purpose, use or matter. The plan is presented without the assumption of a duty of care to any other person (other than the Client) ("Third Party") and may not be relied on by Third Party.
2. RPS AAP Consulting Pty Ltd will not be liable (in negligence or otherwise) for any direct or indirect loss, damage, liability or claim arising out of or incidental to:
 - A. Third Party publishing, using or relying on the plan;
 - B. RPS AAP Consulting Pty Ltd relying on information provided to it by the Client or a Third Party where the information is incorrect, incomplete, inaccurate, out-of-date or unreasonable;
 - C. any inaccuracies or other faults with information or data sourced from a Third Party;
 - D. RPS AAP Consulting Pty Ltd relying on surface indicators that are incorrect or inaccurate;
 - E. the Client or any Third Party not verifying information in this plan where recommended by RPS AAP Consulting Pty Ltd;
 - F. lodgement of this plan with any local authority against the recommendation of RPS AAP Consulting Pty Ltd;
 - G. the accuracy, reliability, suitability or completeness of any approximations or estimates made or referred to by RPS AAP Consulting Pty Ltd in this plan.
3. Without limiting paragraph 1 or above, this plan may not be copied, distributed, or reproduced by any process unless this note is clearly displayed on the plan.
4. Scale shown is correct for the original plan and any copies of this plan should be verified by checking against the bar scale.
5. The title boundaries as shown hereon were not marked at the time of survey and have been determined by plan dimensions only and not by field survey.
6. Underground services have not been plotted or have been plotted from records and are approximate only.
Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services.

TBM Stn 9300
Screw in Wall
RL: 27.976

EMT A
SP143030

MURPHY STREET

114
PTD2094

119

SP126932

NOTES

Level Datum: AHD
Origin of Levels: PM500028
RL: 4.241
Contour Interval: 0.2
Index: 1.0

Origin of Coordinates: PM500028 GDA94
E: 335870.890
N: 8177302.733

Meridian: MGA zone 55

Field/Level Book: N/A

metres

SCALE 1:200 IS APPLICABLE ONLY
TO THE ORIGINAL SHEET SIZE (A3).

AMENDMENTS

A: INIT: AMEND DESCRIPTION	
PROJECT MANAGER DGP	CHECKED
SURVEYED MW 16/12/25	DRAFTING CHECKED
DRAWN DGP 16/12/25	CAD REF AU017397-105-Clearing Location.mjo
SHEET SIZE A3	SHEET 1 OF 1 SHEETS 1

rps RPS AAP Consulting Pty Ltd
ACN 117 883 173
5954 Captain Cook Hwy
Craieldie QLD 4877

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LEGEND

Legend:

- Top of Bank
- Toe of Bank
- Edge of Clearing (Trunkline)
- Edge of Concrete Pool
- Boundary
- Spot Height
- TBM

Turf exposed area adjacent
Driveway after Ergon works
are completed

HICKORY GROUP (QLD) Pty Ltd

Contour Survey of revegetated Area

**adjoining Lot 114 on PTD2094
being within Lot 5 on RP747683
Murphy St
Port Douglas
Queensland**

SCALE	DATE	DRAWING NO.	ISSUE
1:200	16/12/25	PTD17397-107	



APPENDIX B: STANDARD DRAWINGS

COPELIN CIVIL

Copelin Civil

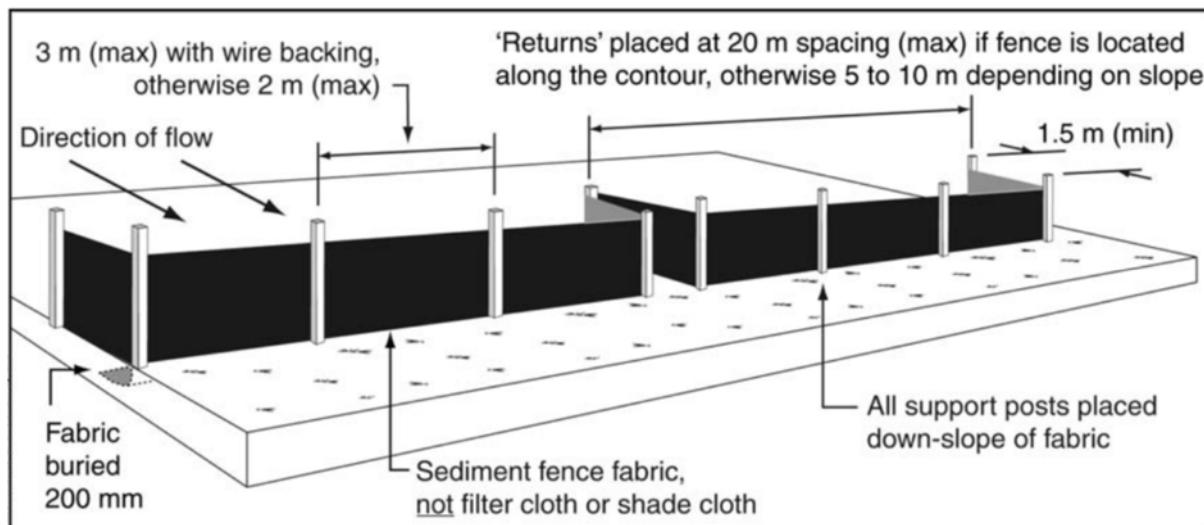
E. leo@copelincivil.com.au P. 0473 667 228

www.copelincivil.com.au

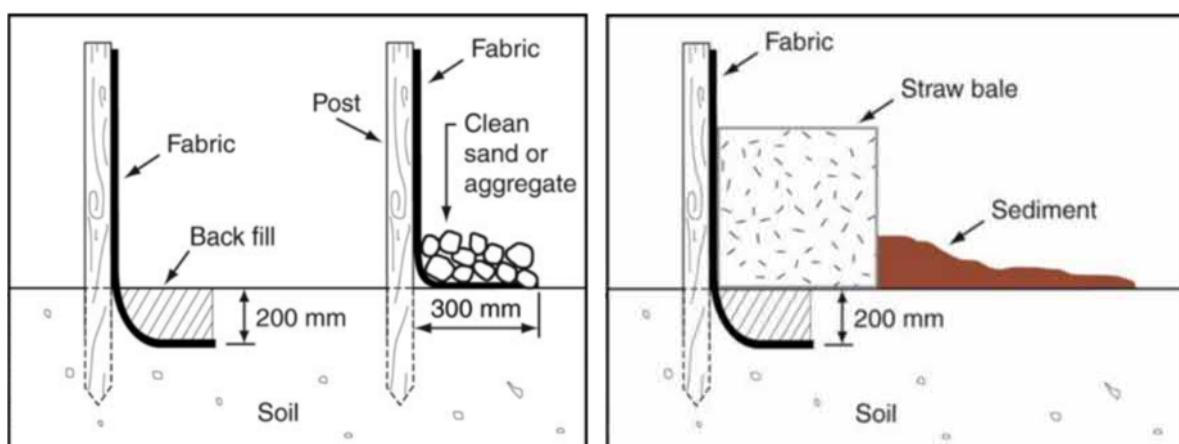
ABN: 15 673 741 234



SEDIMENT FENCE



Maximum post spacing	Installation condition
2m	No support wire or backing mesh.
3m	Support weir attached along top of the fabric at 1m intervals. Wire mesh or PVC safety mesh backing.



