ASPIRE
Town Planning and Project Services

20 August 2026

Chief Executive Officer
Douglas Shire Council
64-66 Front Street
MOSSMAN QLD 4873

Attn: Kieren Nyko (Assessing Officer)

Via email: enquiries@douglas.qld.gov.au
kieren.nyko@douglas.qld.gov.au

RE: RESPONSE TO INFORMATION REQUEST REFERENCED AS MCUC 2026_5943/1

Aspire Town Planning and Project Services act on behalf of Clayton Bray (the 'Applicant' and 'Landowner') in relation to the above described matter.

We refer to the Information Request issued by Douglas Shire Council dated 20 May 2026 (Doc ID: 1366718) under Section 12 of the Development Assessment Rules V3 in respect of the above-referenced development application. We thank Council Officers for their detailed review and constructive advice notes.

We are pleased to provide the following responses to each of the items raised. Where applicable, updated plans, reports, and technical documentation have been prepared and are enclosed with this correspondence. The applicant is committed to working collaboratively with Council to resolve the identified matters and advance the application through the assessment process.

Item 1 – Earthworks Design

An Earthworks Plan prepared by All Civil Design Consultancy is enclosed as **Attachment 1**.

The plan identifies the proposed extent of earthworks and includes:

- the areas affected by earthworks;
- the proposed batter configuration;
- relevant cross-sections and the relationship of the works to the existing benched areas;
- the location and extent of the proposed development footprint; and
- the removal of one tree within the earthworks area.

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The proposed earthworks are limited and localised around the development footprint. They do not involve extensive reshaping of the land or earthworks of a scale that would materially alter the existing landform or drainage characteristics of the site.

The earthworks design principally relies upon appropriately graded and stabilised batters. The plan identifies the location and extent of any proposed retaining structures where required. Detailed engineering specifications, including batter stabilisation, drainage treatment and erosion and sediment controls, can appropriately be finalised as part of the subsequent detailed design and conditioned by Council.

Appropriate erosion and sediment control measures will be implemented during construction. Detailed measures can be confirmed through an erosion and sediment control plan prepared before works commence and may be conditioned by Council.

The earthworks associated with the on-site wastewater treatment system referenced in the Earth Test report (SI 526-25) will be minor and localised. The land application system will be installed below ground, with excavated material temporarily stockpiled and reinstated following installation. These works are not expected to result in any material or permanent alteration to finished ground levels.

Subject to any reasonable conditions potentially requiring detailed engineering design and construction phase erosion and sediment controls, the information provided is considered sufficient for Council to complete its assessment of the application.

Item 2 – Geotechnical Report

A Geotechnical Report prepared by Ground Technics is provided under **Attachment 2**.

Item 3 – Vegetation Clearing

The Earthworks Plans included under **Attachment 1** identify the existing tree locations and canopy extent based on survey information. The plans demonstrate that only one tree is required to be removed to facilitate the development.

The proposed Dwelling House has been carefully positioned within the most practical location on the site to minimise vegetation disturbance while responding to the site's topography, access and servicing requirements.

If Council considers further protection measures necessary, this matter can be appropriately addressed by a condition requiring all vegetation beyond the surveyed canopy extent to be retained and protected.

Item 4 – Vehicle Turn Around

The Engineer Plans included under **Attachment 1** illustrates vehicle swept paths facilitating vehicle entry and exit in forward gear.

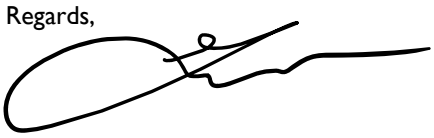
Item 5 – Building Colours

The proposed external colour scheme is:

- Roof: Basalt (Colorbond)
- External Walls: Cool Spearmint (Dulux)

We trust the information provided above and the enclosed documentation adequately addresses each of the matters raised in Council's Information Request of 20 May 2026. Should Council require any further information or clarification, please do not hesitate to contact the undersigned or Daniel Favier at Aspire Town Planning and Project Services on 0418 826 560 or admin@aspireqld.com.

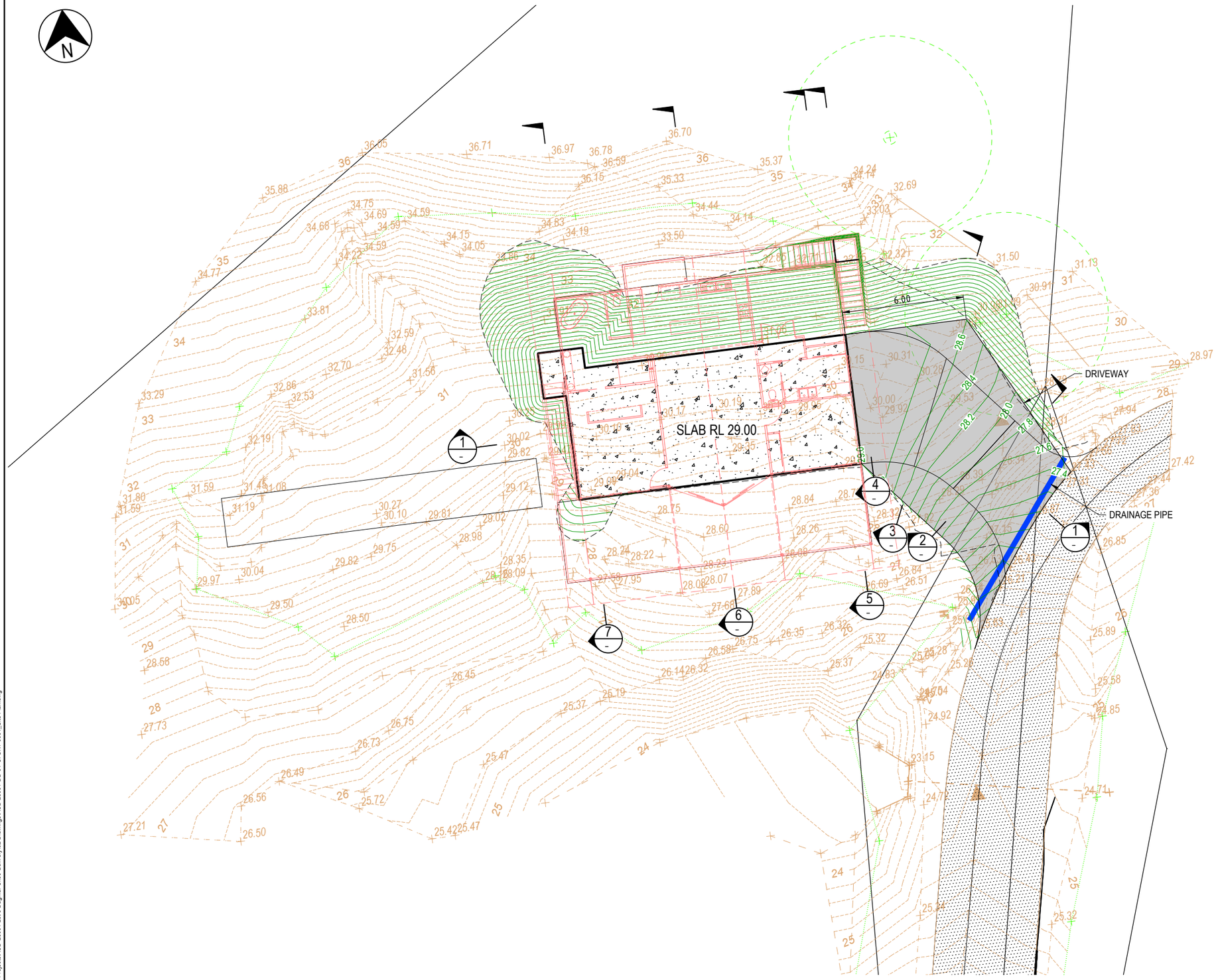
Regards,



Daniel Favier
Senior Town Planner
ASPIRE Town Planning and Project Services

ATTACHMENT 1

Earthworks and Swept Path Plan



PROJECT
LOT 3 DAGMAR CLOSE - LOWER DAINTREE

TITLE
BULK EARTHWORKS

DATE	SCALE	PROJ.No	REVISION
17.08.26	AS SHOWN	ACD-26001	P2

SCALES

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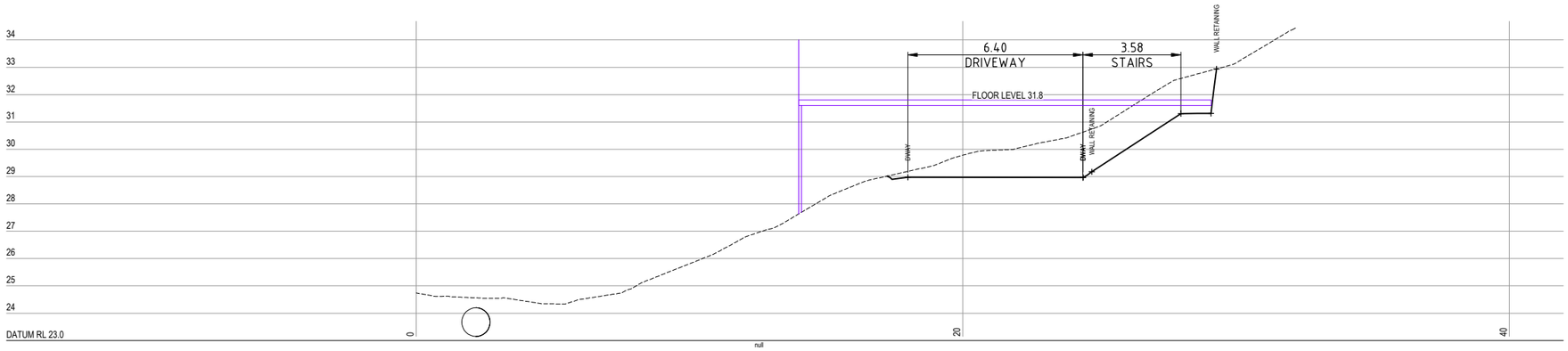

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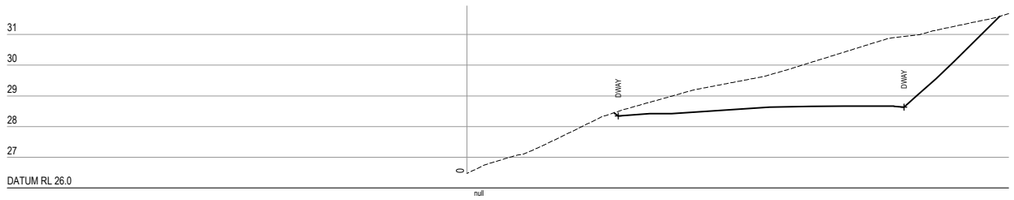

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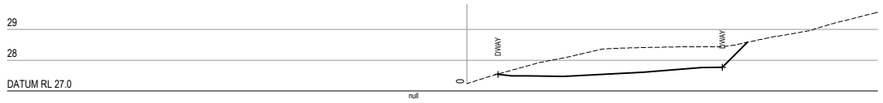

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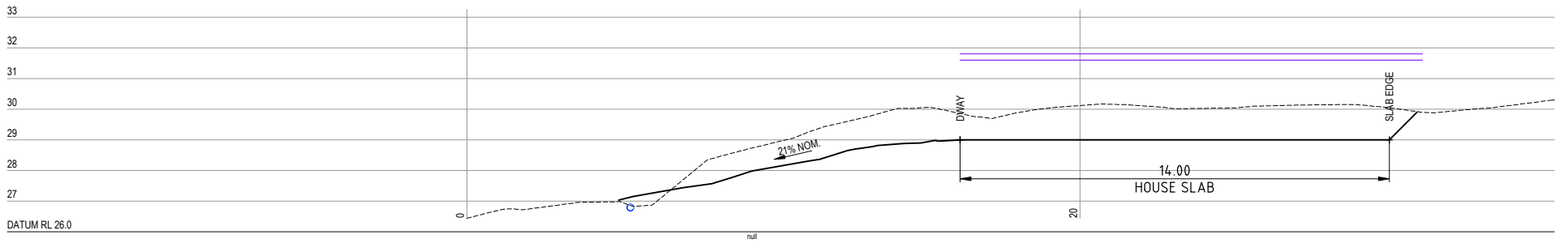

SECTION 1

PROJECT
LOT 3 DAGMAR CLOSE - LOWER DAINTREE

TITLE
BULK EARTHWORKS
CROSS SECTIONS

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04.08.26	AS SHOWN	ACD-26001	P2

