

GEOTECHNICAL INVESTIGATION REPORT

Proposed Residential Development
63 Redbank Creek Road, Adare

REFERENCE NUMBER
PTP/08869 – 0001 – Rev0

PREPARED FOR
Parklands at Adare

ISSUED
14 April 2022



PROTEST

UNIQUE DOCUMENT IDENTIFICATION

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REVISION DETAILS

Revision Number	Date	Comments
0	14/04/2022	Issue of final report

DOCUMENT APPROVAL

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1. REPORT SCOPE

This report presents the results of the broadscale geotechnical investigation carried out by Protest Engineering (Protest) for the proposed residential estate development to be located at 63 Redbank Creed Road in Adare. The investigation was commissioned by Peter Brown on behalf of Parklands at Adare in care of Watson Property Group on 28 March 2022.

Based on provided plans it is understood that the final usage of the site will comprise a residential subdivision with large open space conservation areas.

The geotechnical investigation included 23 test pits with dynamic cone penetrometer (DCP) testing and laboratory testing of selected samples undertaken in general accordance with Protest's proposal PTT/04372/Rev0, 'AS1726:2017-Geotechnical Site Investigations' and 'AS1289-Methods of Testing for Engineering Purposes'.

This report includes a description of the fieldwork procedures, the results of the fieldwork and laboratory testing, and reporting on the following:

- Site preparation and earthworks recommendations including excavatability and suitability of insitu material for reuse as structural fill;
- Site classification and predicted ground surface movement (Ys) in accordance with AS 2870-2011;
- Allowable bearing pressures for high level footings and estimated settlements;
- Temporary and permanent batter slopes;
- California Bearing Ratio (CBR) value and modulus of subgrade reaction for pavement design (by others); and
- Any other geotechnical issues identified that would need management (if any).

2. PROJECT DESCRIPTION

Based on the concept plans provided (attached in Drawing 1) and discussions with the client, the development is understood to comprise:

- Minor cut and fill earthworks (if any) to create level building platforms for the residential lots.
- Installation of underground services;
- Subgrade preparation and boxing out of pavement areas; and
- Construction of roads.

Any structural fill placed at this site would be placed and compacted under Level 1 supervision and testing as outlined within 'AS3798-2007 Guidelines on Earthworks for Commercial and Residential Developments'.

3. SITE DESCRIPTION

The site is located at 63 Redbank Creek Road in Adare and is identified as Lots 95 on CA311434 and 96 on SP225226 with the proposed development combining both lots. The site has an approximate area of 120 ha and is generally surrounded by vacant land/farmland and bordered by Redbank Creek Road to the south and Adare Road to the west. Drawing 2 (attached) is an 8 September 2021 Nearmap aerial view of the site.

Review of 2015 LiDAR data on Drawing 3 (attached) indicates that the site generally slopes down towards the conservation areas and site RLs range from RL 95 m AHD and RL 130 m AHD. The residential lots are all positioned on the high parts of the site.

At the time of the investigation the site was generally vacant with several small dwellings/sheds and dams/ponds located within the conservation areas of the site. Ground cover comprised unkept grass with medium to large sized trees, and some vehicle tracks throughout the site. Drawing 4 (attached) shows images taken at the time of the inspection.

4. REGIONAL GEOLOGY

Review of the Queensland Government's 1:100,000 geology series available on the GeoResGlobe platform indicates that the site is underlain by the geologies outlined in Table 1. Drawing 4 (attached) shows the regional geology overlay at the site as available on the GeoResGlobe platform.

Table 1: Summary of Regional Geology at the Site

Rock Unit Name	Map Symbol	Lithological Summary	Colour Reference
Woogaroo Subgroup	RJbw	Sublabile to quartzose sandstone, siltstone, quartz-rich granule to cobble conglomerate and coal	
Gatton Sandstone	Jbmg	Lithic labile and feldspathic labile sandstone	
Qr-QLD	Qr-QLD	Clay, silt, sand, gravel and soil; colluvial and residual	

5. FIELD INVESTIGATION

The fieldwork scope included twenty-three test pits excavated on 31 March and 4 April 2022 to between depths of 0.95 m and 2.7 m. Test pits were excavated using a 20-tonne excavator equipped with a 1.2 m wide toothed bucket.

Disturbed and bulk samples of representative soil types were collected from the test pits for soil description and classification purposes and subsequent laboratory testing. The visual-tactile description and classification methods undertaken on disturbed samples, and shown on the attached logs, are described in accordance with AS1726:2017.

DCP testing was undertaken adjacent to the test pits from the surface and then recommenced at selected depths within Test Pits 18 and 19, with the number of blows to achieve 100 mm depth penetration recorded in accordance with AS1289.6.3.2.

Soil consistency and relative density described on the test pit logs were inferred from the DCP results, tactile assessment and published correlations.

The approximate test pit locations and numbers are shown on the test location plan attached in Drawing 1. The test pit log report sheets are attached in Appendix 2.

6. LABORATORY TESTING AND RESULTS

NATA accredited laboratory testing was undertaken on selected representative soil samples recovered from the test pits in accordance with 'AS1289-Methods of Testing for Engineering Purposes'. The purpose of the laboratory testing was to determine typical soil behaviour characteristics for engineering assessment.

Laboratory testing comprised six Atterberg Limits test, six Emerson class tests and four 4-day soaked (CBR) test. The Laboratory Test Result Reports are included in Appendix 2 and are summarised in Table 2, Table 3 and Table 4 and plotted on the modified Casagrande chart in Drawing 5.

Table 2: Summary of Atterberg Limits Test Results

Test Pit	Depth (m)	Material	W _L , %	W _p , %	I _p , %	LS, %
2	0.5 – 0.7	Silty sandy clay	66	16	50	17
5	0.3 – 0.5	Clay with sand and silt	58	14	44	15.5
10	0.2 – 0.5	Silty sandy clay	56	14	42	18
14	0.6 – 0.8	Silty clay with sand	71	18	53	15
16	0.4 – 0.7	Silty clay with sand	63	19	44	18
18	0.6 – 0.8	Clayey sand	37	16	21	9.5

Note: W_L = Liquid limit; W_p = Plastic limit; I_p = Plasticity index; LS = Linear shrinkage

Table 3: Summary of Emerson Class Results

Test Pit	Depth (m)	Material	Emerson Class Number
2	0.0 – 0.1	Silty sand	4
6	0.3 – 0.6	Silty sandy clay	4
10	0.0 – 0.2	Silty sandy gravel	2
14	0.4 – 0.6	Silty sand with clay	4
16	0.1 – 0.4	Silty sandy gravel	4
18	0.1 – 0.3	Sand with silt	4

Table 4: Summary of Four-Day Soaked CBR Tests

Test Pit	Depth (m)	Material	FMC (%)	OMC (%)	MDD (t/m ³)	Swell (%)	CBR (%)
3	0.2 – 0.4	Sand	12	9.4	1.96	1.5	10
7	0.2 – 0.4	Sand	8	8.2	2.0	-1.0	60
12	0.1 – 0.3	Silty gravelly sand	6	8.9	1.99	0	13
19	0.1 – 0.4	Sand	10.5	10.3	1.98	-3	50

Notes: FMC – field moisture content; MDD – Maximum dry density; OMC – optimum moisture content

Results indicate that the tested samples collected from the test pits generally had medium to high plasticity fines.