Figures Sediment Fence from Catchments & Creeks Publications – April 2010



MULCH FILTER BERM

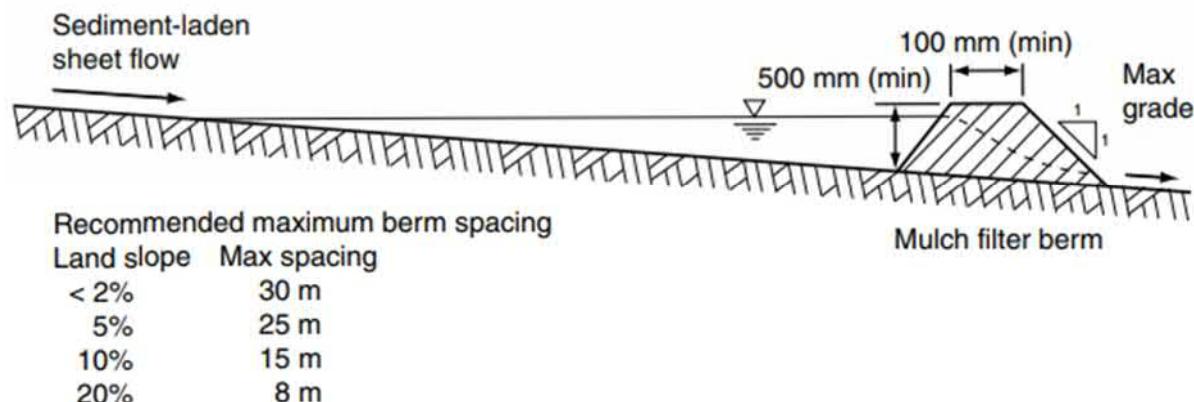


Figure Mulch Filter Berms from IECA Publications – April 2010

DIVERSION CHANNEL

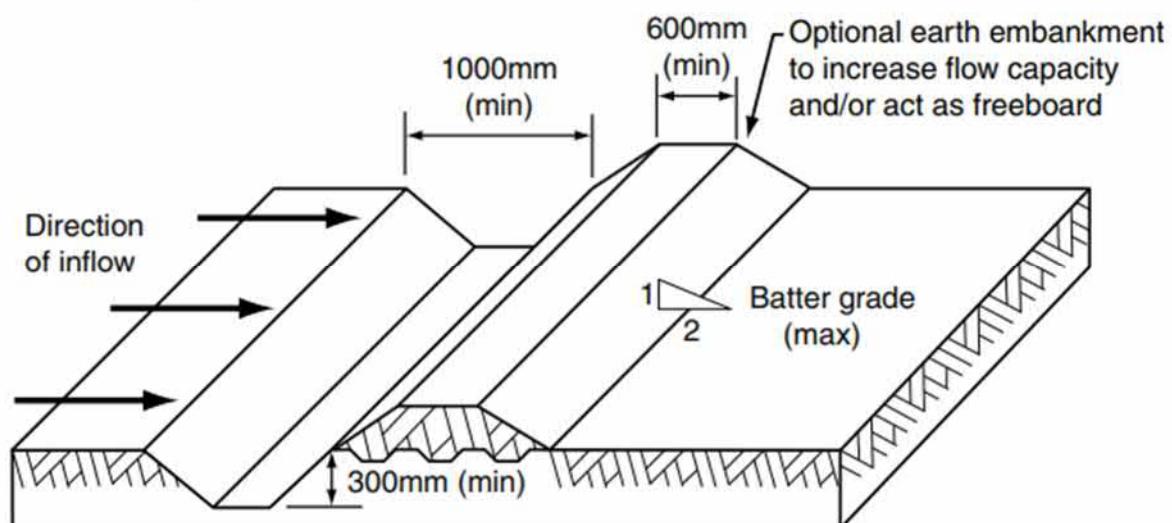
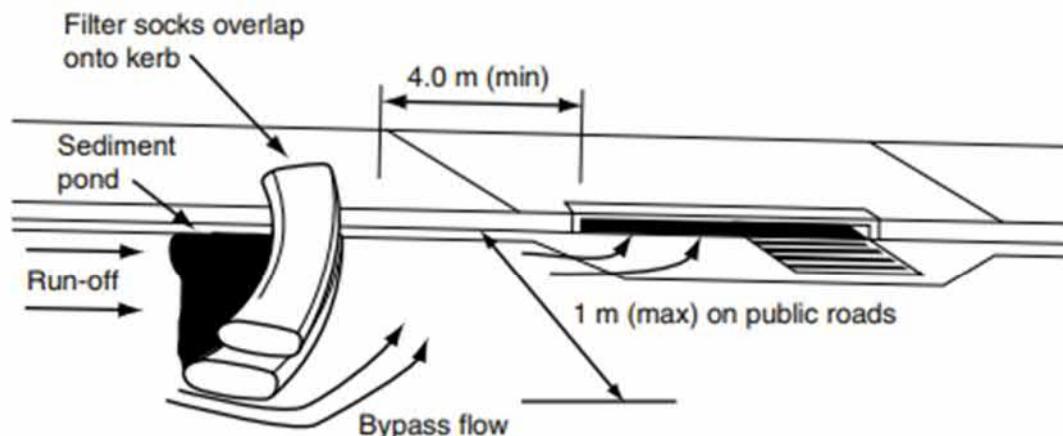


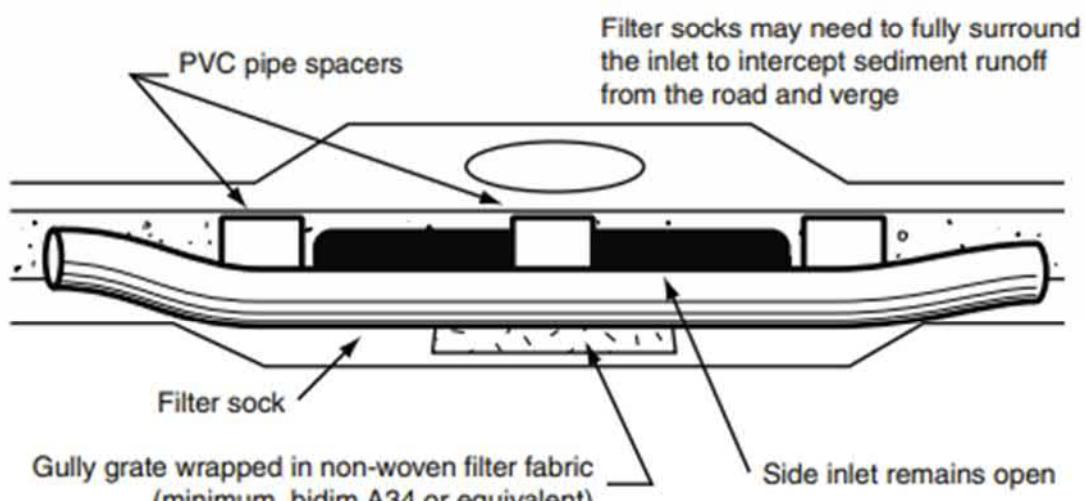
Figure Diversion Channels from IECA Publications – April 2010