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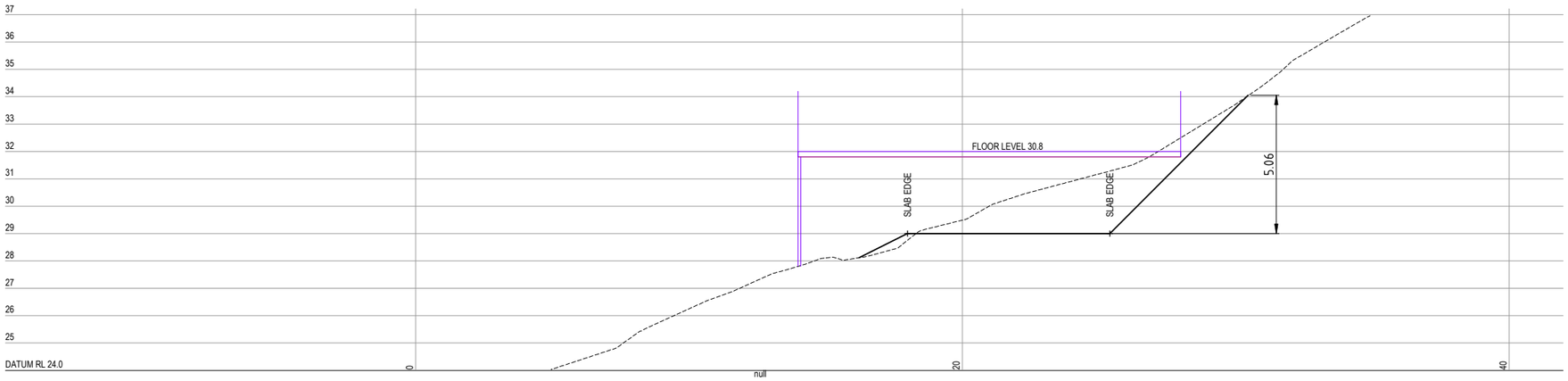

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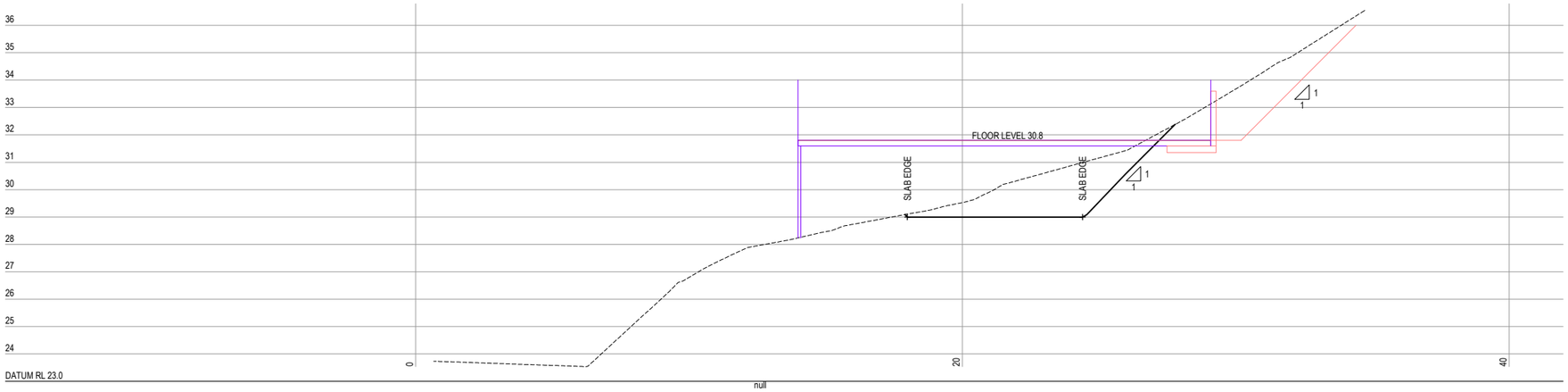

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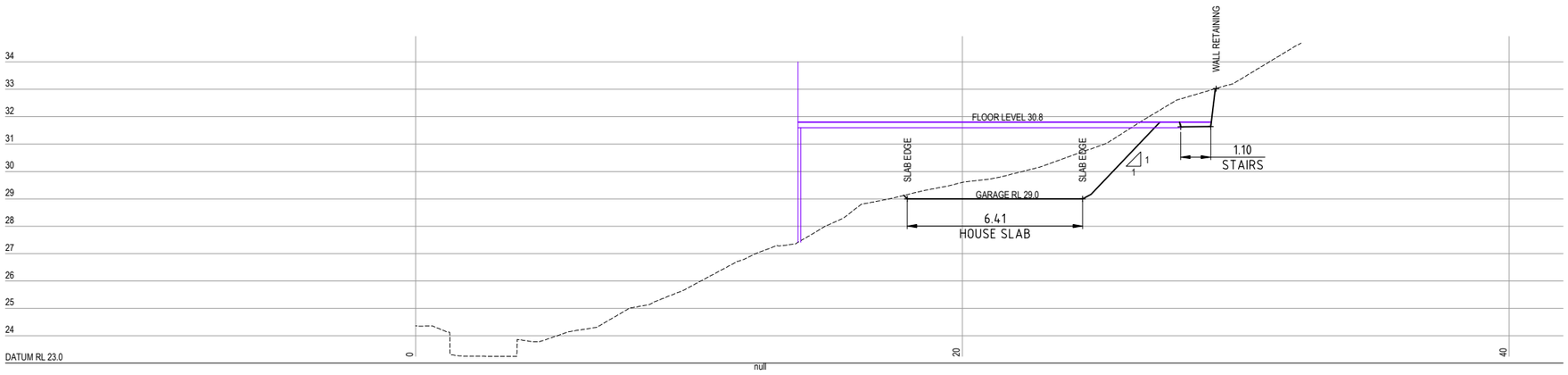

SECTION 5

PROJECT
LOT 3 DAGMAR CLOSE - LOWER DAINTREE

TITLE
BULK EARTHWORKS
CROSS SECTIONS

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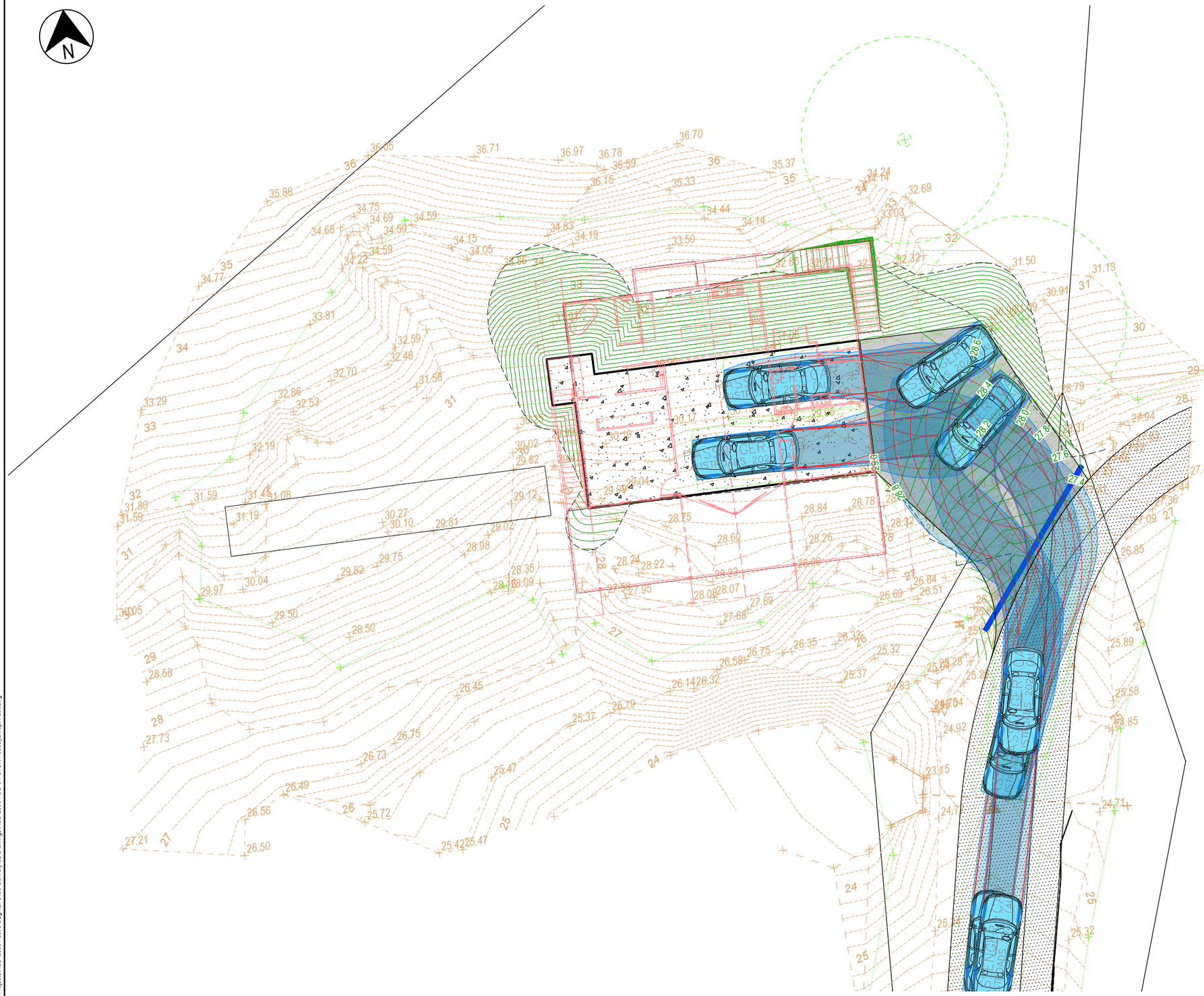

PROJECT
LOT 3 DAGMAR CLOSE - LOWER DAINTREE

TITLE
VEHICLE SWEPT PATH
PASSENGER CAR 5.2m

DATE	SCALE	PROJ.No	REVISION
17.08.26	AS SHOWN	ACD-26001	P2

SCALES

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ATTACHMENT 2

Geotechnical Assessment

Lot 3 Dagmar Close, Lower Daintree

Geotechnical Assessment

C.RYAN
12 June 2026
REFERENCE: 2604301R

Lot 3 Dagmar Close, Lower Daintree
Geotechnical Assessment

Prepared for Clayton Bray

Prepared by:
Cameron Ryan *BSc, MEngSc, RPEQ*
Ground Technics Pty Ltd
Email: cameronr@gtechnics.com.au
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Table of Contents

1.0 Introduction

Ground Technics Pty Ltd has been engaged to undertake an analysis of a proposed residential dwelling at Lot 3 Dagmar Close, Lower Daintree (Figure 1). This report presents the findings of that investigation and slope stability risk assessment.

It is understood that the proposed development will comprise an elevated pole style dwelling with ground level garage beneath the dwelling. Some minor cut and fill earthworks are planned to accommodate the garage.

This report aims to address the requirements of Council's Standard Development Conditions Suite for geotechnical risks. Namely:

- Provide site ground characterisation
- Identify any geotechnical issues at the site, e.g. historic landslides, etc. which should be considered during development of the site.
- Assess the risk of the land in accordance with the AGS Guidelines 2007.
- Provide recommendations of earthworks procedures for the site, including suitable cut and fill batter slopes.

Additionally, we will provide the following:

- Provide footing design parameters (bearing capacity, settlement, end bearing, etc).
- Retaining wall parameters.
- Site classification.
- Safe batter angles.
- Earthworks recommendations.

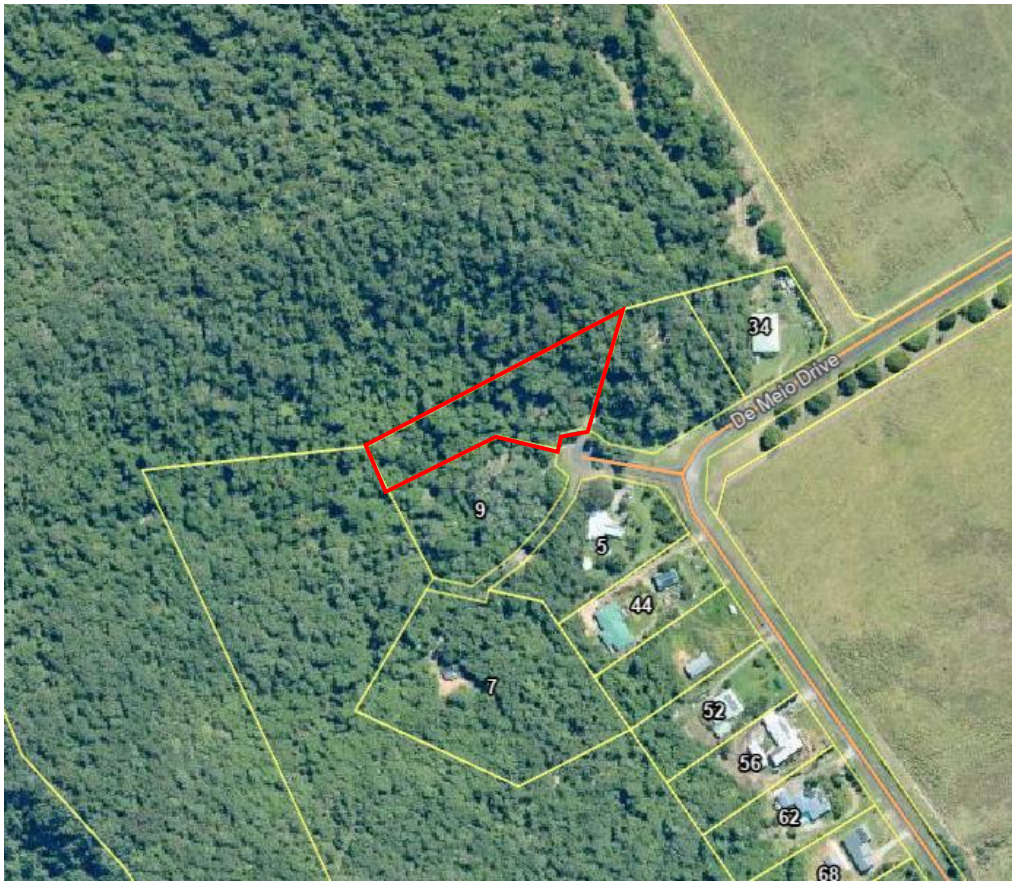


Figure 1 – Locality plan of the subject site (red line depicts the extent of site).