7. GEOTECHNICAL MODEL

Table 5 summarises the soils encountered within the test pits. In summary the soil profile encountered within the test pits generally comprised a surficial layer of topsoil underlain by residual sands, gravels (possible fill) and clays to between 0.5 m and 2.55 m depth then sandstone.

The granular soils (sands and gravels) were generally very loose grading to medium dense (or denser) with depth and the cohesive soils were generally stiff grading to hard with depth. Sandstone was initially logged as very low to low strength and highly weathered and generally increased in strength with depth. Bucket refusal was encountered in all test pits on low to medium strength sandstone.

Table 5: Summary of Materials Encountered in Test Pits

Test Pit No.	Topsoil (m)	Sand (m)	Gravel (m)	Clay (m)	Very low strength sandstone (m)
1	0.0 – 0.1	0.1 – 0.4	-	0.4 – 1.0	1.0 – 2.2
2	0.0 – 0.1	0.1 – 0.4, 1.0 – 1.2	-	0.4 – 1.0	1.2 – 2.7
3	0.0 – 0.2	0.2 – 0.4, 0.6 – 0.7	-	0.4 – 0.6	0.7 – 2.3
4	0.0 – 0.1	0.1 – 0.3	-	0.3 – 0.7	0.7 – 1.4
5	0.0 – 0.1	-	0.1 – 0.3	0.3 – 0.7	0.7 – 1.6
6	0.0 – 0.1	0.5 – 0.6	0.1 – 0.3	0.3 – 0.5	0.6 – 1.45
7	0.0 – 0.2	0.2 – 0.4	-	0.4 – 0.6	0.6 – 0.95
8	0.0 – 0.2	-	-	0.2 – 1.5	1.5 – 2.1
9	0.0 – 0.3	-	-	0.3 – 0.7	0.7 – 2.0
10	-	-	0.0 – 0.2	0.2 – 0.5	0.5 – 1.2
11	-	0.0 – 0.8	-	-	0.8 – 1.0
12	0.0 – 0.1	0.5 – 0.6	0.1 – 0.3	0.3 – 0.5	0.6 – 1.3
13	0.0 – 0.1	0.1 – 0.4, 0.7 – 1.0	0.4 – 0.5	1.0 – 1.6	1.6 – 1.9
14	0.0 – 0.1	0.4 – 0.6	0.1 – 0.4	0.6 – 1.6	1.6 – 2.3
15	0.0 – 0.2	0.2 – 0.7	-	-	0.7 – 1.3
16	0.0 – 0.1	-	0.1 – 0.4	0.4 – 1.3	1.3 – 1.5
17	0.0 – 0.1	0.1 – 1.6	-	1.6 – 2.55	2.55 – 2.6
18	0.0 – 0.1	0.1 – 1.5	-	-	1.5 – 2.3
19	0.0 – 0.1	0.1 – 0.4	-	0.4 – 1.5	1.5 – 2.1
20	0.0 – 0.2	0.2 – 0.6	-	-	0.6 – 2.0
21	0.0 – 0.3	0.3 – 0.7	-	-	0.7 – 1.0
22	0.0 – 0.1	0.1 – 0.9	-	-	0.9 – 1.8
23	0.0 – 0.1	-	0.1 – 0.4	0.4 – 1.0	1.0 – 1.4

Groundwater was not encountered during the fieldwork, however some of the sands and gravels encountered were logged as wet indicating that a perched groundwater table could be encountered in layers of granular material after significant rain events. It should be noted that groundwater levels can be perched and fluctuate seasonally and during and after heavy rainfall events. Given this natural variability, it is prudent to assume that water levels can fluctuate.

8. GEOTECHNICAL COMMENTS

The geotechnical comments in this report are based on factual information collected during the fieldwork, best practice, local experience and published literature however are fundamentally opinion.

In summary, the ground conditions that are likely to be encountered at the site can be characterised as comprising a surficial layer of topsoil underlain by between 0.5 and 2.55 m of sands, gravel and clay then very low to low strength sandstone increasing in strength below the test pit refusal depths.

One of the geotechnical issue identified on during the fieldwork is there is an upper layer of very loose to loose sands over some parts of the site. The presence of very loose to loose sands will impact the following:

- Class P site classification due to low bearing capacities (if not compacted);
- Subgrade preparation/compaction will be required to prepare these parts of the site prior to construction of buildings and roads;
- Service trenches will collapse (particularly when wet) requiring over excavations; and
- Very poor trafficability.

It is noted that once compacted and confined the sand will provide a suitable subgrade for buildings and roads.

Based on the ground conditions encountered during the fieldwork, competent materials (ie capable of supporting house foundations) are generally encountered within the upper 0.5 to 0.8 m (or shallower) depth. It is likely that the majority of houses in the estate could be supported on high level footings.

It is noted that general earthworks activities, subgrade preparation, and improvement of site drainage through stormwater would improve surficially loose soils that were encountered.

8.1. SITE PREPARATION AND EARTHWORKS

All structural fill should be placed and compacted under Level 1 inspection and testing in accordance with site specific design drawings and specifications. Minimum earthwork requirements should be in accordance with 'AS3798–2007 Guidelines on Earthworks for Commercial and Residential Developments'. In summary, AS3798 guidelines recommend the following:

- Strip topsoil and remove vegetation;
- Test rolling using the following plant and load conditions. It is noted that sand/silty sand exposed at subgrade level can be prone to displacement during the test roll however when confined (i.e. beneath pavements) performs adequately:
 - a static smooth steel wheeled roller with a mass not less than 12 tonne and a load intensity under a wheel less than 6 tonnes;
 - a pneumatic tyred plant with a mass not less than 20 tonnes and a ground pressure not less than 450 kPa per tyre; or
 - a highway truck with rear axle loaded not less than 8 tonnes with tyres inflated to 550 kPa;
- Subject to site specific conditions, any soft areas identified might need to be removed and replaced with select material; and
- Structural fill should be in near horizontal layers, commonly termed 'lifts', and generally not to exceed 300 mm thick (uncompacted) and compacted to a 98% minimum DDR for general fill and 100% minimum DDR in the upper 0.5 m depth beneath slabs and pavements with a moisture variation not exceeding $\pm 2\%$ of the OMC. The maximum particle size should be limited to two-thirds of the compacted layer thickness. Where structural fill abuts slopes generally steeper than 8H:1V (if any), benches equal to the height of the fill layer should be cut into the slope before filling.

Other earthwork considerations include:

- Over-compacted clay soils can significantly increase site reactivity and be prone to future softening, and should be avoided;
- The most suitable plant for compaction is a pad-foot roller for cohesive soils with varying amounts of silt and clay and a smooth drum roller for granular (i.e. clean sand and crushed road base gravel) soils.
- Any wet soils would need to be dried out before reuse or continuation of earthworks. Drying of insitu wet soils are accelerated by tyning the upper 0.1 m to 0.3 m depth and baking-out (to within $\pm 2\%$ of the OMC) during sunny weather.

Protest can provide Level 1 supervision and testing following site specific design drawings and specifications and AS 3798–2007 if required.

8.1.1. EXCAVATION CONDITIONS

Excavation of the residual soils and very low strength sandstone encountered within the test pits could be achieved using 20 tonne (or larger) excavators.