KERB INLET SEDIMENT TRAP



(a) On-grade kerb inlet sediment trap



(b) Sag inlet sediment trap

Figure Kerb Inlet Sediment Trap from Catchments & Creeks Publications – December 2009



ROCK ENTRY/EXIT PAD

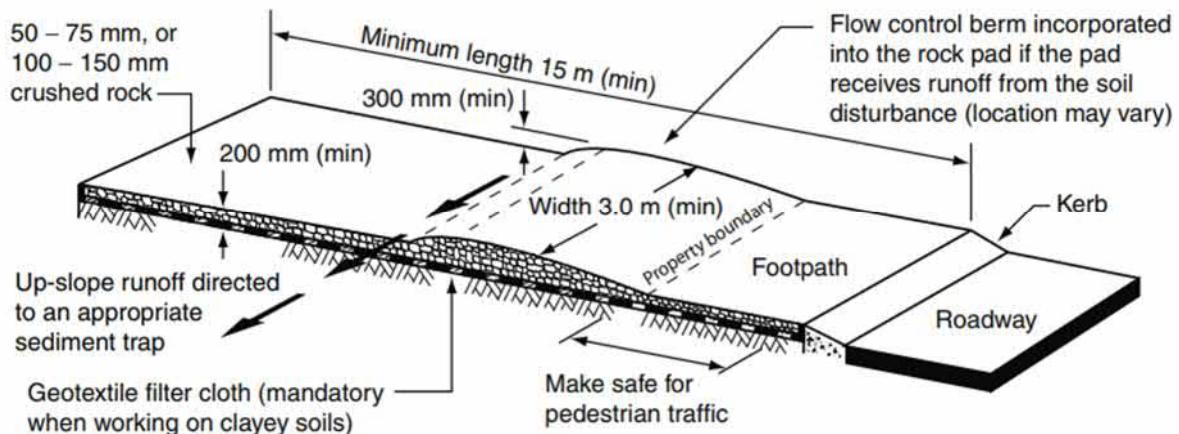


Figure Construction Exit – Rock Pad from IECA Publications – April 2010

TYPE D SEDIMENT BASIN

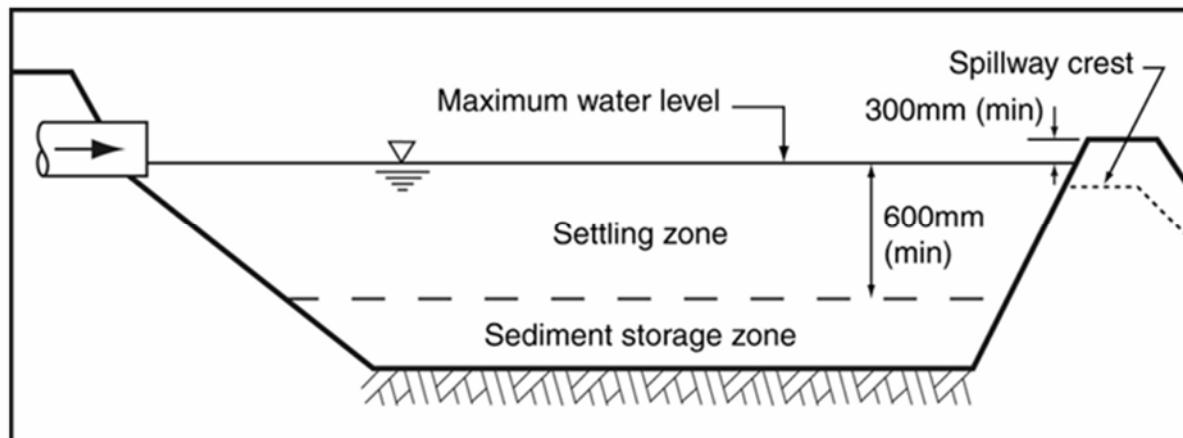


Figure Type D Basin Settling & Sediment Storage Zones from IECA Publications – June 2018

22 January 2026

GEO Ref: 24046AB-D-L04-v1

Your Ref: TBC

George Argyrou
Hickory Constructions Group
3/21 Constitution Hill Road
SORRENTO VIC 3943

Transmission via email: *g.argyrou@hickory.com.au*

**SLOPE STABILITY ASSESSMENT
REMEDIAL EARTHWORKS AND LANDSCAPING
PLACEMENT ON LOT 114 ON PTD2094 AND LOT 5 ON RP747683
PORT DOUGLAS QLD 4877**

Dear George,

INTRODUCTION

Further to your request, GEO Design has carried out an updated landslide risk assessment and stability analysis for an area where remedial earthworks and landscaping has been completed Lot 5 on RP747683 (16 to 22 Murphy Street). The earthworks and landscaping works were carried out as part of the remediation of an area of uncontrolled cut and fill earthworks previously completed on the southern and western portions of Lot 5.

GEO Design has previously provided correspondence regarding stability and recommendations for the remedial works of the subject area. GEO Design's initial advice and recommendations were provided in our letter 24046AB-D-L02-v1 dated 28 October 2024. A review of the initial advice provided by GEO Design and a subsequent site inspection was carried out by ETS Geotechnical. The results of the site inspection together with recommendations for the treatment of the area were provided in ETS Geotechnical's letter GT24-471-001L REV 1 dated 20 November 2024. Further geotechnical advice and recommendations were presented by GEO Design in letter 24046AB-D-L03-v1 dated 1 December 2024.

The remedial earthworks and landscaping were carried out under the direction of the owner in general accordance with the recommendations provided by ETS Geotechnical and GEO Design. Landscaping was carried out in accordance with the revegetation design and recommendations outlined by Hortulus and GGI Landscape Architects.

Copies of the above letters are contained within the Planning Report prepared by Sparke Helmore Lawyers (Reference HIC944-00001 dated 18 November 2025).

As outlined above, in accordance with the geotechnical recommendations previously provided, we understand that an updated landslide risk assessment and stability analyses of the completed remedial earthworks are required.

A summary of the works carried out and the results of an updated geotechnical assessment of the subject area, following completion of the remedial works, are outlined in the following sections.

UPDATED GEOTECHNICAL ASSESSMENT

An updated geotechnical assessment of the subject area of remediation has been carried out. The updated geotechnical assessment has been conducted on the subject area following the completion of the remedial earthworks and landscape works as recommended.

The remedial works recommended by GEO Design in our letter report 24046AB-D-L02-v1 dated 28 October 2024 comprised the following:

1. All uncontrolled filling to be removed from site and the surface returned to its original profile as close as possible.
2. All recently formed permanent cut batters should be trimmed to a maximum of 1.5 m and formed at a maximum 1V:1H.
3. Cut areas should not be filled.
4. Remedial works should ensure that no additional surface water is directed to Lot 5 either from Lot 114 or uphill.
5. Vegetation was to be placed back over the disturbed areas in accordance with advice from a landscaper.
6. Place environmental matting such as TECMAT or ENKAMAT over the disturbed surface prior to revegetation to reduce potential rainfall impact erosion.