2.0 Geological Setting

Historic geological mapping of the area has identified that the proposed development site is underlain by stratified units of the Hodgkinson Formation which generally comprises dark grey, thinly bedded, mudstone, subordinate thin to thick bedded arenite beds, minor chert and basalt (Source: GeoResGlobe (Reference 1)).

2.1 Historic Satellite Review

A review of available historic satellite and aerial imagery was completed for the site. This review was completed to as early as the 1994, prior to this time the image quality was too poor to identify features at the site. No signs of historic instability were observed from this review.

3.0 Site Description

The site is situated on the southern aspect of a hill with the natural slopes dipping towards the south at approximately 27°. It is inferred that cut earthworks have been undertaken in central portion of the site in which the dwelling is to be situated. The earthworks appear to have

reduced the overall slope angle to approximately 11° but had not been completed to the final layout called for in the design drawings. The building pad area had been cleared of all major vegetation.

To the south of the building pad was a seasonal creek, the creek bank displayed signs of scouring and was dipping to the south at approximately 40° and was 3m to 4m high. To the north of the building pad area, the land dipped upwards at approximately 27° to 30° to an elevation of approximately RL 95m AHD, approximately 65m above the building pad RL. The hill slope was covered in thick rainforest vegetation.

Photographs of the site are displayed below.

Photograph No. 1 – Building pad, looking northwest from the access road

Photograph No. 2 – Building pad, looking southeast

Photograph No. 3 – Typical creek bank

4.0 Field Work

Fieldwork was completed by Ground Technics on the 7th May 2026 that included a visual assessment of the site, its surrounds and subsurface investigation. The subsurface

investigation comprised the excavation of two boreholes to a depth of up to 4.5m. Dynamic Cone Penetrometer (DCP) testing was completed throughout the site at the locations displayed in Appendix A, with the results presented in Appendix B.

The subsurface materials encountered across the site are summarised as follows:

- Firm Silty CLAY of medium plasticity to a depth of up to 1.5m.
- Stiff or better Silty CLAY of medium plasticity below 1.5m.

The groundwater table was not observed at the site nor was seepage observed. It should be noted that groundwater levels are affected by climatic conditions and by soil permeability and is therefore likely to vary throughout the seasons. For building and retaining wall design purposes, it should be assumed a seasonal groundwater flow will occur.

The DCP results from a previous geotechnical investigation that were completed at the site by Earth Test Pty Ltd in 24 June 2025 (Reference 2 / Appendix B) were also utilised in the analysis.

5.0 Slope Stability Assessment

A slope stability analysis was completed for one section through the site focused around the proposed development area, assessing the stability with and without the surcharge loading from the proposed dwelling.

The analysis was undertaken using the proprietary limit-state software Slide 2 by RocScience. The geological model adopted in the analysis is based on findings of the subsurface investigation, site observations made during the inspection and knowledge of the local geology.

5.1 Material Properties

The material parameters listed in Table 1 have been adopted based on the results of a literature review of commonly adopted values associated with the materials encountered.

Table 1 – Shear strength parameters

Material	Consistency	Unit Weight (kN/m^3)	Effective Cohesion kPa	Friction Angle (Degrees)	Pore Pressure Coefficient
Sandy Silty CLAY	Firm	17	5	26	0.2
Sandy Silty CLAY	Stiff or better	18	7	27	0.2

*Ru below 2m taken as 0.1.

5.2 Limit State Equilibrium Analysis

The location of the section is displayed in Appendix A, no other sections have been considered. The analysis adopted the material parameters in Table 1 and treats each material type as homogeneous.

Analyses were performed for what is considered to be dry or “normal” conditions and for what is considered to be wet or “extreme” conditions. The pore water pressure coefficients as displayed in Table 1 were used to simulate seepage/water infiltration for “extreme” conditions within the soils. Based on the site geometry, it was anticipated that the upper 2m of the subsurface profile would likely become completely saturated during extreme rainfall, however materials beneath this depth would maintain equilibrium.

A surcharge load of 115kN per pile and a uniform distributed load of 10kN/m^2 for the garage was applied to the ground to represent the proposed surcharge load from the dwelling. These loads must be confirmed by the structural engineer or similar as being more than the anticipated loads for the findings of the stability analysis to remain valid.

The results of the stability analysis are presented in Appendix C and are summarised in Table 2.

Table 2 – Results of stability analyses

Section	Calculated Factor of Safety	
	Dry Conditions	Wet Conditions
A-A (Current)	1.56	1.38
A-A (Proposed)	1.34	1.23
A-A (Proposed- Modified)	1.52	1.31

5.3 Review of Stability Modelling

The Factor of Safety (FoS) against a failure occurring is in general terms 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 FoS of 1.0 indicates the forces are balanced. A FoS below 1.0 indicates slope failure has or will occur.

Generally, a FoS of 1.5 or greater should be achieved for dry, “normal” operating conditions. For short term, wet or “extreme” conditions, where the site may become saturated due to heavy rainfall, a minimum FoS of 1.3 is generally required.

The assessment is based on observed ground conditions and our assessment of the assumed site geometry following construction. If conditions differ from those modelled, results will vary and re-analysis must be completed.

5.3.1 Findings

The analysis demonstrates that while adopting the subsurface profile shown in Appendix C and the material parameters listed in Table 1, the FoS for the site in its current configuration are above the recommended minimums. However, following development as per the design, fall below these minimums. The area with the lowest FoS’ were concentrated around the proposed northern cutting and southern creek bank.

Additional modelling has demonstrated that following the adoption of the site specific recommendations outlined in Section 5.4 of this report, the required minimum FoS can be achieved.

5.4 Site Specific Recommendations

To achieve the required minimum FoS at the site and reduce the likelihood or consequence of instability occurring at the site, the following recommendations must be adopted in development planning:

- Engineer designed retaining walls shall be constructed along the northern cutting to a minimum of 2.5m and along the creek bank a minimum of 2m. These are required due to the relatively low strength of the upper soil mass.
  Modification of the heights may be required following final earthworks. It is recommended once the earthworks are completed, Ground Technics reinspects the site and updates our findings accordingly.

All retaining walls and footings shall be designed to accommodate for any creep soil loading.

- Any uncontrolled fill at the site should be removed and replaced with fill material compacted in accordance with AS3798. This will require the removal of the fill to its full depth, keying into the natural slope, and building up in layers to the finish level.
- All footings must be found into the stiff or stronger natural Sandy Silty CLAY unless on level ground supported by engineer designed retaining walls.
  The final footing locations must be provided to Ground Technics to confirm the validity of our assessment. Confirmation that footings are in this material during construction must be made by a Ground Technics' geotechnical engineer.
- Any footings located in front of an unsupported cutting shall be designed to withstand the impact of a potential slope failure.
- All stormwater at the site should be collected in concrete lined drains or collection pits and piped away from the sloping sections of the site.
- Maintain the thick rainforest vegetation cover to the rear of the dwelling to assist in maintaining ground stability.

6.0 Risk Assessment

Landslides present significant hazards that can lead to loss of life, damage to property, and environmental degradation. In response to these threats, the Australian Geomechanics Society (AGS) issued comprehensive guidelines in 2007 to standardise the approach to landslide risk assessments. These guidelines offer a framework for identifying, evaluating, and mitigating landslide risks to ensure the safety and sustainability of affected areas. A risk assessment was undertaken for the identified slope hazards at the site. Definition of the terms used in this report with respect to the slope risk assessment and management is given in AGS 2007c (Reference 3).

6.1 Identification of Hazards

Indicators of instability within the soil beneath the site can include, but are not limited to:

- Creep movement– observed by tilting of structures including trees, fences or by soil/rock encroaching on roads or over drains, gutters etc.
- Hummocky disturbed ground in or at the base of slopes.
- Tension cracks in or at the top of slopes.
- Sunken ground at the crest of slopes.

Erosional scouring was observed along the creek bank, while sunken ground was observed in the northern slope cutting. However, no signs of deep-seated instability were observed during the appraisal of the site. It shall be understood however that the extent of our assessment was limited to the site and its immediate surrounds. Our evaluation has also considered our historic aerial imagery review, as detailed in Section 2.1.

6.2 Risk to Property

For risk to property, the risk assessment was primarily based on a qualitative approach. The descriptive terminology used for qualitative assessment in this report is provided in AGS 2007c Appendix C, page 91 – 92. The assessment process for the hazards identified involved the following:

- Risk estimation (comparative analysis of likelihood of a slope failure versus consequence of the failure).
- Evaluation of the estimated (assessed) risk by comparing against acceptance criteria. Risk management and control strategies are recommended where the estimated risk is beyond the acceptable/tolerable limit.

6.3 Likelihood and Consequence

Ground Technics have listed the anticipated geotechnical hazards that could affect the site and assigned the estimated likelihood of a hazard developing using the annual probabilities listed in the AGS guidelines as well as utilising the descriptive terminologies presented in the same document.

The qualitative measure of consequence to the proposed dwelling have been assessed based on the most likely 'average' case outcome. The descriptive terminology is provided in the guidelines and is duplicated below.

Catastrophic - Structure completely destroyed and/or large scale damage requiring major engineering works for stabilisation. Could cause at least one adjacent property major consequence damage.

Major - Extensive damage to most of structure, and/or extending beyond site boundaries requiring significant stabilisation works. Could cause at least one adjacent property medium consequence damage.

Medium - Moderate damage to some of structure, and/or significant part of site requiring large stabilisation works. Could cause at least one adjacent property minor consequence damage. With an indicative value of between 10% and 20% of the asset value.

Minor - Limited damage to part of structure, and/or part of site requiring some reinstatement stabilisation works. With an indicative value of between 1% and 5% of the asset value.

Insignificant - Little damage

Table 3 present the estimated likelihood and consequence to the dwelling, the current risk and anticipated risk following implementation of the recommendations outlined in Section 5.4 and throughout this report.

Table 3 – Risk assessment

Hazard	Comment	Prior to Remediation			Remediation Works	Following Remediation		
		Likelihood	Consequence	Preliminary Risk		Likelihood	Consequence	Preliminary Risk
Instability above the dwelling impacting the dwelling	Landsliding failure above the site due to rain, erosion, fire, disturbance by people or animals.	Rare (10^{-5})	Major	Low	Maintain vegetation above site	Rare (10^{-5})	Major	Low
Soil Creep	In hill slopes exceeding 20°	Likely (10^{-2})	Medium	High	Design retaining walls for creep loads and found structures in stiff or stronger soils	Unlikely (10^{-4})	Medium	Low
Localised instability through any cuttings, fill slopes or the creek bank	Landsliding failure around any slope crests and batter cuttings / fill / natural slopes.	Likely (10^{-2})	Medium	High	Fully support any cuttings and the creek bank with an engineer designed retaining wall.	Unlikely (10^{-4})	Medium	Low
Drainage triggered localised instability	On both the existing and cut slopes	Likely (10^{-2})	Minor	Moderate	All stormwater at the site should be collected in concrete lined drains or collection pits and piped away from the sloping sections of the site.	Unlikely** (10^{-4})	Minor	Low

*Assessment based on the understanding the overall site has not suffered any major slope instability over its life.

*Based on the understanding that any captured stormwater will be collected and discharged from the site in a controlled manner, e.g. concrete lined drains or collected in pits and piped away from the site and have scour protection at the outlet.

In our assessment of the potential consequences of a hazard, we have assumed that human intervention will take place in the event of erosion, failures or persistent minor instability. In other words, it is presumed that failures will not be allowed to continue over an extended period without corrective measures.

6.4 Risk Level Discussion

Regarding tolerable levels of Risk to Property, the AGS guidelines indicates that:

- 'Low' risk is "usually acceptable to the regulator".
- 'Moderate' risk may "be acceptable in certain circumstances (subject to regulator's approval) but requires investigation, planning and implementation of treatment options to reduce the risk to Low'.
- 'Very High' risk is 'unacceptable without treatment' in order to mitigate risk.

As outlined in Table 3, based on the understanding the recommendations listed in this report will be adopted the Risk to the Property, is assessed as Low.

7.0 Engineering Properties

7.1 Footings

7.1.1 Shallow Footings

Shallow footings founded into the firm soils below approximately 0.6m depth may be designed for an Ultimate Bearing Capacity of 300kPa. Elastic settlements under such applied loading are predicted to be less than 20mm

In making our assessment of the predicted settlement, it has been assumed that a FoS of 3.0 will be applied to the ultimate bearing capacity values listed.

Given the variable soil strength encountered across the site during the investigation, some ground modification may be required to allow the use of shallow footings. Construction phase testing must be completed in the base of the footings prior to the placement of steel or concrete. Where the required bearing capacity has not been achieved, reworking of the insitu soil or removal and replacement with compaction controlled fill will be required. These works must be completed in accordance with AS3798 and the recommendations outlined in Section 7.7 of this report

No soil resistance should be relied upon on the downslope side of the footings.

If footings are positioned near an underground service, retaining walls or other structure, it is recommended to extend the footing at least 0.3 m below an imaginary line projected at a 45-degree angle from the lowest point of the service/obstruction. Figure 2 provides a visual representation for reference.