Excavations below the refusal depths of the test pits (not anticipated) would likely require the use of 20 tonne (or larger) excavators fitted with 2 to 3 tonne pneumatic rock breaking equipment.

Actual excavation rates in sandstone are dependent on many factors including sandstone strength, fracture/joint spacing, fracture/joint orientation, plant age and operator experience.

8.1.2. TRAFFICABILITY AND WORKABILITY

The fieldwork was conducted after a period of significant rain and in many places the site was untrafficable by a 4WD vehicle. It is expected that:

- The site could probably be trafficked with light vehicles under normal/dry conditions;
- Trucks and construction plant may have difficulty trafficking the site under normal/dry conditions;
- During and after wet period trafficability is expected to deteriorate significantly for light vehicles, trucks and construction plant;

Good drainage and diverting stormwater away from areas that need to be trafficked would assist with trafficability after rain events.

8.2. SITE CLASSIFICATION AND SITE MOVEMENTS

Once earthworks are completed, in strict accordance with AS2870 the site (as a whole) would be classified Class 'P' due to the abnormal moisture conditions caused by the removal of trees, perched groundwater after heavy rain events and low bearing pressure due to the presence of very loose to loose sands.

Based on the results of the fieldwork, majority of the site encountered a combination of granular and cohesive soil and then sandstone which was above the depth of suction of the area. It is considered that most lots at the site post earthworks would likely achieve surface movements between 20 mm and 40 mm consistent with a Class M site movement. Each lot would require an individual site classification once earthworks at the site are complete.

For areas with a deep clay profile (ie Test Pit 8) surface movements could be expected to be up to approximately 75 mm, consistent with a Class H2 movement.

8.3. FOUNDATIONS

Post earthworks and subgrade preparation, it is anticipated that all encountered materials would achieve an allowable bearing capacity of 100 kPa.

8.4. SAFE TEMPORARY AND PERMANENT BATTER SLOPES

For medium dense (or denser) granular soils and stiff (or stronger) clays, excavations and batters up to 3 m depth could generally be designed with a safe 1H:1V temporary batter slope or 2H:1V for permanent batter slopes.

Near vertical cuts in clay soils and lower sands/extremely weathered rock could be considered for installation of the services provided adequate safety controls are implemented and the excavations are assessed by an experienced Geotechnical Engineer. Very loose and loose granular soils would collapse during excavation, and some over excavation should be allowed for.

Other considerations include:

- Excavations up to 1.5 m depth are usually formed near vertical for short periods of time for installation of services or construction of footings;
- Where soils become excessively wet, batter angles will need to be flattened;
- All temporary batters should not have construction loads (i.e. plant, equipment or soil stockpiles) or people at the crest of the batters at a distance equal to the height of the slope; and
- All batters should be assessed by this office with critical slopes having detailed stability analysis and risk assessments undertaken to provide 'risk levels' which need to be accepted by the contractor and developer.

8.5. INDICATIVE CBR VALUES

Based on the test pit logs and after the anticipated earthworks are completed, the subgrade post-earthworks are expected to comprise clay and sand soils (both natural and controlled fill) and undisturbed sandstone. The soaked CBR tests returned results values of between 10% and 60%. The lower bound CBR values and modulus of subgrade reaction in Table 6 can be adopted for the pavement design. These values assume that the materials are compacted to a minimum of 100 % MDD and are prevented from becoming saturated. Cut-off drains may be required to prevent subgrade from getting wet.

Table 6: Inferred Pavement Design Parameters

Material	CBR Value (%)	Modulus of subgrade reaction (kPa/mm)
Clay	4	30
Sand and gravel	8	40
Undisturbed sandstone	10	50

It should be noted that insitu testing such as plate loads, light weight falling deflectometers and PANDAs usually return more reliable and higher pavement parameters than conventional soaked CBR testing. Protest can assist where required.

If a minimum subgrade CBR value is required for the design of pavements, then a nominal depth of quarry gravel would need to be placed over the site. Where pavement fill is less than 1 m, the composite subgrade can be assessed in accordance with the Japan Road Association which produces a weighted subgrade strength as follows:

$$CBR_w = (D_f \times CBR_f^{0.33} + (1-D_f) \times CBR_s^{0.33})^3$$

where: CBR_w = weighted subgrade CBR (%),
 D_f = depth of filling (m),
 CBR_f = CBR of filling material (%),
 CBR_s = CBR of natural subgrade (%)

Where additional fill is placed over 1 m depth, then the CBR value of the fill can be adopted.

9. LIMITATIONS

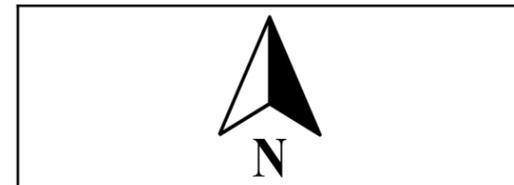
It should be noted that the test sites simply give a representation of what the soil profile is expected to be across the entirety of the site. However, it is possible for the soil profile to differ at other locations within the site and due to this Protest Engineering requires notification of any varying conditions that are found during construction as it may alter the assumptions and models adopted within this report.

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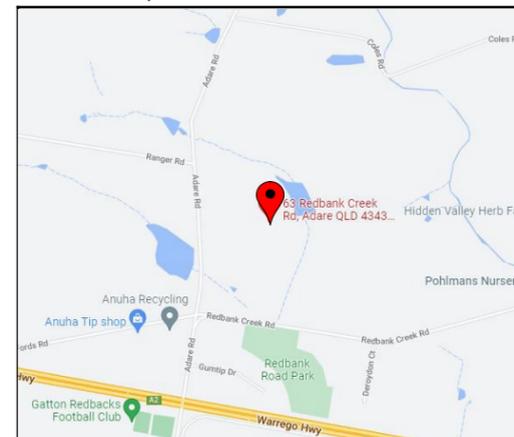
GEOTECHNICAL // ENVIRONMENTAL // TESTING SERVICES // STRUCTURAL

Appendix 1

ATTACHMENTS



Site locality



Legend

-  Site locality
-  Site boundary
-  Borehole location and number
-  Borehole location and number