The remedial works were carried out by the owner and Hortulus under the guidance of GEO Design. The remedial works were in general accordance with the recommendations outlined above and comprised the following:

- a) Removal of uncontrolled filling placed over the site, particularly on the lower portions of the allotment where most unauthorised fill was placed.
- b) Reshaping of the ground surface to form uniform profiles. This included some placement of fill in some sections.
- c) Planting of specified species, placement of mulching, erosion protection and matting.

The extents of the remedial works are shown on the provided drawings and survey plans. A survey of the completed profile in the subject area is attached. A cut and fill plan showing the location and volumes of cut and fill earthworks carried out as part of the remedial works, compared to the pre-remediation survey, is also attached.

A review of the post remedial works survey drawings and data, together with a site inspection of the works, indicates the following:

1. The uncontrolled filling has been removed from site.
2. Some filling has been placed in formed low areas as part of slope profiling works.
3. The upper slopes vary between about 20° to 34°. These slopes remain relatively untouched and generally conform to the original site profile.
4. A cut batter on the northwestern portion of the area has been re-graded to form a new cut batter of around 1.5 m in height and formed at about 26° overall.
5. The formed slopes in the central and lower portions of the site have been formed at around 15° to 20°.
6. The lower southeastern corner fill has been placed in a previous low area. This area now has a finished surface slope of <10°.
7. The works have not resulted in the concentration of surface water flows and/or resulted in an unacceptable level of erosion/scouring.
8. Erosion matting was placed over exposed subgrade areas.
9. Revegetation and landscape works were carried out by Hortulus in general accordance with their plans.

Based on our inspections and evaluation of the site conditions, it is considered that the completed remedial works are satisfactory from a geotechnical point of view. Further comments about slope stability and landslide risk are presented below.

STABILITY ANALYSES

GEO Design has carried out a number of geotechnical investigations and assessments for 12 and 14 Murphy Street. In addition, GEO has carried out inspections of the subject area of remediation at Lot 5 prior to placement of the uncontrolled fill, after placement of filling and other unauthorised earthworks, during and after completion of the recommended remediation works.

Given the results of the previous geotechnical investigations and inspections as outlined above and the developed geotechnical model, together with the survey data provided for the subject remediated Lot 5 area (attached), a slope stability analysis was carried out on the remediated area. The section used for the stability analyses noted as Section A, is shown below in Figure 1.

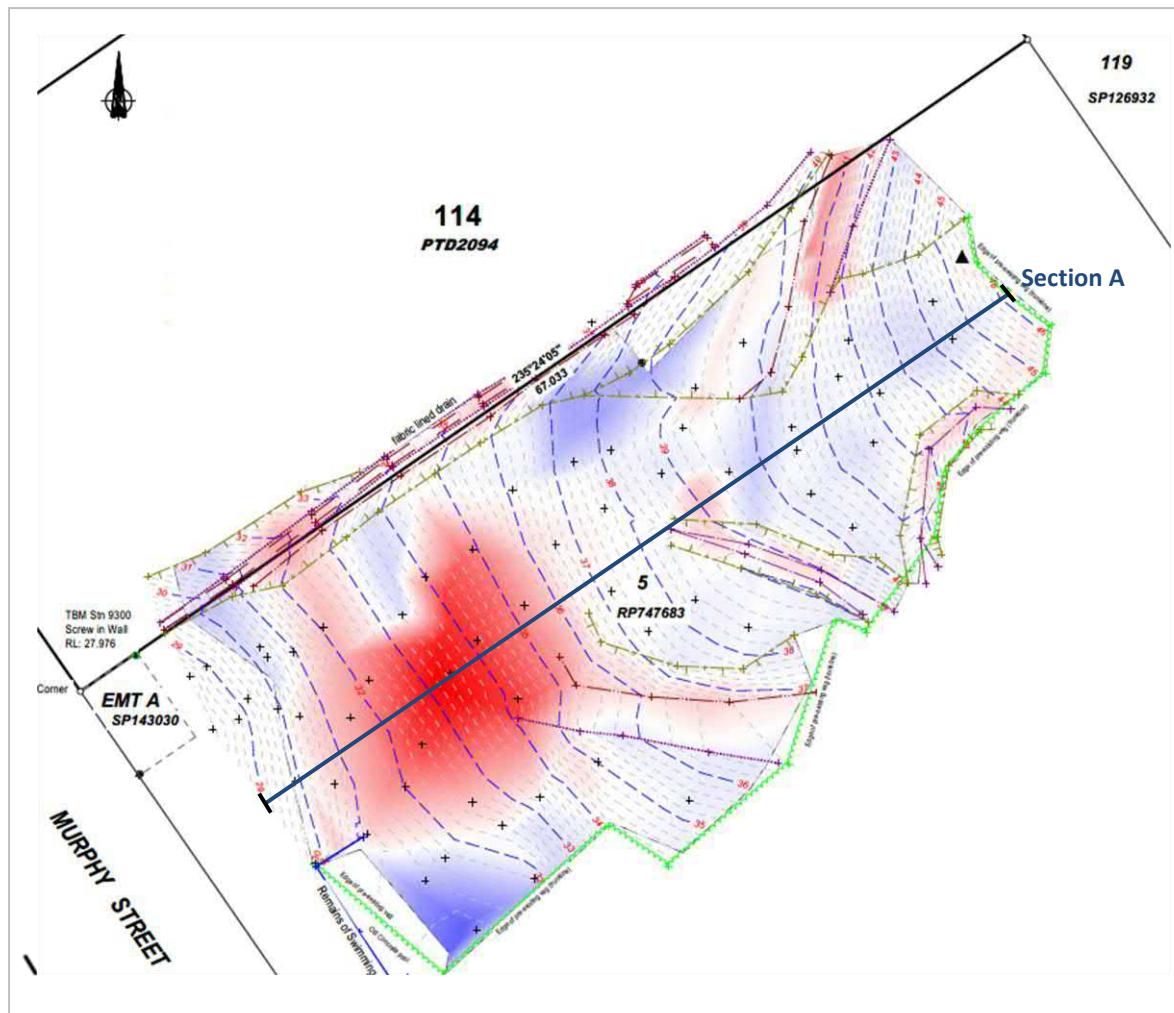


Figure 1: Section for Stability Analysis
(Extract from RPS Drawing PTD17397-107)

Based on the materials observed at the site and commonly used parameters in this area of Port Douglas (and as used in previous stability analyses for 14 Murphy Street), the effective (drained) strength parameters outlined in Table 1 were adopted for the stability analyses:

Table 1: Effective (Drained) Strength Parameters

Material Type	Strength Parameters	
	c'	ϕ'
Placed Fill	3 kPa	28°
Clayey Soils	3 kPa	30°
Weathered Rock	10 kPa	35°

Analyses were initially performed for what are considered to be dry or “normal” conditions. Analyses were then performed for what are considered to be wet or “extreme” conditions to simulate seepage/water infiltration. The “extreme” conditions consider near saturation of the materials with a pore water pressure co-efficient (R_u) of between 0.1-0.2 adopted for the material properties.