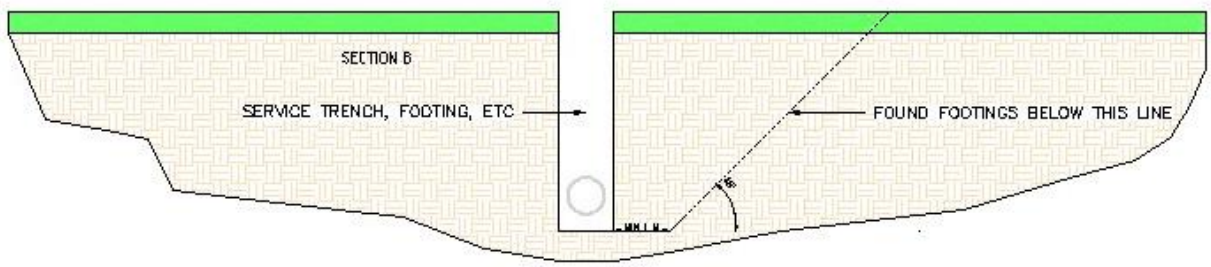


Figure 2 – Influence of trenches/ services

7.1.2 Bored Piers

The design of vertically loaded bored piers that are founded at least two pile diameters into the designated strata can adopt the ultimate values that are listed in Table 4 below. In calculating these parameters, it is assumed that the piers will be found a minimum of 4x the width of the pier or greater.

Pile skin friction in the upper 1.5m of natural soils and the full depth of the fill should be ignored in the design. This precaution is necessary due to the potential separation between the pile and the ground due to soil shrinkage during drying. The pier footings shall be designed to accommodate any potential lateral load from a landslip.

Table 4 - Deep footings – ultimate geotechnical parameters

Material Type	Minimum Depth	Skin Friction (kPa)	End Bearing (kPa)
Stiff Sandy Silty Clay	1.6m	18	560

To ensure the proper performance of piles, it is recommended to have them designed and certified by a qualified structural engineer and constructed according to the minimum requirements specified in AS2159 - Piling Design and Installation. It is highly recommended that a strength reduction factor of 0.42 is applied to this value.

Settlements of piles that are loaded in a manner like the one described above are not expected to exceed approximately 20mm.

7.2 Site Classification

Due to the potential for slope instability, the site is classified as Class P in accordance with AS2870.

To provide an indication of potential ground movements that could be experienced at this site, a shrink-swell index (Iss) value of 2.2% for the clay soils was inferred based on the previous experience with the soils encountered. Based on the shrink-swell value and empirical methods described in Section 2.3 of AS2870, the calculated surface movement (ys) in response to normal seasonal soil suction variations could potentially be in the Class M category (20mm to 40mm).

This classification is valid for its current configuration based on the understanding that no earthworks have been completed at the site and the tension crack zone which develops in soils over time is fully present.

Tension cracks act like drainage and stress relief features, allowing rainfall to infiltrate rapidly and equalise suction in the upper soil zone. By breaking the continuity of the near-surface soil, they reduce the depth over which seasonal moisture changes propagate, limiting how far drying or wetting fronts can move. The result is smaller seasonal volume changes and reduced movement in the underlying soil mass.

The removal of the tension crack zone via reworking the site, will result in increased seasonal movement with the site falling into the H1 Class category (40mm to 60mm).

Should bulk earthworks be undertaken, in which fill is imported to the site, the site will need to be reclassified using the shrink/swell parameters and depth of any imported fill. Should any cutting be completed at the site, the classification will also need to be reassessed.

Proper site maintenance is crucial for the long-term performance of any building's foundation system. As such, the guidelines outlined in the attached CSIRO publication "Foundation Maintenance and Footing Performance: A Homeowners Guide" should be followed to ensure the site remains in optimal condition.

7.3 Retaining Wall Parameters

Recommended retaining wall design parameters for the materials encountered during the investigation are provided in Table 5. These parameters are unfactored and drained (of pore pressures) and have been inferred based on the information available.

Table 5 – Retaining wall parameters

Material	Unit Weight (kN/m^3)	Ka	Kp	Ko
Firm soils	18	0.42	2.37	0.59
Stiff or better soils	20	0.40	2.46	0.57
Controlled fill	21	0.40	2.46	0.57

Ka- Coefficient of active earth pressure, Kp- Coefficient of passive earth pressure, Ko- Coefficient of at rest earth pressure.

To ensure the safety and stability of retaining walls, it is recommended that they are designed and certified by a qualified structural engineer and built in accordance with the minimum requirements outlined in AS4678 - Earth Retaining Structures.

Retaining walls shall be founded into the stiff (or stronger) natural Sandy Silty CLAY, typically encountered below 1.5m and designed for the allowable bearing pressures and for lateral soil pressures developed due to creep movement. Retaining walls could also be founded into compaction controlled fill.

A zone of free draining backfill material should be provided behind the retaining wall to prevent a build-up of water pressure due to rainwater ingress and/or groundwater seepage and to reduce the potential for lateral swelling pressures. Any retaining wall backfill should comprise a free draining material with a subsurface drainage pipe installed behind the rear base of the wall. The drainage pipe should be located in the base of the backfilled trench and should be carefully graded to reduce the potential for water to remain in the backfill.

7.4 Temporary Batter Angles

The following batter angles are recommended for use during construction of the site and apply during construction duration (ie. day by day basis). Steeper batters are possible by use of retaining structures. Fill batter slopes are dependent on suitable compaction being achieved.

Table 6 – Recommended Batter Angles

Material	Short Term	Long Term
Firm clay[1]	1V:1.5H	1V:2H
Engineered fill[2]	1V:1H	1V:1.5H
Stiff or better clay[2]	1V:1H	1V:1.5H

Note 1: Maximum height of 1.5m, subject to final inspection and approval.

Note 2: Maximum height of 2.5m, subject to final inspection and approval..

If batters are to be left untreated for any length of time, a batter angle of 1V:2H is recommended and berm widths are to be strictly maintained.

It should be noted that all trench excavations deeper than 1.5m will require shoring to comply with the regulations of the Workplace Health and Safety Act. Benching practices are recommended for excavation depths greater than 1.5m should shoring and retention measures not be utilised.

7.5 Site Drainage

It is a requirement that good drainage practices are implemented at this site, these include but are not limited to; the provision of subsurface drainage behind any retaining walls, the provision of drainage structures or slope grading on any proposed benches, and the collection and discharge of stormwater from the site.

Lined surface and subsurface drains should be constructed and water collected by these drainage systems, together with run-off from gutters, down-pipes, driveways and paved areas should be directed into the stormwater reticulation system or lawful discharge point on level ground.

Particular attention should be given to drainage and erosion control measures during site development. Areas where surface groundwater seepage currently exists or becomes apparent during or immediately after periods of heavy rainfall may require sub-soil drains. Subsoil drainage should be constructed to no less than the full depth behind each retaining wall

It is recommended that earthworks are not undertaken during the wet season due to the potential for boggy and saturated ground at this site.

7.6 Excavatability

It is anticipated that upper level footings, trenches, etc will readily be excavated with medium sized earthmoving equipment, e.g. 5 to 10 tonne excavator or backhoe. For bored piers, most

equipment, including excavators with auger attachments, should be able to achieve the desired excavations in the soils encountered. For bulk earthworks, larger plant such as 10 to 20 tonne excavators will likely be required.

7.7 Earthworks Recommendations

All filling earthworks must comply with the principles outlined in AS3798. The following provides a general procedure for site preparation and earthworks:

- Remove topsoil, soil containing significant organic materials, 'uncontrolled' fill, and any deleterious soft, wet, or highly compressible materials encountered at footing or pavement formation levels.
- Conduct ‘proof’ rolling of exposed surface levels using a minimum 12 tonne static weight smooth drum roller or equivalent. Soft or loose material that cannot be compacted should be removed and replaced with approved select fill.
- Exposed natural foundation soils are to be compacted to a minimum dry density ratio of 98% using Standard compaction, with moisture content maintained between -2% (dry) and +2% (wet) of optimum moisture content (OMC).
- Excavations should remain free of water to ensure stability of surrounding soils and suitable working conditions until foundations are installed.
- Where foundation levels require raising or subgrade materials need excavation (remove & replace), prepare foundation soils as detailed below:
    - Place approved filling in uniform horizontal layers not exceeding 200mm (loose thickness) and compact each layer to achieve a dry density ratio of at least 98% using Standard compaction for cohesive soil, or at least 75% density index for sand. Cohesive soil fill moisture content should remain within -2% to +2% of OMC during and after compaction.
    - Place filling at least two (2) metres beyond the design profile and subsequently trim to the design profile.
    - When unsuitable materials are excavated, remove all such in-situ soils from the site and use approved select fill, placed and compacted in the excavation. Bench the excavation to "key in" the select fill and facilitate compaction. Benches should slope back at 1V:5H and be at least 0.6m wide.
    - Approved general fill should be well graded, free from organic materials, have a Liquid Limit less than 35%, and not contain individual particles larger than 75mm.

For earthworks beneath proposed structures or pavements to be classified as 'controlled', they must be conducted under full-time 'Level 1' inspection and testing as specified in accordance with AS3798:2007.

7.8 Concluding Commentary

As with all hillside developments in Far North Queensland, some degree of batter instability is to be anticipated. This may manifest as minor slumping, slipping, or soil erosion during or following extended periods of rainfall. Such instability is generally acknowledged within the region and must be recognised and accepted by all parties participating in residential development on the allotment.

8.0 References

1. Department of Resources, Queensland Government. GeoResGlobe. Retrieved 4 August 2025, from https://georesglobe.information.qld.gov.au.
2. Construction Soiltest Pty Ltd (2025), "Site Classification and Wastewater Management System *for Clayton Bray, Lot 3 Dagmar Close, Lower Daintree",* Job No. SI526-25.
3. AGS (2007a). "*Guideline for landslide susceptibility, hazard and risk zoning for land use planning"*, Australian Geomechanics, Vol 42, No. 1, March 2007.

9.0 Residual Design Risk and Limitations

Ground Technics have employed accepted geotechnical engineering procedures, and our opinions and conclusions are made in accordance with generally accepted principles and practices of this profession. The contents of this report are valid as of the date of preparation. However, changes in the condition of the site can occur over time as a result or either natural processes or human activity. In addition, advancements in the practice of geotechnical engineering and changes in applicable practice codes may affect the validity of this report. Consequently, this report should not be relied upon after an eclipsed period of twelve months without a review by Ground Technics for verification of validity.

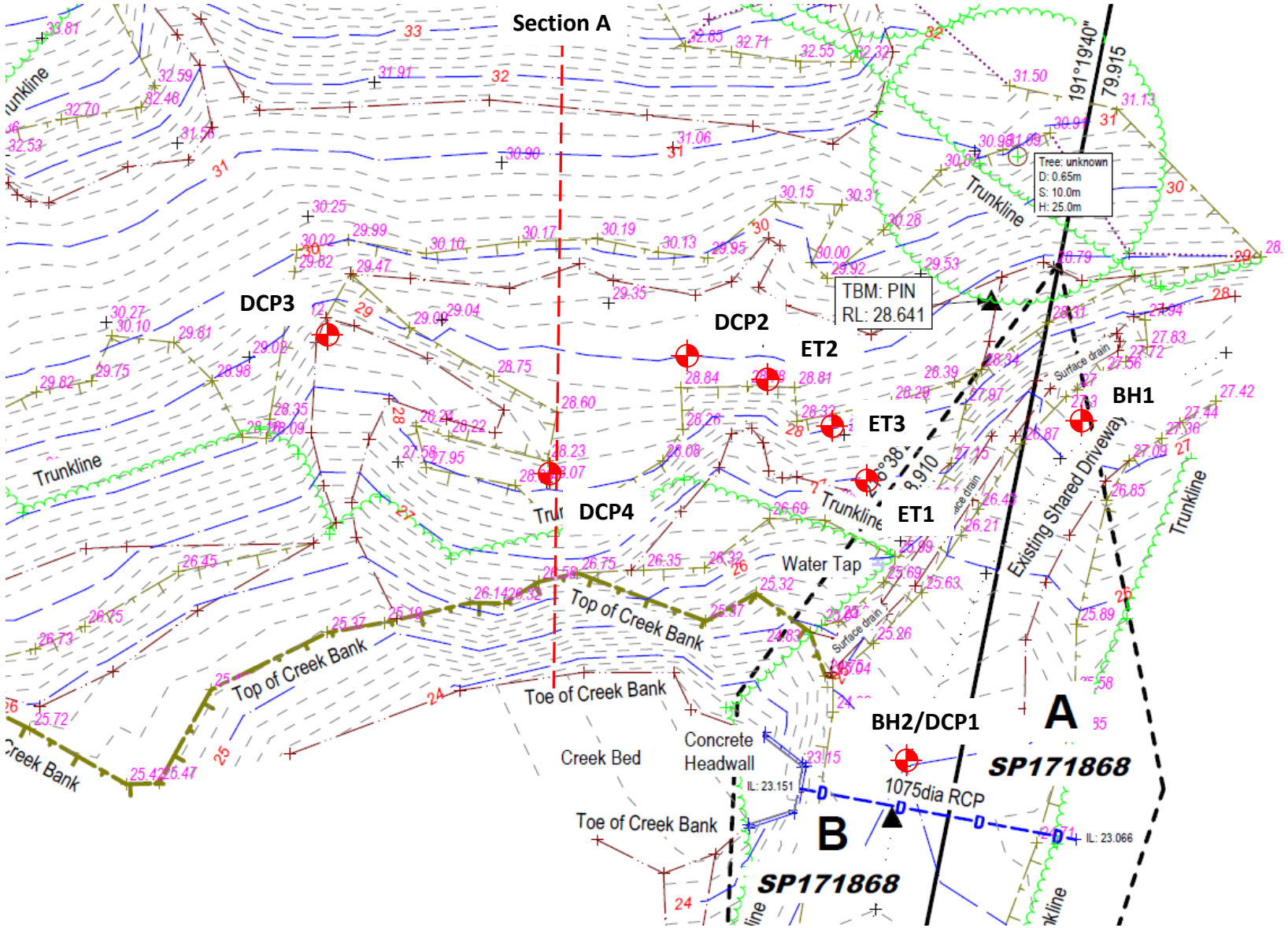
This document has been prepared by Ground Technics for the particular purpose outlined in our proposal for the use by the client for planning purposes. No other warranty, expressed or implied, is made as to the professional advice included in this report.