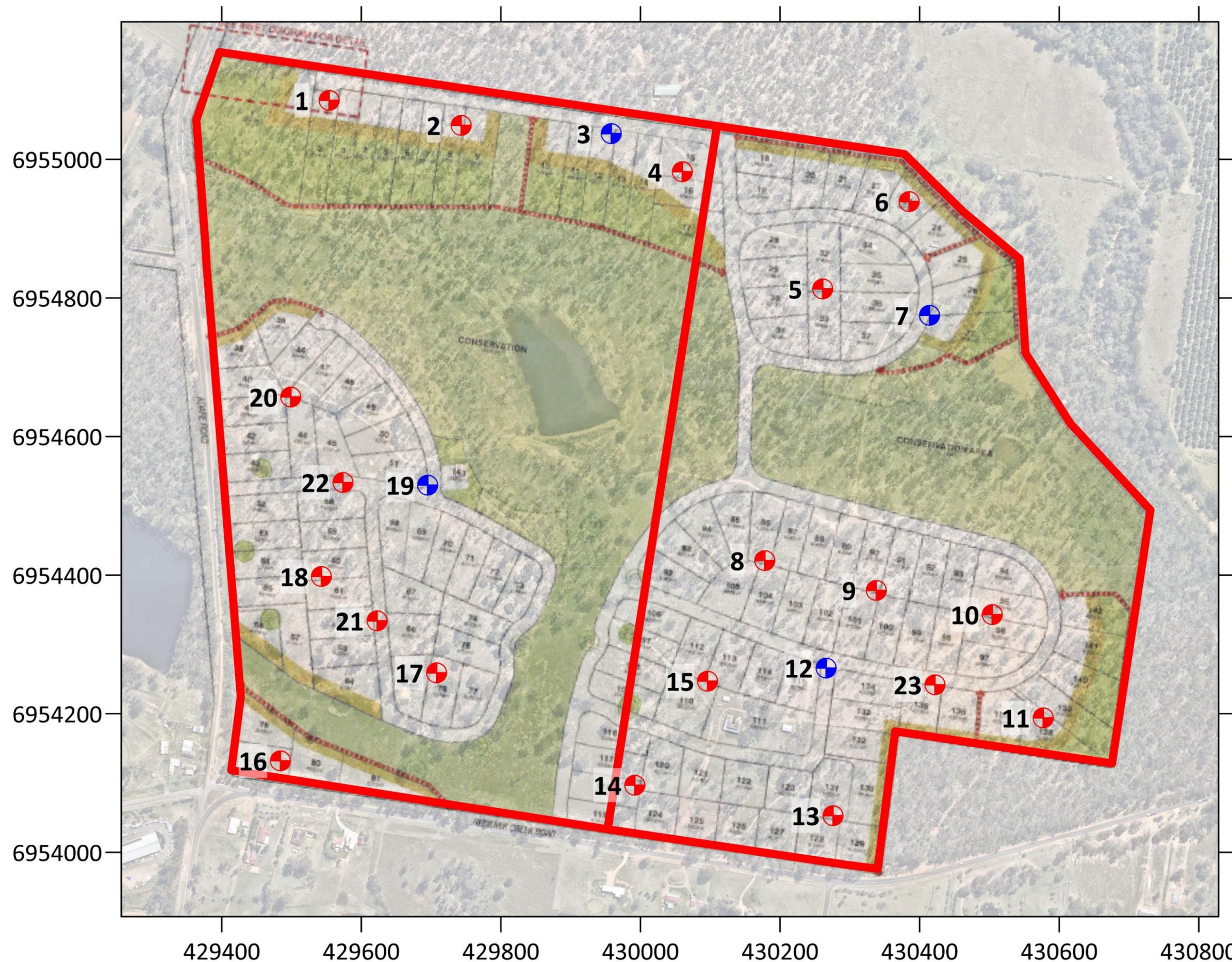


Client: Parklands at Adare Pty Ltd

Site: 63 Redbank Creek Road,
Adare, QLD, 4343

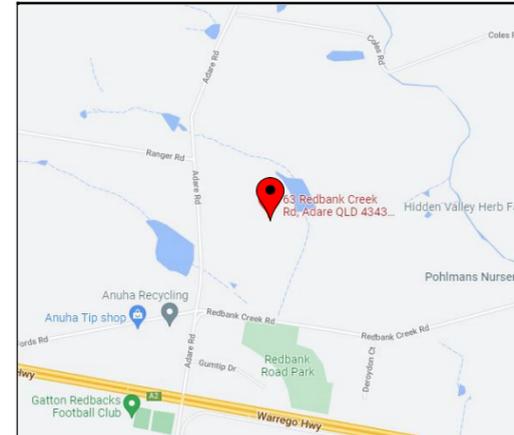
Title: Test Location Plan

Date: 12/04/2022	Drawn: JS	Checked: DV
Project: PTP/08869	Drawing No: 1	Revision 1





Site locality



Legend

-  Site locality
-  Site boundary

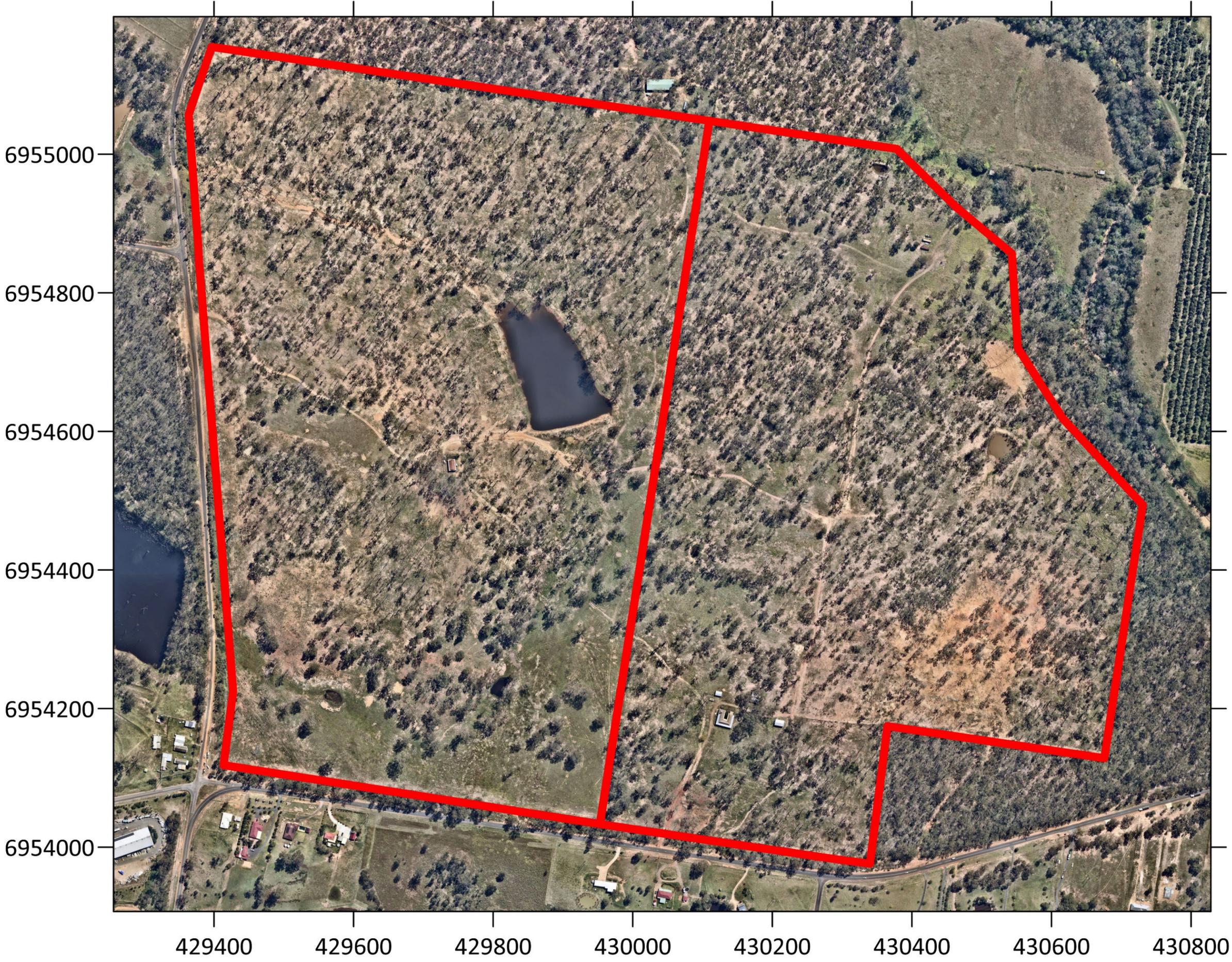


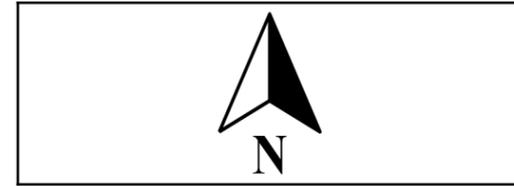
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Site: 63 Redbank Creek Road,
Adare, QLD, 4343