The analyses were carried out for a potential circular failure using the proprietary software SLIDE 2. Potential failure surfaces were analysed for the upper slope, lower slope and for a global failure. The results of the stability analyses and estimated minimum factors of safety for the above potential failure surfaces are attached and summarised in Table 2.

Table 2: Summary of Stability Analyses Results

Failure Location	Calculated Factor of Safety (FOS)	
	Dry Conditions	Extreme Conditions
Upper Slope	2.17	1.843
Lower Slope	2.959	2.698
Global	3.006	2.730

For the purposes of assessing stability, we provide the following guidelines which are appropriate to the conditions at this site:

- A calculated factor of safety > 1.5 indicates the profile is likely to be stable.
- A calculated factor of safety from 1.0 – 1.5 indicates a marginally stable profile.
- A calculated factor of safety < 1.0 indicates the profile is likely to be unstable.

In general terms the factor of safety is calculated by dividing the forces resisting instability (i.e. the strength of the soil/rock or the strength of discontinuities within the soil/rock) by the forces driving instability (i.e. the weight of the soil/rock, plus groundwater/seepage, plus surcharges/loads on the slope). A calculated factor of safety of 1.0 indicates the forces are balanced, whereas a calculated factor of safety <1.0 indicates instability will likely occur.

For this site we consider that a calculated factor of safety >1.3 should be achieved for the wet or “extreme” conditions modelled, and that a calculated factor of safety >1.5 should be achieved for the dry or “normal” conditions modelled.

The results of the stability analyses indicate that the FOS for instability for the potential failure surface areas along the remediated slope are >1.5 under the dry conditions modelled and wet/extreme conditions modelled. As such, it is considered that the overall site should be stable.

The stability analyses do not consider small scale failures. Small scale erosion and slumping failures may be possible on the slope. These small type failures are considered to pose negligible risk and should have minimal impact on the overall slope and surrounding areas. These types of small-scale failures are common in batters and natural slopes during or following periods of high intensity and prolonged rainfall events.

LANDSLIDE RISK

Based on the completed works, together with the stability analyses, an updated landslide risk assessment was carried out for Lot 5 and the remediated area in general accordance with the Guidelines for Landslide Risk Management outlined in Australian Geomechanics, Volume 42, No. 1 March 2007 (AGS 2007).

The risk to property within the Guidelines for Landslide Risk Management outlined in Australian Geomechanics, Volume 42, No. 1 March 2007 (AGS 2007) can be defined as Very Low to Very High. In general terms risks of Very Low to Low are tolerable for regulatory bodies in relation to developments while higher risks are generally unacceptable without detailed investigation and implementation of risk reduction strategies to enable the reduction of risk to an acceptable level. The risk system matrix outlined in AGS 2007 is attached.

A full description of the risk analyses procedures are presented in AGS2007. For further information the reader is directed to these documents.

The landslide risk assessment carried out as part of this investigation was based on the satisfactory completion of the remedial works as outlined above. The risk assessment considered the results of the stability analyses (outlined in the previous section), site inspections during remedial works and following completion, site observations and based on experience in this area of Port Douglas.

The hazards evaluated as part of the risk analysis were based on the proposed development with the adoption of the construction recommendations and measures included within this report.

The hazards considered comprised the following:

1. Instability within the remediated slopes resulting in downward migration of $>2 \text{ m}^3$ of soil debris or rocks impacting the structures and land below.
2. Instability within the remediated slope resulting in downward migration of $>20 \text{ m}^3$ of soil debris or rocks impacting structures and land below.

Based on the above, the following AGS 2007 risk classifications have been assessed for the remediated slope.

Table 3: Risk Classifications

Hazard	AGS 2007 Risk Rating
1	Low
2	Low

Low to Very Low risks are generally considered acceptable to regulators for development approval in accordance with the relevant guides. As such, it is considered that the completed remedial works and slope are acceptable from a stability point of view.

SUMMARY & CONCLUSION

It is considered that the remedial works carried out and the subsequent profiles formed as part of the earthworks are satisfactory from a geotechnical point of view and are inferred to have Low risk of instability.

In addition, it is considered that the landscaping works carried out have increased the stability of the site and limited the risk for further erosion and scouring.

Given the above, GEO Design can confirm adequacy of the works from a geotechnical point of view and that the subject area should remain stable.