It should be understood that conditions may exist which were not detected given the limited nature of the enquiry Ground Technics was engaged to undertake with respect to this site. Variations in conditions may exist between assessed locations, and there may be special

conditions pertaining to the site which have not been revealed by the investigation which therefore have not been taken into account in the report. Therefore, additional investigations or studies may be required.

The report has been prepared for use by the client and not for use by any other parties, as this report may not contain sufficient information for use by those parties.

Appendix A



Issue	Description	Date	DRN	CHK	APP
1	Test location plan	01/06/26	CR		CR

GROUND TECHNICS

CLIENT

Clayton Bray

TITLE

Lot 3 Dagmar Close, Lower Daintree

Geotechnical investigation test location plan

Project No.
2604301

Drawing No.

Appendix A

Appendix B

Ground Technics Pty Ltd
Email : admin@gtechnics.com.au
Phone : 0403 657 467
Web : gtechnics.com.au

HOLE NO.:	BH1	**SHEET:**	1 of 1
CUSTOMER:	Clayton Bray	**JOB NO:**	2604301
PROJECT:	Lot 3 Dagmar Close, Lower Daintree Slope Stability Assessment	**DATE:**	7/05/2026
LOGGED BY:	CR	**REVIEWED BY:**	CR
MACHINE:	Ezi Probe	**RL:**	-
BH DIMENSIONS:	100mm diameter auger	**COORDINATES:**	-

Depth (m)	Method	Water	Sample or Field Test	USCS Symbol	Soil/Rock Description	Moisture Condition	Consistency/ Density	DCP (blows per 100mm)	Additional Observations
0.0 – 0.6	Auger	Not Encountered			Sandy Silty CLAY, low plasticity, brown, fine to medium sand, moist		F		
0.7 – 2.4				Cl	Sandy Silty CLAY, medium plasticity, red brown, fine to medium sand, trace medium gravel, moist	M			
2.5 – 2.7					Becoming harder		St		
2.8 – 4.4					Broke through harder layer at 2.8m				
4.5					Borehole Terminated				
4.6 – 4.7									

Moisture Condition
D- Dry
M- Moist
W- West

Consistency
VS- very soft, S- soft, F- firm, St- Stiff
Vst- Very Stiff, H- Hard

Density
VL- very loose, L- loose, MD- medium dense
D- dense, VD- very dense

Additional Observations
PP- Hand Penetrometer Value

Ground Technics Pty Ltd
Email : admin@gtechnics.com.au
Phone : 0403 657 467
Web : gtechnics.com.au

HOLE NO.:	BH2	**SHEET:**	1 of 1
CUSTOMER:	Clayton Bray	**JOB NO:**	2604301
PROJECT:	Lot 3 Dagmar Close, Lower Daintree Slope Stability Assessment	**DATE:**	7/05/2026
LOGGED BY:	CR	**REVIEWED BY:**	CR
MACHINE:	Ezi Probe	**RL:**	-
BH DIMENSIONS:	100mm diameter auger	**COORDINATES:**	-

Depth (m)	Method	Water	Sample or Field Test	USCS Symbol	Soil/Rock Description	Moisture Condition	Consistency/ Density	DCP (blows per 100mm)	Additional Observations
0.0	Auger	Not Encountered		CI	Sandy Silty CLAY, low plasticity, red brown, fine to medium sand, trace fine to medium gravel. moist	M	VS	-	
0.1								-	
0.2								-	
0.3								-	
0.4								-	
0.5							S	5	
0.6								2	
0.7								3	
0.8								5	
0.9								11	
1.0								10	
1.1								8	
1.2								3	
1.3					Gravelly Silty CLAY, medium plasticity, red brown, fine to medium gravel, moist			3	
1.4								3	
1.5								4	
1.6								3	
1.7								1	
1.8								2	
1.9								5	
2.0								5	
2.1								6	
2.2								6	
2.3								6	
2.4								6	
2.5								9	
2.6								7	
2.7								8	
2.8								8	
2.9								7	
3.0									
3.1									
3.2							St		
3.3									
3.4									
3.5									
3.6									
3.7									
3.8									
3.9									
4.0									
4.1									
4.2									
4.3									
4.4									
4.5									
4.6									
4.7									

Moisture Condition
D- Dry
M- Moist
W- West

Consistency
VS- very soft, S- soft, F- firm, St- Stiff
Vst- Very Stiff, H- Hard

Density
VL- very loose, L- loose, MD- medium dense
D- dense, VD- very dense

Additional Observations
PP- Hand Penetrometer Value

Ground Technics Pty Ltd
Email : admin@gtechnics.com.au
Phone : 0403 657 467
Web : gtechnics.com.au

Client: Clayton Bray	**Project No:** 2604301
Project Name: Lot 3 Dagmar Close, Lower Daintree Slope Stability Assessment	**Tested by:** CR
Site Address: Lot 3 Dagmar Close, Lower Daintree	**Test Date**: 07/05/26

Depth			BH2/P1	DCP2	DCP3	DCP4	ET1	ET2	ET3		
0.0	-	0.1	-	1	1	1	2	3	4		
0.1	-	0.2	-	1	2	2	4	4	4		
0.2	-	0.3	-	2	3	2	5	4	4		
0.3	-	0.4	-	2	2	2	4	5	5		
0.4	-	0.5	-	1	2	4	5	8	6		
0.5	-	0.6	5	4	2	3	5	7	6		
0.6	-	0.7	2	3	3	6	5	8	8		
0.7	-	0.8	3	4	4	8	5	9	8		
0.8	-	0.9	5	6	2	7	6	11	8		
0.9	-	1.0	11	4	3	8	6	15	8		
1.0	-	1.1	10	4	3	7	6	12	8		
1.1	-	1.2	8	6	3	8	7	12	7		
1.2	-	1.3	3	5	3	8	8		8		
1.3	-	1.4	3	6	2	6	8		9		
1.4	-	1.5	3	4	2	6	7		8		
1.5	-	1.6	4	5	4	8					
1.6	-	1.7	3	5	6	6					
1.7	-	1.8	1	5	8	4					
1.8	-	1.9	2	5	10	4					
1.9	-	2.0	5	4	13	4					
2.0	-	2.1	5	5	18	6					
2.1	-	2.2	6	6		6					
2.2	-	2.3	6	4		5					
2.3	-	2.4	6	4		8					
2.4	-	2.5	6	4		9					
2.5	-	2.6	9	3		8					
2.6	-	2.7	7	4		7					
2.7	-	2.8	8	4		5					
2.8	-	2.9	8	6		6					
2.9	-	3.0	7	7							

Site Classification

And

Wastewater Management System

For

Clayton Bray

At

Lot 3 Dagmar Close

Lower Daintree

Postal address: Earth Test, PO Box 1042, Tolga, Qld 4882. Phone: 4095 4734
e-mail: info@earthtest.com.au

INTRODUCTION:

Earth Test has been engaged by Clayton Bray to assess, design and report on Site Classification and a Domestic Wastewater Management System at Lot 3 Dagmar Close, Lower Daintree.
Real Property Description:-
Lot 3, on RP865078
Local Authority: Douglas Shire Council.

It is understood the intention is to construct a new dwelling at the site.
A site and soil evaluation was carried out in June 2025.

SITE FACTORS:

The site was identified during a meeting with the owner on-site.
The lot has an area of 6522 square metres and is covered with regrowth forest.
The location of the proposed dwelling was identified.
The water supply for the dwelling will be reticulated
There were no water bores on the Lot. An intermittent water course was noted at the site and marked on the site plan.
Three Dynamic Cone Penetrometer tests were performed at locations DCP1 through DCP3, four boreholes BH1 through BH4, and one constant head soil permeability test P1 as shown on the site plan.
Atterberg Limits tests were performed on a disturbed sample from Borehole1.

Site testing at Lot 3 Dagmar Close, Lower Daintree

SITE INVESTIGATION REPORT
BOREHOLE LOG

CLIENT: Clayton Bray. **PROJECT:** Lot 3 Dagmar Close, Lower Daintree. **REPORT DATE:** 20/06/2025	**DATE SAMPLED:** 16/06/2025 **Sampled by:** G. Negri

BOREHOLE No: BH1

DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.3	Sandy Silty CLAY, Yellow-Brown, Dry	Disturbed sample 0.6- 0.9m.
0.3-1.5	Sandy Silty CLAY, Red-Brown	Watertable not encountered.

BOREHOLE No: BH2

DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.5	Sandy Silty CLAY, Brown, Dry	Watertable not encountered.
0.5	Refusal	

BOREHOLE No: BH3

DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.2	Sandy Silty CLAY, Brown, Dry	Watertable not encountered.
0.2-1.5	Sandy Silty CLAY, Red-Brown, Moist	

BOREHOLE No: BH4

DEPTH (m)	DESCRIPTION	COMMENTS
0.0-0.1	Sandy Silty CLAY, Brown, Dry	Watertable not encountered.
0.1-1.5	Sandy Silty CLAY, Red-Brown, Moist	

ATTERBERG LIMITS TEST REPORT

CLIENT: Clayton Bray

PROJECT: Lot 3 Dagmar Close, Lower Daintree.

SAMPLE DETAILS: BH1 0.6-0.9m

REPORT DATE: 20/06/2025

SAMPLE No: SI 526-25

DATE SAMPLED: 16/06/2025

Sampled by: G. Negri

Tested By: K. Hodgson

TEST METHOD	RESULT
Liquid Limit: AS 1289.3.1.2	51%
Plastic Limit: AS 1289.3.2.1	26%
Plasticity Index: AS 1289.3.3.1	25%
Linear Shrinkage: AS 1289.3.4.1	9.5%
Length Of Mould:	125mm
Cracking, Crumbling, Curling, Number Of Breaks:	One Break
Sample History:	Oven Dried
Preparation Method:	Dry Sieved
Insitu Moisture Content:	19.7%
% Passing 0.075mm:	

DYNAMIC CONE PENETROMETER REPORT
AS 1289.6.3.2

CLIENT: Clayton Bray.

SAMPLE No: SI 526-25

PROJECT: Lot 3 Dagmar Close, Lower Daintree.

DATE SAMPLED: 16/06/2025

SAMPLE DETAILS: Sites "DCP1, DCP2 & DCP3." as per site plan.

Tested By: G. Negri

REPORT DATE: 20/06/2025

DEPTH (Metres)	Site: DCP1	Site: DCP2	Site: DCP3
	No Blows	No Blows	No Blows
0.0 – 0.1	2	3	4
0.1 – 0.2	4	4	4
0.2 – 0.3	5	4	4
0.3 – 0.4	4	5	5
0.4 – 0.5	5	8	6
0.5 – 0.6	5	7	6
0.6 – 0.7	5	8	8
0.7 – 0.8	5	9	8
0.8 – 0.9	6	11	8
0.9 – 1.0	6	15	8
1.0 – 1.1	6	12	8
1.1 – 1.2	7	12	7
1.2 – 1.3	8		8
1.3 – 1.4	8		9
1.4 – 1.5	7		8
1.5 – 1.6			
1.6 – 1.7			
1.7 – 1.8			
1.8 – 1.9			
1.9 – 2.0			

SITE CLASSIFICATION

Lot 3 Dagmar Close, Lower Daintree.

The Dynamic Cone Penetrometer test results indicate adequate allowable bearing pressure to 1.5m.

The Atterberg Limits test results indicate a moderately reactive soil.

The characteristic surface movement (y_s) is estimated to be in the $20 < y_s \leq 40$mm range. According to TABLE 2.3 of AS 2870-2011 the site must be classified **CLASS-"M".**

To comply with the "Building Services Board Subsidence Policy" advice should be sought from a Registered Professional Engineer for footing design.

All site works must be carried out in accordance with AS 3798-2007 "Guidelines on earthworks for commercial and residential developments"

If the depth of any cut exceeds 0.5m or uncontrolled fill exceeds 0.4m the classification shall be reconsidered.

Because this investigation is limited in scope and extent, it is possible that areas may exist which differ from those shown on the test hole records and used in the site classification. Should any variation from the reported conditions be encountered during excavation work, this office must be notified immediately so that reappraisal of the classification can be made.