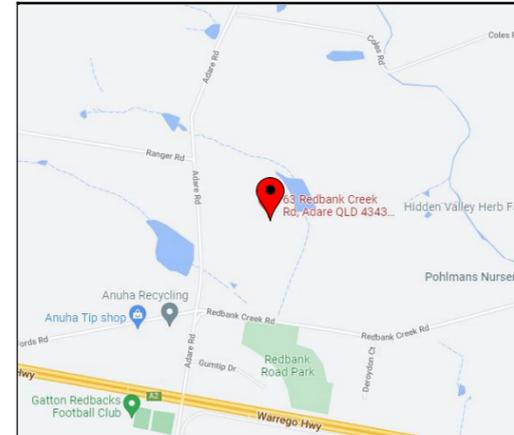
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Date: 12/04/2022	Drawn: JS	Checked: DV
Project: PTP/08869	Drawing No: 2	Revision 1

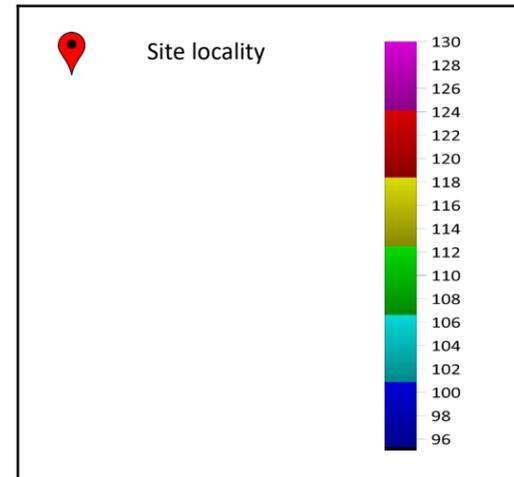




Site locality



Legend

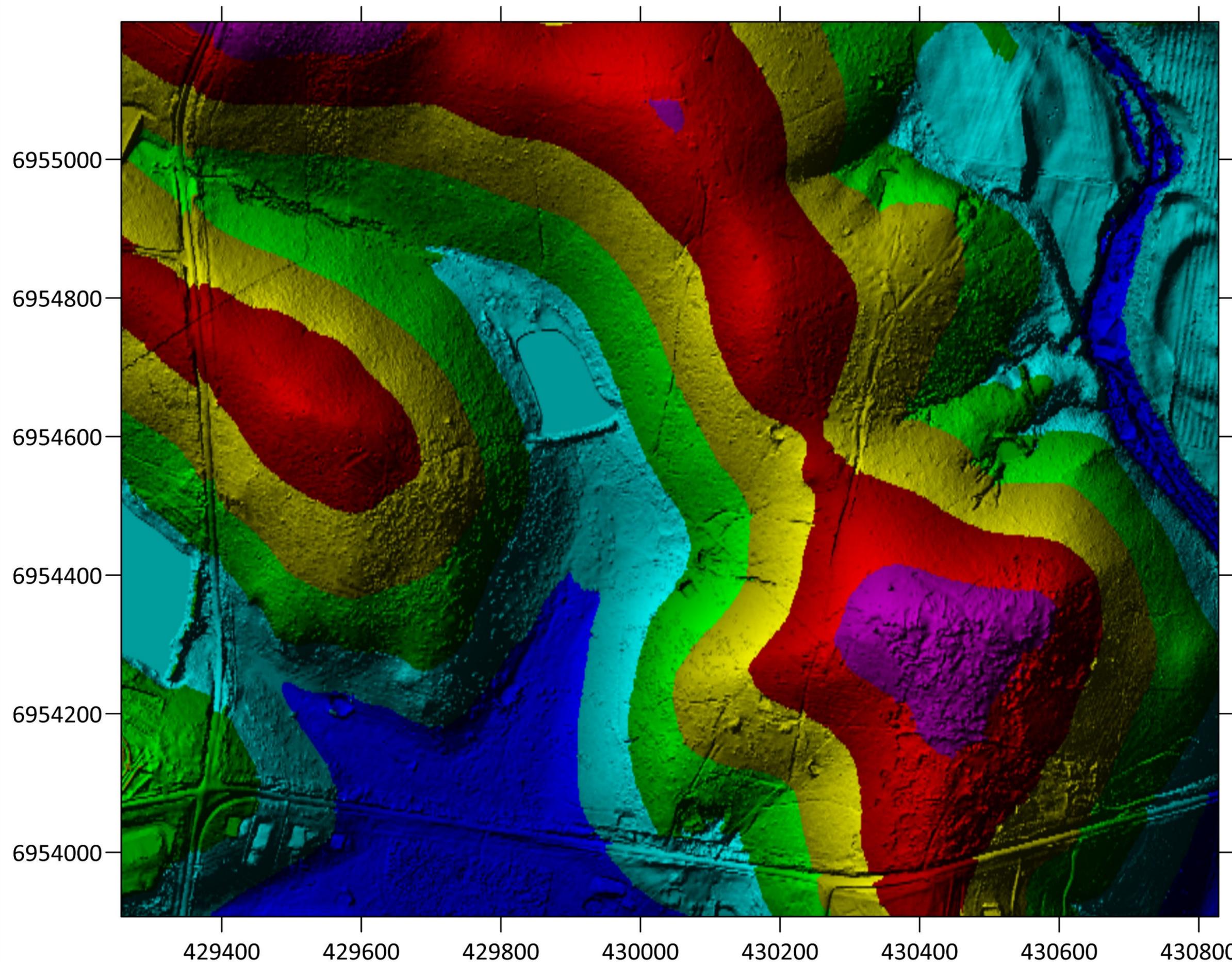


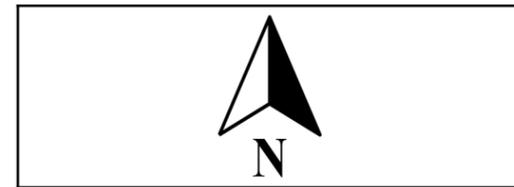
Client: Parklands at Adare Pty Ltd

Site: 63 Redbank Creek Road,
Adare, QLD, 4343

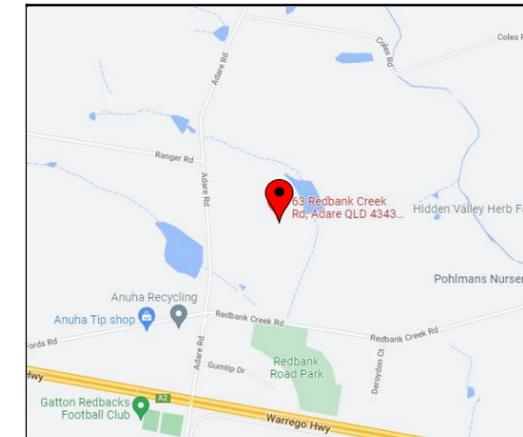
Title: Aerial View

Date: 12/04/2022	Drawn: JS	Checked: DV
Project: PTP/08869	Drawing No: 3	Revision 1