Yours sincerely,

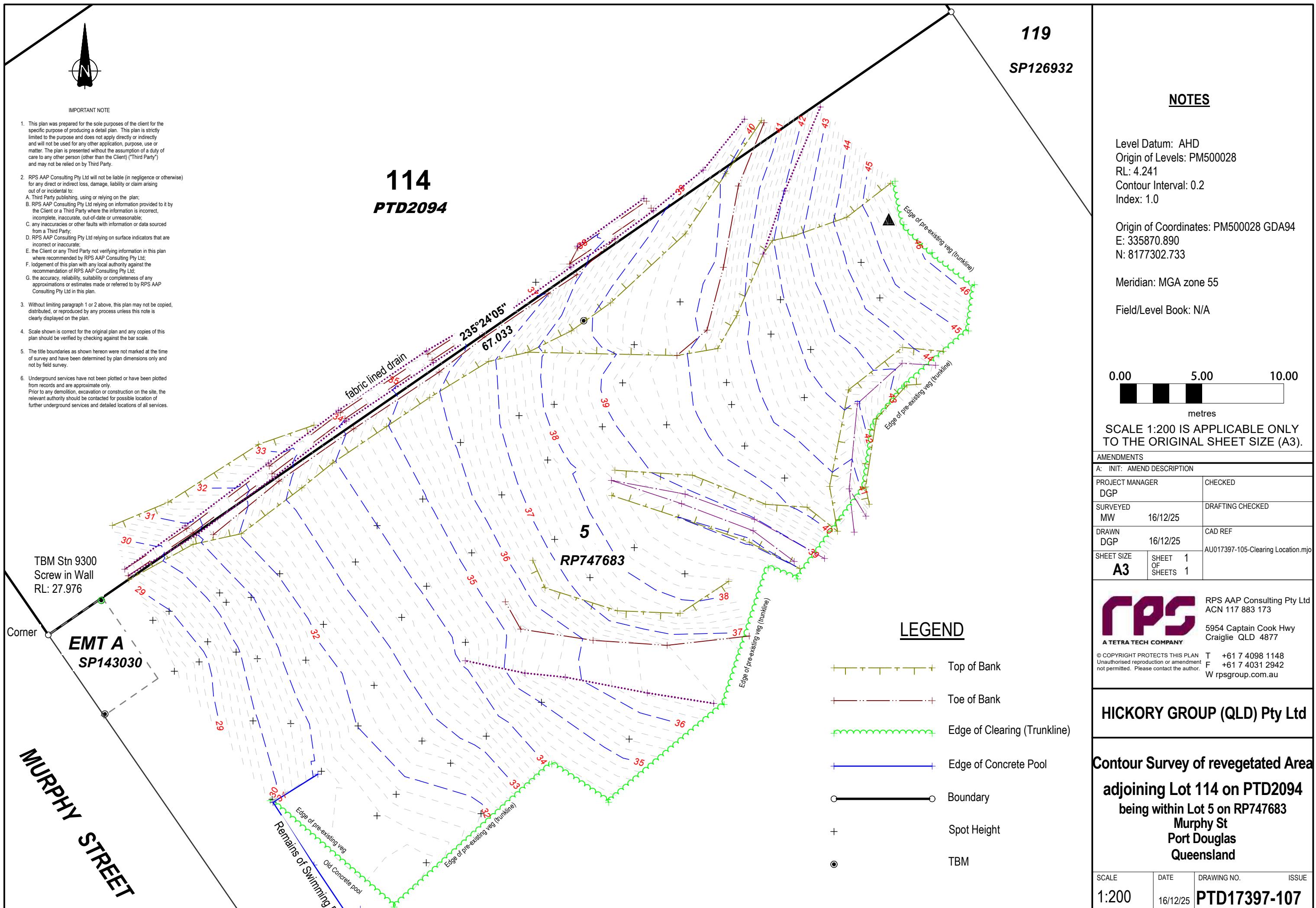


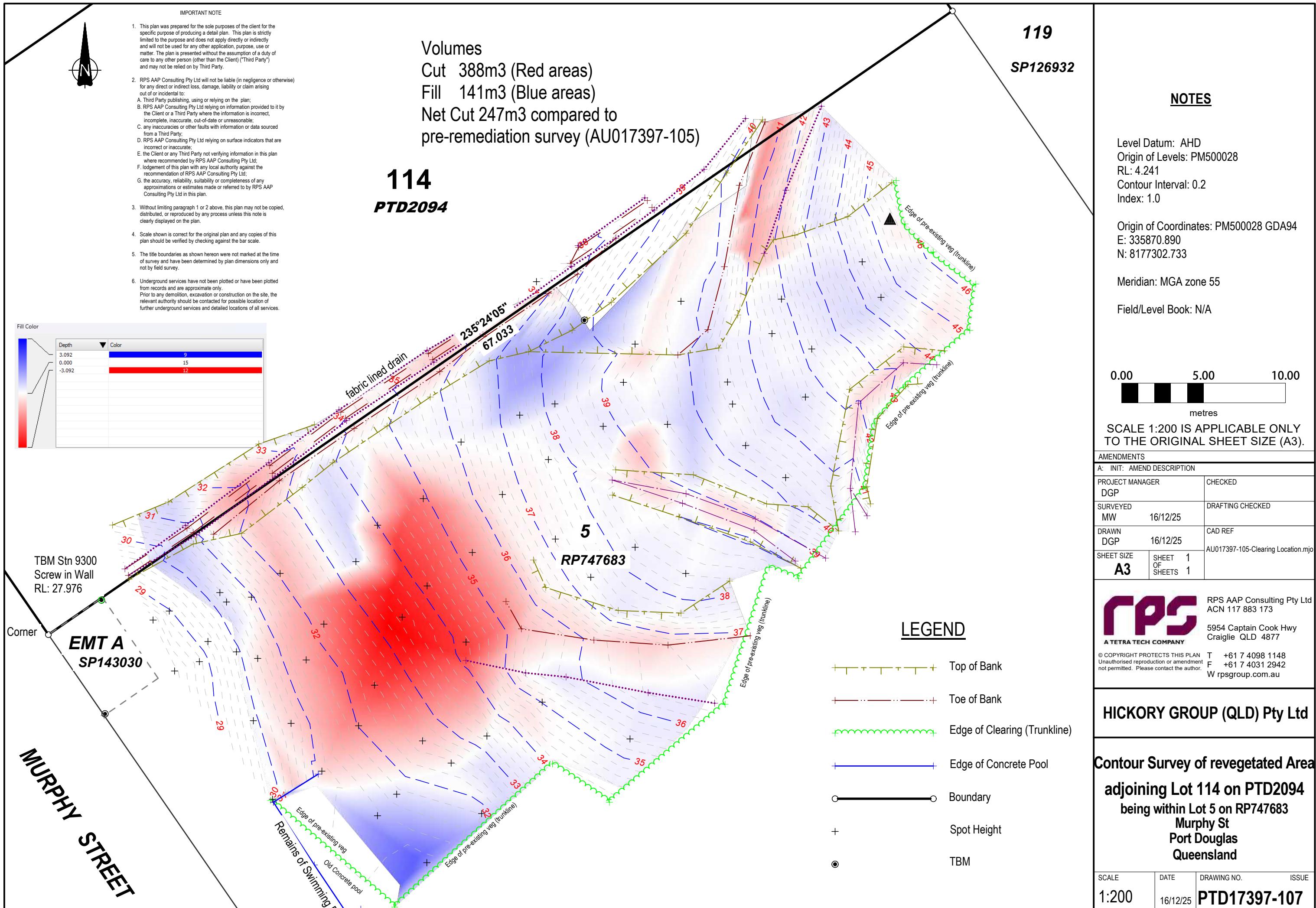
Steve Ford
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RPEQ 25762

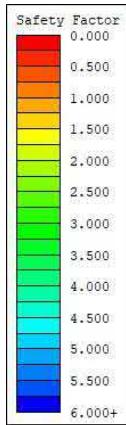
Attachments

1. Survey Drawing - Completed Profile
2. Survey Drawings - Cut and Fill
3. Results of Stability Analyses
4. AGS 2007 Risk Matrix

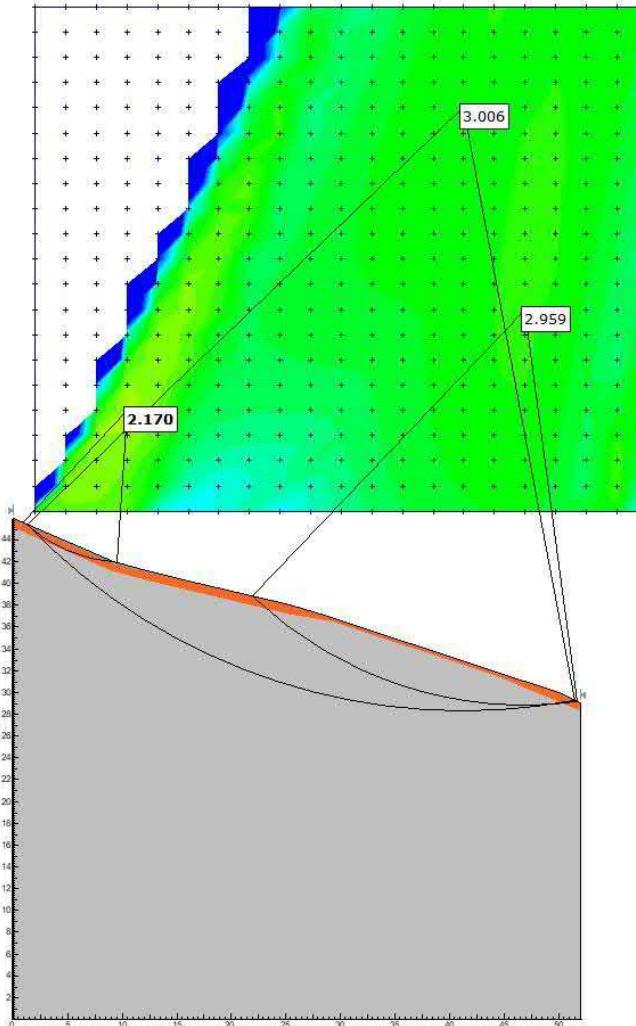






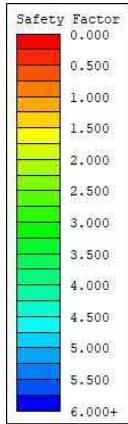


Material Name	Color	Unit Weight (kN/m³)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Fill	Blue	19	Mohr-Coulomb	3	28	None	0
Natural Clayey Soil	Orange	20	Mohr-Coulomb	3	30	None	0
Weathered Rock	Grey	21	Mohr-Coulomb	10	35	None	0