Gavin Negri
Earth Test

SITE AND SOIL EVALUATION

Lot 3 Dagmar Close, Lower Daintree.

The site and soil evaluation carried out on 16/06/2025 provided the following results.

Site Assessment

Site Factor	Result
Slope	12 Degrees
Shape	Linear Planar
Aspect	South
Exposure	Good
Erosion/land slip	Not noted.
Boulders/rock outcrop	Not noted.
Vegetation	Forest
Watercourse	As shown on the site plan
Water table	Not encountered during investigation.
Fill	None.
Flooding	Not likely.
Channelled run-off	Not found
Soil surface conditions	Firm, Dryt.
Other site specific factors	Not noted

Soil Assessment

Soil Property	Result
Colour	Red-Brown
Texture	Clay-Loam
Structure	Moderate
Coarse Fragments	2-10%
Measured Permeability Ksat (m/d)	Indicative Permeability 1.5-3.0
Dispersion	Slakes
Soil Category	3
Resultant Design Load Rating, DLR (mm/d)	20

WASTEWATER MANAGEMENT SYSTEM

An “All-Waste” septic tank discharging into an “Advanced Enviro-Septic” bed is considered suitable for this site.

This system has been designed to conform to the requirements of the following codes, acts, regulations and standards. All work to be carried out in accordance with the following codes.

- AS/NZ 1547:2012 On-site domestic-wastewater management.
- Queensland PLUMBING AND DRAINAGE ACT 2018.
- Queensland STANDARD PLUMBING AND DRAINAGE REGULATION 2019.
- Queensland PLUMBING AND WASTEWATER CODE.

SYSTEM SIZING FACTORS.

A population equivalent of five (5) persons has been chosen for the proposed three bedroom dwelling.

The site is connected to a reticulated water supply system.

Standard water-reduction fixtures must be used to ensure the integrity of the system.
They shall include:-

- Dual flush 6/3 Litre water closets.
- Shower-flow restrictors.
- Aerator faucets (taps).
- Water-conserving automatic washing machines.

Note: - Garbage grinders are not permitted.

As per AS/NZ 1547:2012 Appendix H, Table H1 the “Typical wastewater design flow” for a “Reticulated water supply” gives a flow allowance of 150 L/Person/day.

The daily flow for the dwelling (5 persons @ 150 L/person/day) will be 750 L/day.

From AS/NZ 1547:2012 Table J1 the minimum capacity of the All-Waste septic tank required is 3000 L.

The tank must NOT be fitted with an outlet filter.

LAND-APPLICATION SYSTEM

DISPOSAL AREA SIZING

From AS/NZ 1547:2012 APPENDIX L, L4 DESIGN AREA SIZING, L4.2 Sizing

L = Q / (DLRxW)

Where:
L = length in m
Q = design daily flow in L/day
DLR = Design Loading Rate in mm/d
W = Width in m

L = 750/20*2.40
= 15.6m.

Use one 15.6m long by 2.40m wide advanced enviro septic bed.
See site plan and detail cross-section.

1kg gypsum per m² shall be applied to the scarified base before laying the sand

SYSTEM SAND

All Advanced Enviro-Septic systems require the use of "system sand" surrounding the pipe. This sand, typically washed coarse sand, must adhere to the following specification.

AS Sieve Size (mm)	Percent Passing %
9.50	100
4.75	95-100
2.36	80-100
1.18	50-85
0.600	25-60
0.300	5-30
0.150	0-10
0.075	0-2

If there is any doubt if the sand media proposed for use will meet the requirements please contact Earth Test for further advice.

SYSTEM INSTALLATION

The entire bottom of the bed should be scarified a minimum of 200mm deep parallel to the AES pipes.

Avoid compaction by keeping people and machinery off the finished trench or bed floor. The system shall be installed by a licensed plumber in accordance with the manufacturer's recommendations and the relevant Australian Standards.

Operation and Maintenance

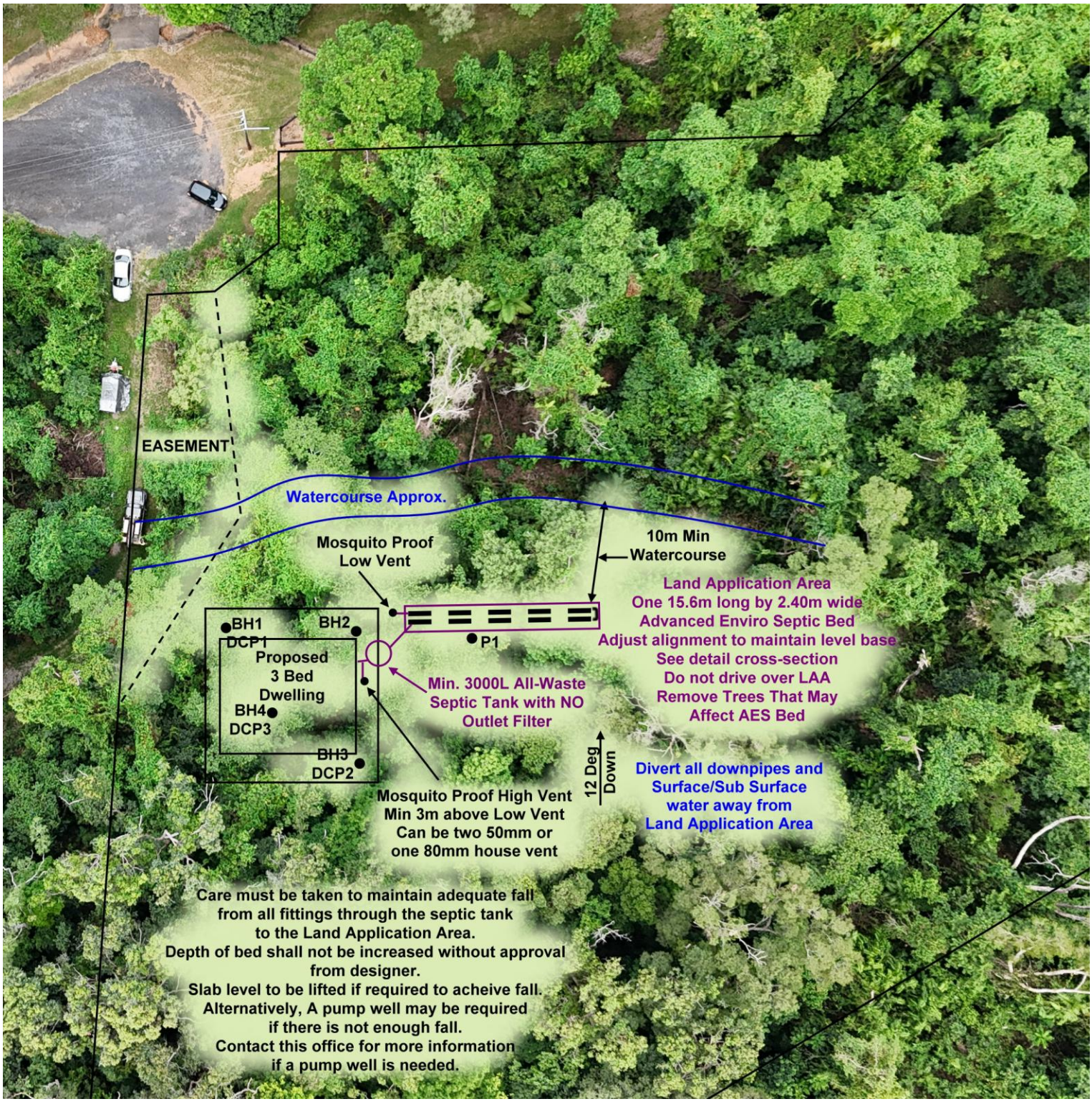
Homeowners should be fully informed of the proper operation and maintenance requirements of the on-site wastewater system.

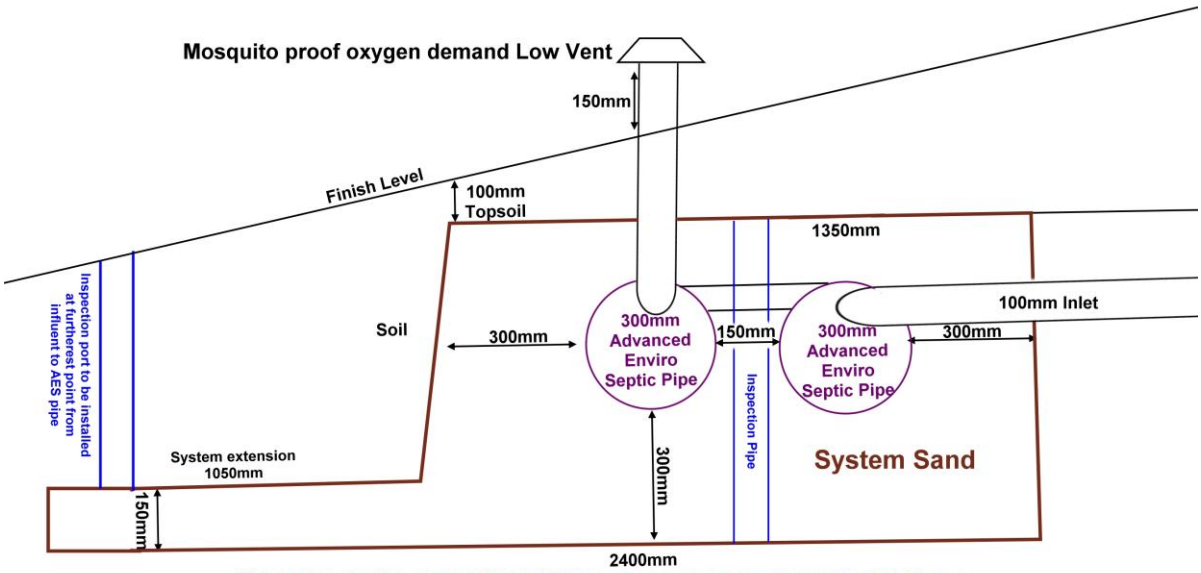
Gavin Negri
Earth Test

SITE PLAN

Lot 3 Dagmar Close, Lower Daintree.