Site locality



Legend

-  Site locality
-  Site boundary
-  Image location and direction

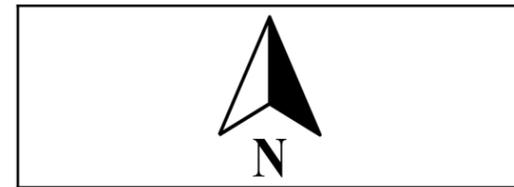


Client: Parklands at Adare Pty Ltd

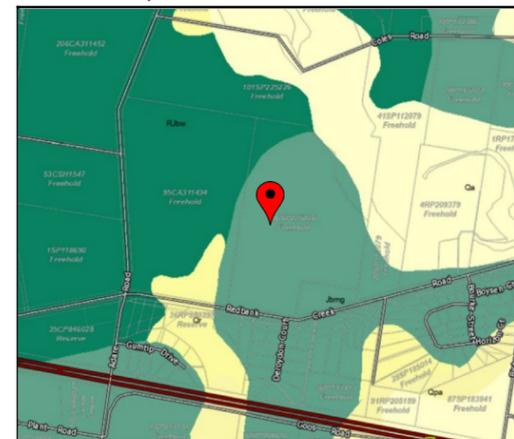
Site: 63 Redbank Creek Road,
Adare, QLD, 4343

Title: Site Images

Date: 12/04/2022	Drawn: JS	Checked: DV
Project: PTP/08869	Drawing No: 4	Revision 1



Site locality



Legend

-  Site locality
-  Site boundary
-  **Woogaroo Subgroup (RJbw)**
- Sublabile to quartzose sandstone, siltstone, quartz-rich granule to cobble conglomerate and coal
-  **Qr-QLD (Qr)**
- Clay, silt, sand, gravel and soil; colluvial and residual deposits
-  **Gatton Sandstone (Jbmg)**
- Lithic labile and feldspathic labile sandstone
-  **Qa-QLD (Qa)**
- Clay, silt, sand and gravel; flood-plain alluvium



Client: Parklands at Adare Pty Ltd

Site: 63 Redbank Creek Road,
Adare, QLD, 4343

Title: Regional Geology

Date: 12/04/2022	Drawn: JS	Checked: DV
Project: PTP/08869	Drawing No: 5	Revision 1



6955000

6954800

6954600

6954400

6954200

6954000

429400

429600

429800

430000

430200

430400

430600

430800

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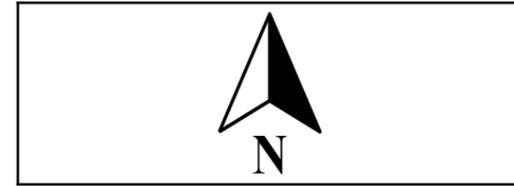
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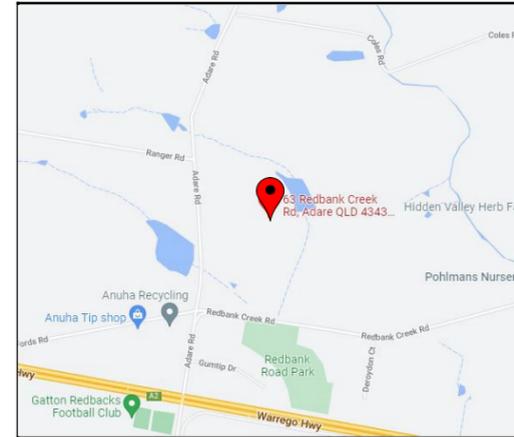
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36RP880397 Reserve