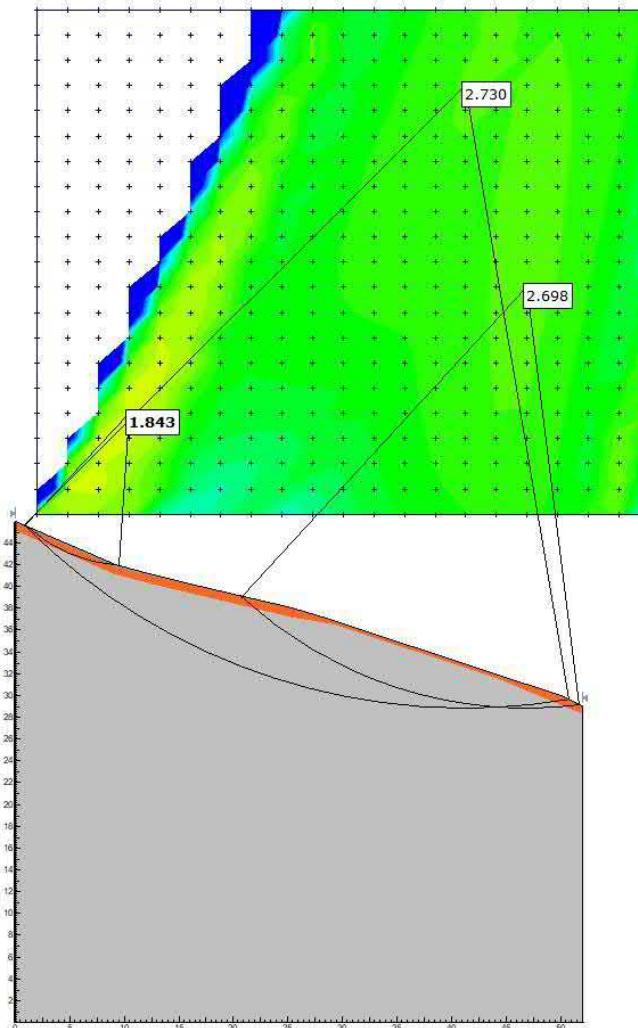


GEO | design

Client:	Hickory Constructions Group	GEOTECHNICAL ASSESSMENT
Drawn:	SRF	LOT 5 ON RP747683
Scale:	NTS	RESULTS OF STABILITY ANALYSES SECTION A DRY CONDITIONS
Project No:	24046AB-D	



Material Name	Color	Unit Weight [kN/m³]	Strength Type	Cohesion [kPa]	Phi [deg]	Water Surface	Ru
Fill	Blue	19	Mohr-Coulomb	3	28	None	0.2
Natural Clayey Soil	Orange	20	Mohr-Coulomb	3	30	None	0.2
Weathered Rock	Grey	21	Mohr-Coulomb	10	35	None	0.1



GEO | design

Client:	Hickory Constructions Group	GEOTECHNICAL ASSESSMENT
Drawn:	SRF	LOT 5 ON RP747683
Scale:	NTS	RESULTS OF STABILITY ANALYSES SECTION A WET CONDITIONS
Project No:	24046AB-D	

QUALITATIVE RISK ANALYSIS MATRIX – LEVEL OF RISK TO PROPERTY

LIKELIHOOD		CONSEQUENCES TO PROPERTY (With Indicative Approximate Cost of Damage)					
		Indicative Value of Approximate Annual Probability	1: CATASTROPHIC 200%	2: MAJOR 60%	3: MEDIUM 20%	4: MINOR 5%	
A - ALMOST CERTAIN		10^{-1}	VH	VH	VH	H	M or L (5)
B - LIKELY		10^{-2}	VH	VH	H	M	L
C - POSSIBLE		10^{-3}	VH	H	M	M	VL
D - UNLIKELY		10^{-4}	H	M	L	L	VL
E - RARE		10^{-5}	M	L	L	VL	VL
F - BARELY CREDIBLE		10^{-6}	L	VL	VL	VL	VL

Notes: (5) For cell A5, may be subdivided such as that a consequence of less than 0.1% is Low risk

(6) When considering a risk assessment it must be clearly stated whether it is for existing conditions or with risk control measures which may not be implemented at the current time

RISK LEVEL IMPLICATIONS

Risk Level		Example Implications (7)
VH	VERY HIGH RISK	Unacceptable without treatment. Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to low; may be too expensive and not practical. Work likely to cost more than the value of the property.
H	HIGH RISK	Unacceptable without treatment. Detailed investigation, planning and implementation of treatment options required to reduce risk to Low. Work would cost a substantial sum in relation to the value of the property.
M	MODERATE RISK	May be tolerated in certain circumstances (subject to regulator's approval) but requires investigation, planning and implementation of treatment options to reduce risk to Low. Treatment options to reduce to Low should be implemented as soon as practical.
L	LOW RISK	Usually acceptable to regulators. Where treatment has been required to reduce the risk to this level, ongoing maintenance is required.
VL	VERY LOW RISK	Acceptable. Manage by normal slope maintenance procedures.

Note: (7) The implications for a particular situation are to be determined by all parties to the risk assessment and may depend on the nature of the property at risk; these are only given as a general guide.



REVEGETATION SITE SURVEY OF 16 MURPHY ST. PORT DOUGLAS

Prepared by John Sullivan Bach.App.Sc.Hort.

Hortulus Australia Pty/Ltd

PO Box 798 Port Douglas Q. 4877

15 December 2025.

INTRODUCTION

Hortulus Australia Pty Ltd has been asked to provide a Survey of vegetation for the site known as 16 Murphy Street, (Lot 5 on RP747683) Port Douglas, twelve months post revegetation. The site was covered with Jutemaster biodegradable geofabric to reduce erosion and weeds before being planted with locally native rainforest species on the 17th of December 2024. The site has been irrigated to ensure the survival of the planting.

THE PLAN

The landscaping plan referred to is "**Landscape Planting Plan, Revegetation of 16 Murphy Street, Port Douglas. Dated 3/10/2024. Drawn by Hortulus Australia P/L.**" (provided below)

This plan was discussed and accepted in principle at the meeting with GGI Landscape Architects representing the owners of 16 Murphy Street and Douglas Shire Council Planning Department representative Rebecca Toronto at a site meeting on the 14/11/2024. On this basis the planting proceeded as the Wet Season was due to begin.