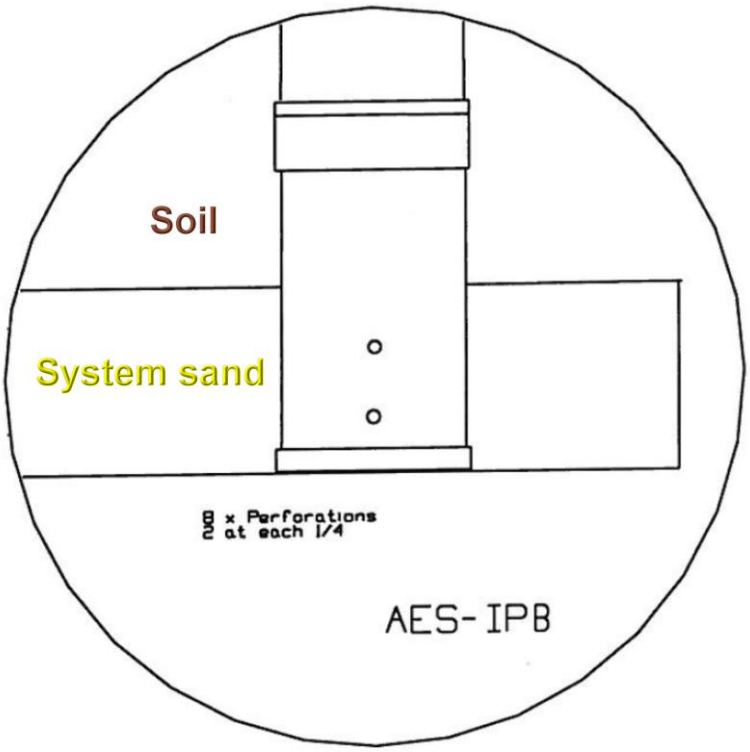
NOT TO SCALE





Base must be scarrified 200mm deep. Parallel to AES Pipes

2400mm Wide Two Pipe
Advanced Enviro-Septic Cross-Section



AES Inspection point detail

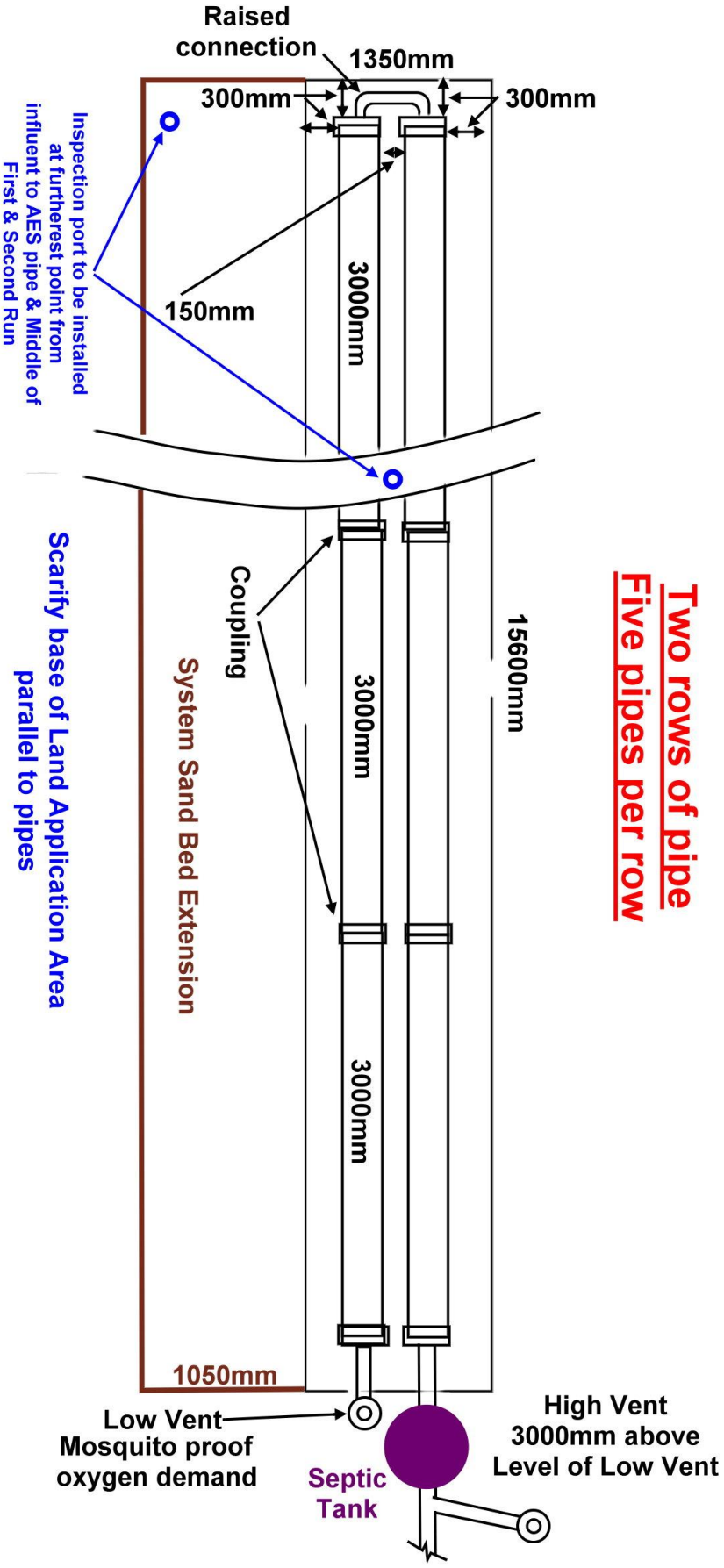

Raised connection
1350mm
300mm
300mm
Inspection port to be installed at furtherest point from influent to AES pipe & Middle of First & Second Run
150mm
3000mm
Coupling
3000mm
15600mm
Two rows of pipe
Five pipes per row
Scarify base of Land Application Area parallel to pipes
System Sand Bed Extension
3000mm
1050mm
Low Vent
Mosquito proof
oxygen demand
Septic Tank
High Vent
3000mm above
Level of Low Vent

Table T2 – Setback distances for subsurface land application area for a greywater treatment plant or an on-site sewage treatment plant

Feature	Horizontal separation distance❶		
	Up slope	Down slope	Level
Property boundaries, pedestrian paths, walkways, recreation areas, retaining wall, and footings for buildings and other structures.	2	4	2
Inground swimming pools	6	6	6
Inground potable water *tank* not exposed to primary effluent	6	6	6
Inground potable water *tank* exposed to primary effluent	15	15	15

❶ Distances are given in metres and are measured from the edge of trench/bed excavation or subsurface irrigation distribution pipework to the nearest point of the feature

Table T5 - Setback distances for on-site sewerage facilities and greywater use facilities - Protection of surface water and groundwater.

Feature	Separation distance ❶		
For onsite – see Table 2.1 in AS 1546.3	**Advanced Secondary**		
For *greywater* – see Table 2.1 in AS 1546.4	**Level 1 and Level 2**		
Top of bank of permanent water course	10		
Top of bank of intermittent water course			
Top of bank of a lake, bay or estuary			
Top water level of a surface water source used for agriculture, aquaculture or stock purposes			
Open stormwater drainage channel or drain			
Bore or a dam			
Unsaturated soil depth to a permanent water table (vertically)	0.3		

❶ Distances are given in metres and are measured from the edge of the irrigated wetted area to any point of the feature.

Advanced Enviro-septic Design Calculator V9.0 ©

ADVANCED ENVIRO-SEPTIC™ "Always The First Option"

AES The World Leader in Passive Solutions ©

Site Address	Lot 3 Dagmar Close, Lower Daintree		State QLD	Post Code	
Client Name	Clayton Bray			Date of Site Visit	
Designers Name	Earth Test	Designers Ph Number	07 4095 4734	Designer Lic (e.gQBCC)	15092731
Lic Plumber	TBA	Plumber Ph Number	TBA	Plumb / Drainer Lic Number	TBA
Council Area	Douglas Shire Council	Designers AES Cert Number	1164	Date	

This Calculator is a guide only, receiving soil classification, surface water, water tables and all other site constraints addressed by the qualified designer.

System Designers site and soil calculation data entry		IMPORTANT NOTES
Enter AES L/m loading rate, "30" for ADV Secondary or "38" Secondary	30	>> *This design is for an ADVANCED SECONDARY system*
Is this a new installation Y or N	Y	>> Minimun single vent size is 80mm or 2 x 50mm house vents
Number of Bedrooms	3	>> This is not used in ANY Calculation. If not known use N/A or 0.
Number of persons	5	>> A septic tank outlet filter is NOT RECOMMENDED
Daily Design Flow Allowance Litre/Person/Day	150	
Number of rows required to suit site constraints	2	>> The maximum length of a single AES pipe run is 30m or 10 PIPES
Infiltration Soil Category from site/soil evaluation. CATEGORY	3	
Design Loading Rate based on site & soil evaluation DLR (mm/day)	20	>> Soil conditioning may be necessary. Ref AS1547 & Comments.
Bore log depth below system Basal area	1.5m	>> Min depth 1.5m. Check water table/restrictive layer
Is this design a GRAVITY system with no outlet filter? Y or N	Y	>> GRAVITY. A House Vent & LOW VENT required on this system
PLEASE CHECK YOU HAVE FALL FROM TANK TO AES SYSTEM PIPES		

COMMENTS :- *" The outcome must be important to everyone. "*

- Ripping of receiving surface required in clay soil structures in Cat 4,5,6. In addition refer to AS 1547. Always excavate & rip parallel to the site slope/AES pipe.

- Designers need to be familar with special requirements of Local Authorities. ie - Minimum falls from Septic tank outlets to Land application areas etc

- Plumbers are reminded to practice good construction techniques as per AS 1547 & as provided on AES installation instructions supplied with components.

AES System Calculator Outcomes		
Total System load - litres / day (Q).	750	l/d
Min Length of AES pipe rows to treat loading	12.50	lm
Number of FULL AES Pipe lengths per row	5	lths
Total Capacity of AES System pipe in Litres	2120	ltr.

AES dimensions	AES System	System Extension
Length:(L)	15.60m	15.60m
Width:(W)	1.35m	1.05m
Sand Depth :	0.75m	0.15m
Area m2	21.1 m^2	16.4 m^2

USE CUT LENGTHS OF PIPE IN THIS DESIGN? (ENTER Y)						
IF YOU WISH TO USE A TRENCH EXTENSION DESIGN OPTION ENTER "Y"				Enter Custom Width in metre		
AES INFILTRATION FOOT PRINT AREA - L = Q / (DLR x W)	Length		Width	Minimum AES foot print required		
for this Basic Serial design is	15.60m	x	2.40m	=	37.5	m2 total

AES pipes are best centered in the trench parallel to the site slope

Code	AES System Bill of Materials		
AES-PIPE	AES 3 metre Lengths required	10	lths
AESC	AES Couplings required	8	ea
AESO	AES Offset adaptors	4	ea
AESODV	AES Oxygen demand vent	1	ea
AES-IPB	AES 100mm Inspection point base	2	ea
TD Kit 4	4 Hole Distribution Box Kit		ea
TD Kit 7	7 Hole Distribution Box Kit		ea
VS43-4	Sweet Air Filter VS43-4		ea
AES DESO	Double Offset Adaptors		ea
	TOTAL SYSTEM SAND REQUIRED (Estimate Only)	22	m3

Please email your AES Calculator (EXCEL FORMAT), Site Layout & AES Design to designreview@enviro-septic.com.au

Chankar Environmental Use Only

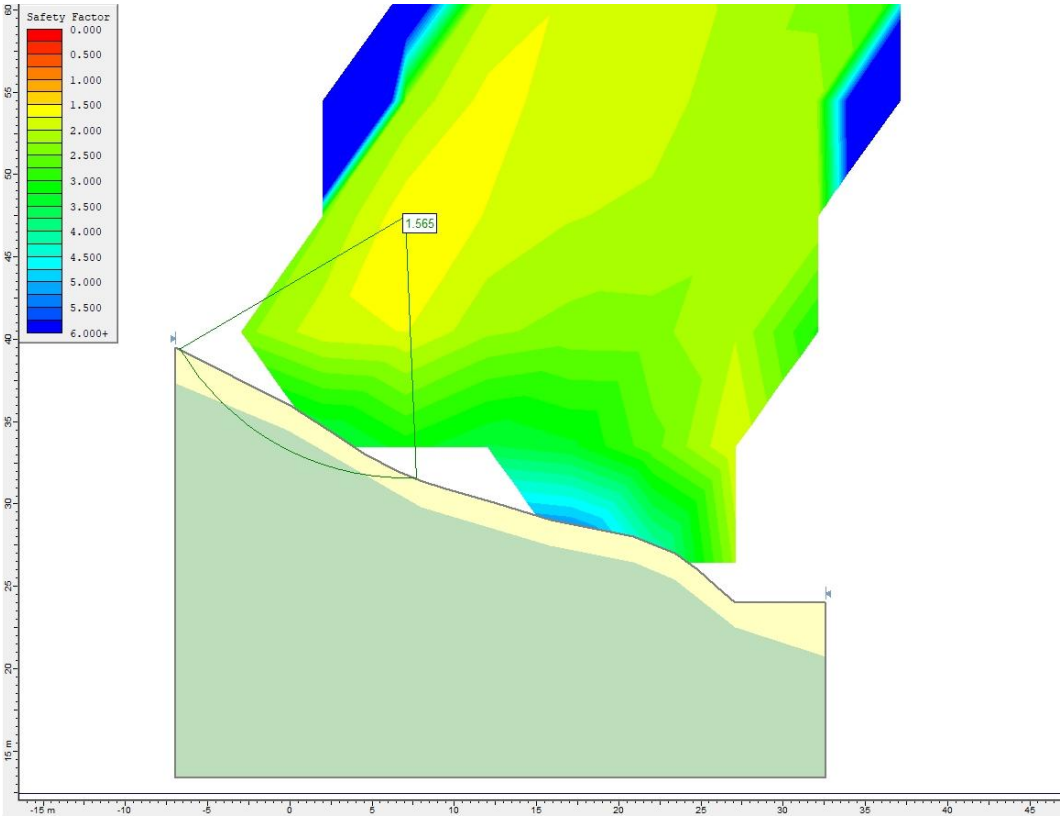
ADVANCED ENVIRO-SEPTIC™ "Nature's Wastewater Solutions"

Digitally signed by Kane Dickson
DN: cn=Kane Dickson, o=Chankar Environmental Pty Ltd , ou=Advanced Enviro-Septic , email=designreview@enviro-septic.com.au, c=AU
Date: 2025.06.18 08:22:33 +10'00'

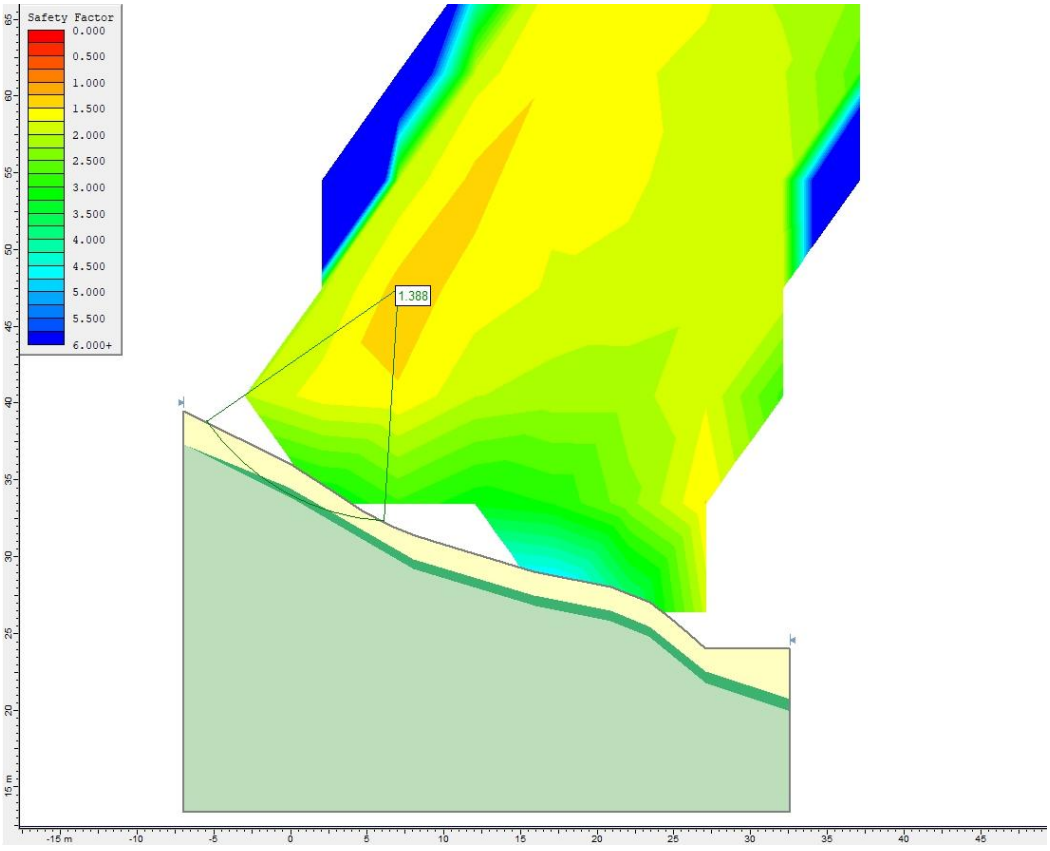
designreview@enviro-septic.com.au

> The AES Calculator is a design aid to allow checking of the AES components, configuration and is a guide only. Site and soil conditions referencing AS1547 are calculated and designed by a Qualified Wastewater Designer.
> Chankar Environmental accepts no responsibility for the soil evaluation, loading calculations or DLR entered by the designer for this calculator.
> AES pipes can be cut to length on site. They are supplied in 3 meter lengths only.
> AES ONLY supply AES components as detailed in the Bill of Materials.
> SEPTIC Tank & other components including SAND will need to be sourced from other suppliers. Refer to our WEBSITE www.enviro-septic.com.au OR 07 5474 4055