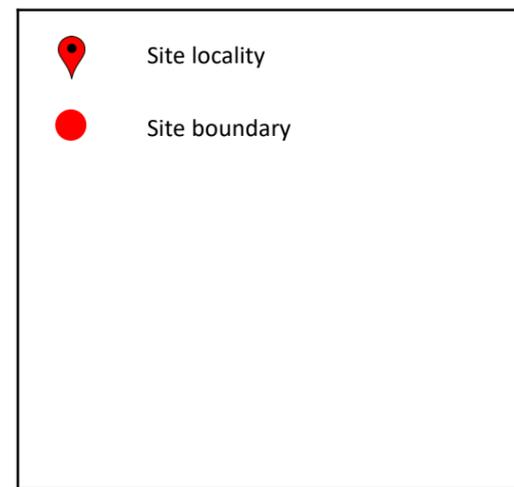
2RP880397 Freehold



Site locality



Legend

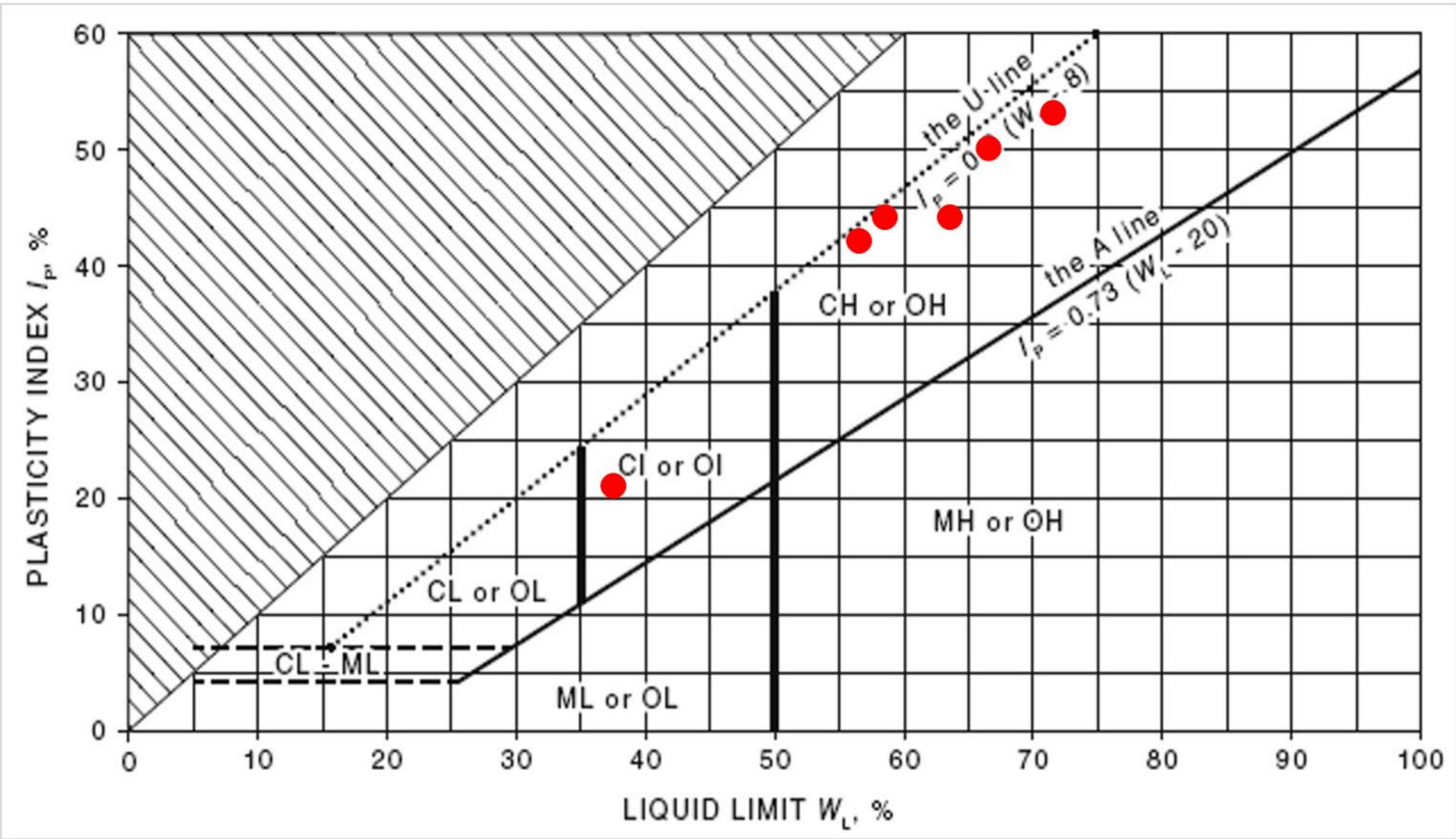


Client: Parklands at Adare Pty Ltd

Site: 63 Redbank Creek Road,
Adare, QLD, 4343

Title: Modified Casagrande Chart

Date: 12/04/2022	Drawn: JS	Checked: DV
Project: PTP/08869	Drawing No: 6	Revision 1





GEOTECHNICAL // ENVIRONMENTAL // TESTING SERVICES // STRUCTURAL

Appendix 2

TEST PIT LOGS

TEST PIT 1

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
119.0	0			0	TOPSOIL/GRASS - SM silty SAND, brown, fine to coarse grained, low plasticity fines, moist		Loose			3
	0.1			0.1	SP SAND with clay and silt, pale brown, loose, fine to coarse, low plasticity fines, moist					1
	0.2			0.2	- medium dense		Medium Dense			4
	0.4			0.4	CH silty sandy CLAY, red-brown mottled brown, stiff, high plasticity fines, fine to coarse sand, moist		Stiff	PP=200 kPa		3
118.5	0.5			0.5						4
	0.8			0.8	- very stiff		Very Stiff	PP=250 kPa		4
	1.0			1.0						5
118.0	1.1			1.1	SANDSTONE, pale brown mottled grey with white lenses, very low strength, fine to medium grained, highly weathered, dry; friable		Very Low Strength			6
	1.5			1.5						
117.5	2.0			2.0						
117.0	2.2			2.2	- low strength, excavation difficulty increased		Low Strength			
	2.3			2.3	Test Pit terminated at 2.3 m. 20T CAT Excavator refusal on low strength sandstone.					
116.5	2.5			2.5						
	3.0			3.0						

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
117.5	0			0	TOPSOIL/GRASS - SM silty SAND, brown, fine to coarse grained, low plasticity fines, moist			0		5
	0.1			0.1	SP SAND with gravel, grey, loose, fine to coarse sand, fine to medium gravel, moist		Loose	0.1		1
	0.4			0.4	CH silty sandy CLAY, dark red mottled white, stiff, medium plasticity fines, fine to medium sand, moist		Stiff	0.5		1
117.0	0.6			0.6	- very stiff		Very Stiff	0.6	PP=200 kPa	2
	1.0			1.0				0.7	PP=200 kPa	3
	1.2			1.2	SM silty SAND with gravel, brown-orange mottled white, dense, fine to coarse sand, low plasticity fines, fine gravel, moist; extremely weathered sandstone		Dense		PP=250 kPa	7
116.5	1.2			1.2	SANDSTONE, brown-orange with white lenses, very low strength, fine to medium grained, highly weathered, dry; friable		Very Low Strength			13
116.0	2.0			2.0						7
115.5	2.6			2.6	- low strength		Low Strength			
115.0	2.7			2.7	Test Pit terminated at 2.7 m. 20T CAT Excavator refusal on low strength sandstone.					
	3.0			3.0						

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
121.5	0			0	TOPSOIL/GRASS - SM silty SAND, brown, loose, fine to coarse grained, low plasticity fines, moist					5 10 15 20
	0.1			0.1	SM silty SAND, brown, loose, fine to coarse grained, low plasticity fines, moist		Loose			1
	0.2			0.2	SP SAND trace silt, grey, loose, fine to coarse sand, low plasticity fines, moist			B		2
	0.4			0.4	CH silty sandy CLAY, brown-orange mottled red-brown, stiff, high plasticity fines, fine sand, moist		Stiff	D	PP=150 kPa	3
121.0	0.6			0.6	SM silty SAND with gravel, orange mottled brown mottled white, very dense, fine to coarse sand, low plasticity fines, fine gravel, moist; extremely weathered sandstone		Very Dense		PP=200 kPa	6
	0.7			0.7	SANDSTONE, orange mottled brown with white lenses, very low strength, fine to medium grained, dry; friable					17
	1.0						Very Low Strength			12 / 40 mm
120.5	1.5									
120.0	2.0									
119.5	2.0			2	- low strength, excavation difficulty increased		Low Strength			
	2.3				Test Pit terminated at 2.3 m. 20T CAT Excavator refusal on medium strength sandstone.					
119.0	2.5									
	3.0									

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
				0	TOPSOIL/GRASS - SM silty SAND, dark brown, very loose, fine to coarse sand, low plasticity fines, moist					5 10 15 20
				0.1	GP silty sandy GRAVEL, pale brown, very loose, fine to medium gravel, fine to coarse sand, low plasticity fines, moist		Very Loose			1
120.0				0.3	CH CLAY with sand and silt, brown-orange mottled grey and red-brown, firm, high plasticity fines, fine to coarse sand, moist		Firm	D	PP=250 kPa	1
	0.5			0.4	- stiff		Stiff			3
				0.7	- very stiff		Very Stiff	D	PP=600 kPa	8
119.5				0.9	SANDSTONE, brown-orange with white lenses, very low strength, fine grained, highly weathered, dry; interbedded layers of possible dry fissured clay					3
	1.0			1	- red-brown with white lenses		Very Low Strength	D		7
119.0				1.4	- excavation difficulty increased					8
	1.5				Test Pit terminated at 1.6 m. 20T CAT Excavator refusal on low strength sandstone.					
118.5	2.0									
118.0	2.5									
117.5	3.0									

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

TEST PIT 6

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
				0	TOPSOIL/GRASS - SM silty SAND, dark brown, medium dense, fine to coarse sand, low plasticity fines, moist; cobbles throughout					5 10 15 20
				0.1	GP GRAVEL with sand and silt, pale brown, medium dense, fine to medium gravel, fine to coarse sand, moist; cobbles throughout		Medium Dense			3
112.0				0.3	CH silty sandy CLAY, grey mottled orange and red-brown, stiff, high plasticity fines, fine to medium sand, moist		Stiff		PP=150 kPa	12
	0.5			0.5	SM silty SAND with gravel, red-brown mottled white, dense, fine to coarse sand, low plasticity fines, fine gravel, moist; extremely weathered sandstone		Dense			3
				0.6	SANDSTONE, red-brown with white lenses, very low strength, fine to coarse grained, highly weathered, dry		Very Low Strength			2
111.5	1.0			1.4	- low strength, excavation difficulty increased		Low Strength			20/80 mm
					Test Pit terminated at 1.45 m. 20T CAT Excavator refusal on low strength sandstone.					
111.0	1.5									
	2.0									
110.0	2.5									
109.5	3.0									