On discussions with GGI Landscape Architect's Rebecca Gould and based on her report dated 21/11/24, some native species were changed with other adjustments due to availability of plants at the time of planting.

On the 3/2/2025, ten larger plants (45Ltr & 100Ltr bags) were requested by GGI Landscape architects for more immediate screening. These plants were installed. Further discussions with GGI Landscape Architects in May 2025, resulted in a further 8 larger plants being added at 45Ltr & 100Ltr sizes.

RELEVANT STANDARDS & REQUIREMENTS

The original plan was drawn by a qualified landscape designer, John Sullivan, holding a Bachelor of Applied Science in Environmental Horticulture & Landscape Design, and working professionally in the Douglas Shire for over 28 years.

The plan was derived in the knowledge that Flagstaff Hill is a transitioning landscape from dry forest dominated by wattle and gum trees toward rainforest species introduced by birds. Being an urban site, bush fire prone vegetation is inappropriate. The species selection was based on low flammability, with care given to increase biodiversity for local butterfly, bird, and reptile species. Retention of vegetation and continual canopy cover is important for the future scenic amenity of Flag Staff Hill so suitable species were used.

The design adheres to the Douglas Shire Planning Scheme 2018 with attention to; SC6.6 Landscape Values, SC6.7 Landscaping, SC6.7.8.1 Plant Species Schedule and the Douglas Shire Council's Landscaping Code (Policy 4.6.3).

VEGETATION SURVEY

On the request of Douglas Shire Council a site survey of the revegetation area was conducted on the 15th of December 2025. This was to determine the success of the planting to date. The site was traversed in section to identify the species & calculate the number of plants that either survived or have grown from natural recruitment. The result is in the table below showing the proposed plant numbers from the plan, compared to the number of plants surveyed to be onsite. Plants shown in red were substitutions either requested by GGI Landscape Architects or due to availability at the time or by natural seed recruitment of plants.

PLANT SCHEDULE; 16 Murphy Street revegetation

CODE	BOTANICAL NAME	COMMON NAME	PLAN NO.	SURVEY NO.
Native Trees & Shrubs substitutions in red			3/10/2024	15/12/2025
AF	<i>Atractocarpus fitzalanni</i>	Brown Gardenia	20	22 8x4
BA	<i>Brachychiton acerifolius</i>	Illawarra Flame tree	8	7 10x4
CA	<i>Cupaniopsis anacardioidea</i>	Tuckeroo		18 8x6
CB	<i>Carallia brachiata</i>	Corky Bark Tree	13	11 12x5
CC	<i>Cyathea cooperi</i>	Sun Tree Fern	4	3 6x4
CE	<i>Cerbera floribunda</i>	Cassowary Plum		3 10x5
CF	<i>Cupaniopsis flagelliformis</i>	Northern Tuckeroo		2 8x6
DA	<i>Dillenia alata</i>	Red Beech Tree	4	4 6x5
DC	<i>Diploglottis campbellii</i>			2 8x6
DD	<i>Darlingia darlingiana</i>	Brown Silky Oak	3	5x 400mm 10x6
DT	<i>Deplanchea tetraphylla</i>	Golden Bouquet Tree	5	6 10x6
ET	<i>Eucalyptus tereticornis</i>	Blue gum		18 30x10
FI	<i>Ficus virgata</i>	Native Fig Tree	6	8 15x10
FO	<i>Ficus opposite</i>	Sandpaper Fig		5 6x6
GI	<i>Graptophyllum ilicifolium</i>	Native holly	16	4x2
GR	<i>Graptophyllum spinigerum</i>	Northern holly	2	4x2
GA	<i>Gardenia actinocarpa</i>	Daintree Gardenia		7 6x3
GS	<i>Gardenia scabrella</i>	Cape York Gardenia	11	4x1
GW	<i>Garcinia warrenii</i>	Native Mangosteen	13	8x4
HO	<i>Homalanthus populifolius</i>	Bleeding Heart Tree	20	6x6
IT	<i>Ixora timorensis</i>	Native Ixora	9	6x4
LI	<i>Leea indica</i>	Bandicoot berry	4	4 4x4
MA	<i>Melastoma affine</i>	Blue Tongue		2 2x2
MB	<i>Melaleuca Leucadendra</i>	Paperbark Tree		3 12x6
MC	<i>Macaranga tanarius</i>			5 6x6

ME	<i>Melicope elleryana</i>	Ulysses Tree	12	11	12x6
MI	<i>Mimusops elengi</i>	Mimusops Tree	5	3	10x6
ML	<i>Maniltoa lenticellata</i>	Native Handkerchief Tree	4	4	12x6
MM	<i>Micromelum minutum</i>	Lime Berry	17		6x4
MR	<i>Melicope rubra</i>	Dwarf Ulysses Tree	10	4	6x3
PC	<i>Phaleria clerodendron</i>	Native daphnia	4	12	6x4
PH	<i>Phyllanthus cuscutiflorus</i>	Pink Phyllanthus		27	6x3
PE	<i>Ptychosperma elegans</i>	Solitaire Palm	9	19	8x3
PM	<i>Ptychosperma macartheri</i>	Macarther Palm	6	11	8x3
RT	<i>Rhus taitensis</i>	Native Rhus		3	6x6
SA	<i>Syzygium angophoroides</i>	Yarrabah Satinash		7x 100Ltr bag	12x6
SR	<i>Syzygium</i> sp. "Rocky River"	Dwarf Lilly Pilly	9		4x2
SW	<i>Syzygium wilsonii</i>	Powder Puff Lilly Pilly		8	6x3
TL	<i>Tristaniopsis laurina</i>	Water Gum		5x 400mm	8x6
XC	<i>Xanthostemon chrysanthus</i>	Golden Penda Tree	3		7
<i>Xanthostemon chrysanthus</i> 'Fairhill Gold'	Dwarf Golden penda	10		10	
XV	<i>Xanthostemon verticillatus</i>	Bloomfeld Penda Tree	6		4
TOTAL TREES			233	270	
Native Groundcovers					
AT	<i>Aristolochia tagala</i>	Dutchman's Pipe Vine	30	4	5x5
DC	<i>Dianella caerulea</i>	Blue Flax Lily	150	200	0.7x0.7
LH	<i>Lomandra hystrix</i>	Mat Rush	420	456	1x1
TOTAL			600	660	

CONCLUSION

The status of the planting from the table above shows an additional 37 trees have been added since the original plan either by request or from natural recruitment of local species. This provides a high density of approximately 1 tree/3.6m². The density of ground cover plants is at 1 plant/1.5m². In addition to this there has been strong recruitment of two local sedges, *Mariscus javanica* and the local Bamboo Sedge.

The photos below show the area of planting in February 2025, just after planting and again in September 2025. Good growth rates have been achieved, and the project delivers a much greater biodiversity than what was present prior to the site disturbance.



Photo February 2025



Photo September 2025