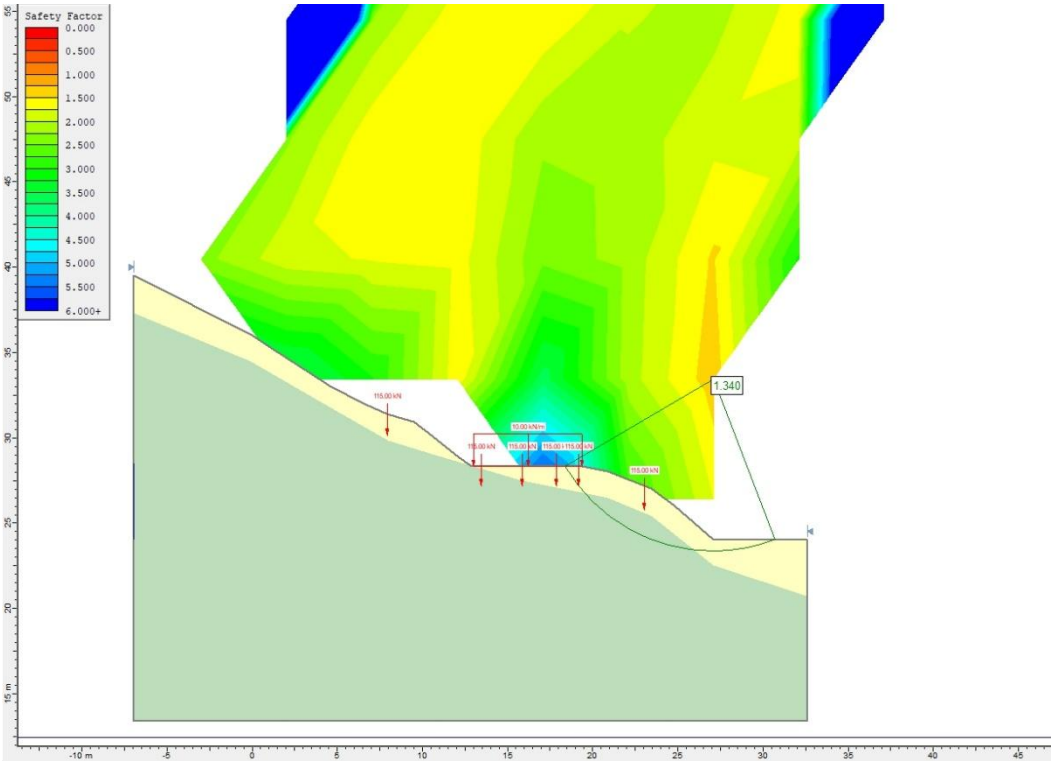
Appendix C



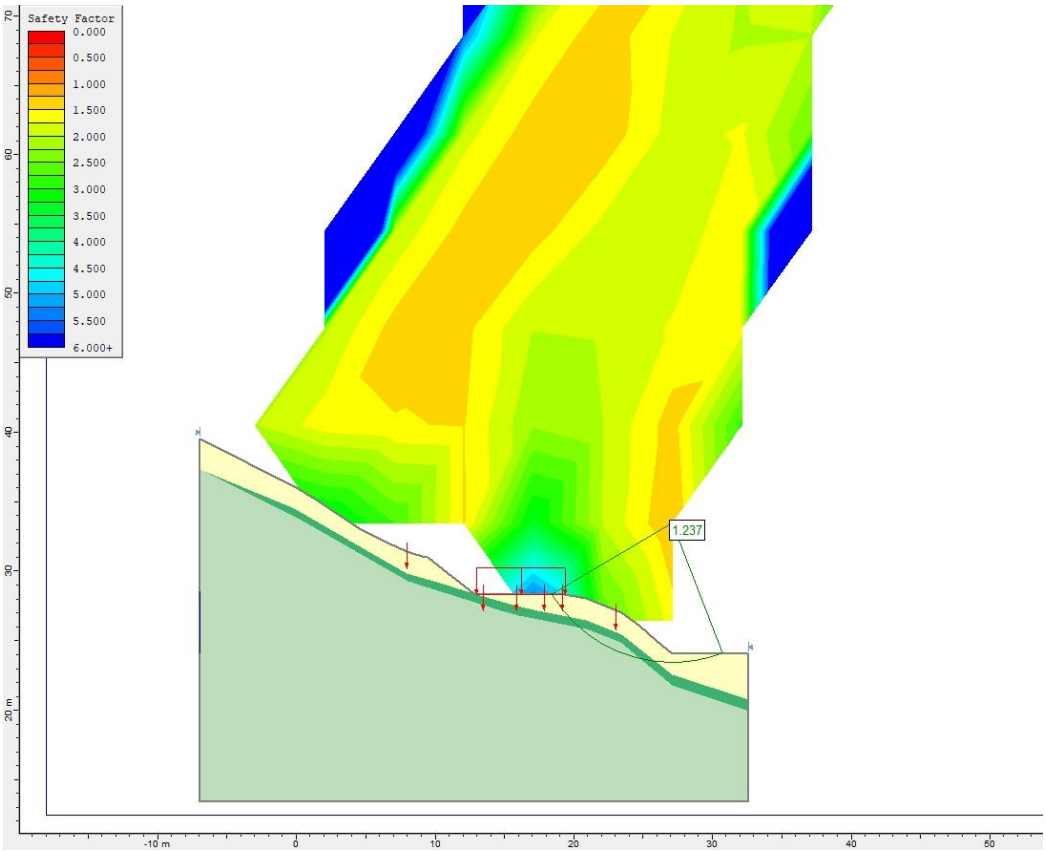
Current site geometry – Dry conditions



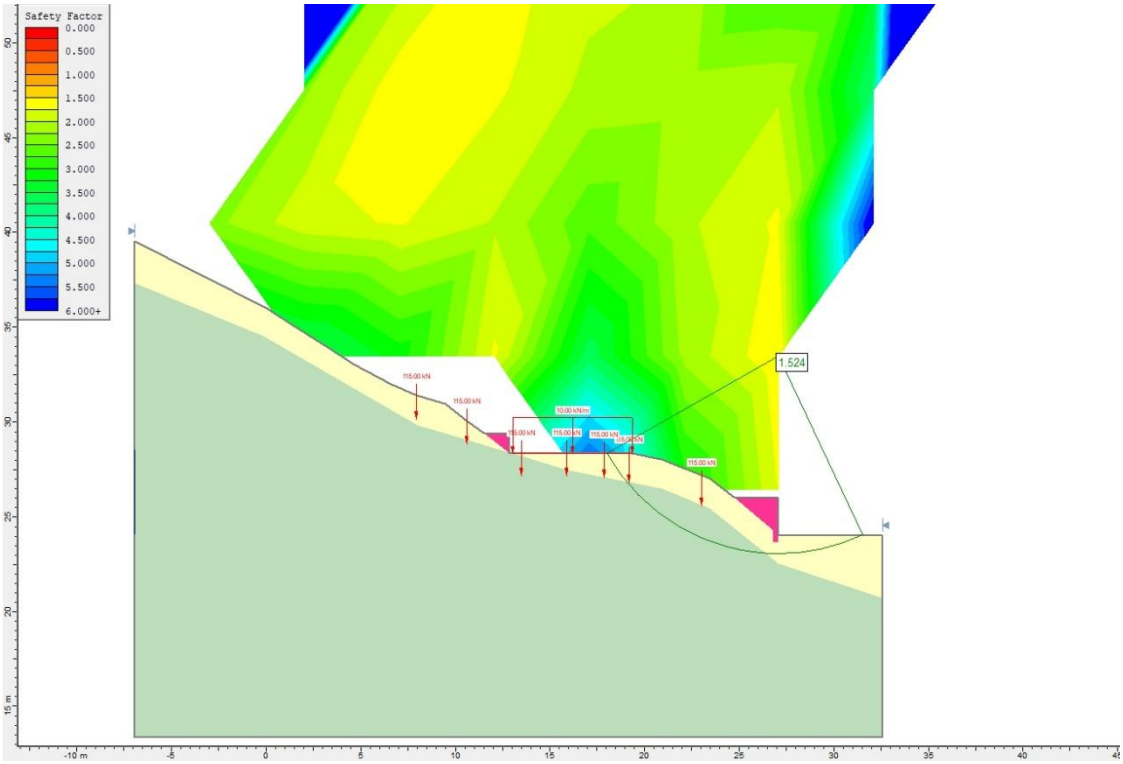
Current site geometry – Saturated conditions



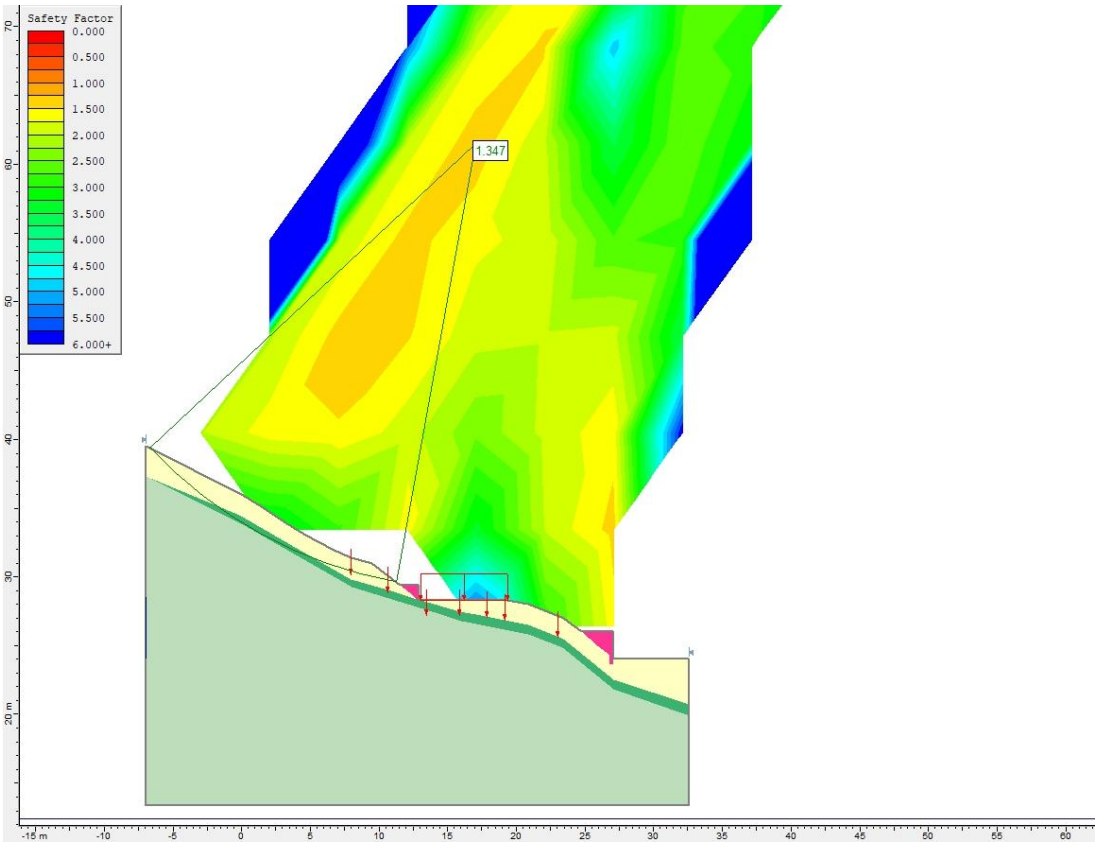
Proposed site geometry with surcharge loading– Dry conditions



Proposed site geometry with surcharge loading – Saturated conditions



Modified site geometry with surcharge loading– Dry conditions



Modified site geometry with surcharge loading – Saturated conditions