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

TEST PIT 7

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
114.0	0			0	TOPSOIL/GRASS - SM silty SAND with gravel, brown, loose, fine to coarse sand, low plasticity fines, fine to medium gravel, moist		Loose			1
	0.1			0.1	SM silty SAND with gravel, brown, medium dense, fine to coarse sand, low plasticity fines, fine to medium gravel, moist		Medium Dense			7
	0.2			0.2	SP SAND with silt, pale brown, medium dense, fine to coarse sand, low plasticity fines, moist		Medium Dense			8
	0.4			0.4	CH silty CLAY with sand, grey mottled red-brown and brown-orange, stiff, high plasticity fines, fine sand, moist		Stiff			9
113.5	0.6			0.6	SANDSTONE, pale brown with brown-orange lenses, low strength, fine to medium grained, highly weathered, dry		Low Strength			10
	0.7			0.7	- red-brown, medium strength, excavation difficulty increased		Medium Strength			3
	0.95				Test Pit terminated at 0.95 m. 20T CAT Excavator refusal on medium strength sandstone.					20 / 80 mm
113.0	1.0									
	1.5									
112.5	2.0									
	2.5									
112.0	3.0									
111.5										



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		
								Type	Results & Comments	Dynamic Penetrometer Test (blows per 100 mm)
				0	TOPSOIL/GRASS - SM silty SAND trace clay, dark brown, loose, fine to coarse sand, low plasticity fines, moist					5 10 15 20
				0.1	SM silty SAND trace clay, dark brown, loose, fine to coarse sand, low plasticity fines, moist					
				0.2	CH silty sandy CLAY, brown mottled orange and grey, stiff, high plasticity fines, fine to medium sand, moist					
114.0	0.5			0.4	- very stiff					
				0.5	- hard					
				0.6	- orange mottled pale brown					
113.5	1.0			1	- grey					
113.0	1.5			1.5	SANDSTONE, orange-brown, very low strength, fine to coarse grained, highly weathered, dry; friable					
112.5	2.0			1.8	- low strength					
112.0	2.5				Test Pit terminated at 2.1 m. 20T CAT Excavator refusal on low strength sandstone.					
111.5	3.0									



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
				0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse grained, low plasticity fines, moist					5 10 15 20
				0.1	SM silty SAND, dark brown, loose, fine to coarse grained, low plasticity fines, moist		Loose			1 2
				0.3	CH silty CLAY with sand, dark brown mottled red, stiff, high plasticity fines, fine to coarse sand, moist		Stiff	0.3	PP=100 kPa	2 3 4
125.0	0.5			0.4	- very stiff					5 6 7
				0.5	CI gravelly sandy CLAY, orange mottled dark grey, very stiff, medium plasticity fines, fine to coarse sand, fine gravel, moist		Very Stiff			8 9
				0.7	SANDSTONE, orange-brown, very low strength, fine to coarse grained, dry; friable					10 11 12 13 14 15 16 17 18 19 20
124.5	1.0						Very Low Strength			
124.0	1.5									
				1.8	- pale brown-orange, low strength					
123.5	2.0			1.9	- orange mottled white		Low Strength			
					Test Pit terminated at 2 m. 20T CAT Excavator refusal on low strength sandstone.					
123.0	2.5									
122.5	3.0									



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		
								Type	Results & Comments	Dynamic Penetrometer Test (blows per 100 mm)
				0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse grained, low plasticity fines, moist					5 10 15 20
				0.1	GP GRAVEL with sand trace silt, pale brown, loose, fine to coarse gravel, low plasticity fines, fine to coarse sand, moist		Loose			2
				0.2	CH silty sandy CLAY, brown-orange mottled red and grey, stiff, high plasticity fines, fine to coarse sand, moist		Stiff		PP=100 kPa PP=150 kPa	1
				0.3	- very stiff		Very Stiff			2
126.0				0.5	SANDSTONE, pale red-brown, low strength, fine to medium grained, highly weathered, dry - yellow-orange with white lenses		Low Strength			5
				0.6						10
125.5										23
	1.0									
	1.2				Test Pit terminated at 1.2 m. 20T CAT Excavator refusal on medium strength sandstone.					
125.0										
	1.5									
	2.0									
124.5										
	2.5									
124.0										
	3.0									
123.5										

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
120.5	0			0	SM silty SAND, pale brown, very loose, fine to coarse gravel, low plasticity fines, fine to coarse sand, moist					2
	0.3			0.3	SM silty gravelly SAND with clay, pale brown, very loose, fine to coarse sand, fine to medium gravel, low plasticity fines, wet		Very Loose	D		1
	0.4			0.4	- seepage					5
120.0	0.6			0.6	- cobbles throughout			D		1
	0.8			0.8	SANDSTONE, brown, low strength, fine to medium grained, moderately weathered, dry		Low Strength	D		0
	0.9			0.9	- medium strength, excavation difficulty increased		Medium Strength	D		8
	1.0			1.0	Test Pit terminated at 1 m. 20T CAT Excavator refusal on medium strength sandstone.					20 / 50 mm
119.5	1.5									
119.0	2.0									
118.5	2.5									
118.0	3.0									



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm) 5 10 15 20	
								Type	Results & Comments		
122.5	0.5	[Diagonal Hatching]	[Graphic Log Symbols]	0	TOPSOIL/GRASS - SM silty SAND, dark brown, medium dense, fine to coarse sand, low plasticity fines, moist		Medium Dense	-0.1	PP=250 kPa	4	
				0.1	GP GRAVEL with sand trace silt, grey-brown, medium dense, fine to medium gravel, low plasticity fines, fine to coarse sand, moist					B	4
				0.3	CI silty sandy CLAY, grey mottled red-brown and orange, stiff, medium plasticity fines, fine to coarse sand, moist		Stiff	-0.3		D	3
				0.5	SM silty SAND with gravel, orange-brown, very dense, fine to coarse sand, low plasticity fines, fine gravel, moist; extremely weathered sandstone		Very Dense	-0.5			4
				0.6	SANDSTONE, orange-brown, low strength, fine to medium grained, dry; friable - medium strength, excavation difficulty increased		Low Strength				6
122.0	1.0						Medium Strength			20 / 50 mm	
121.5	1.5				Test Pit terminated at 1.3 m. 20T CAT Excavator refusal on medium strength sandstone.						
121.0	2.0										
120.5	2.5										
120.0	3.0										

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
				0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse sand, low plasticity fines, moist		Loose			2
115.5				0.1	SP SAND with silt, pale brown, medium dense, fine to coarse sand, low plasticity fines, wet			D		5
	0.5			0.4	GP GRAVEL with sand trace silt, pale brown, medium dense, fine to medium gravel, fine to coarse sand, low plasticity fines, wet - seepage		Medium Dense	D		8
115.0				0.5						7
	1.0			0.7	SM silty SAND with gravel, orange-brown, medium dense, fine to coarse sand, fine gravel, low plasticity fines, moist			D		4
	1.5			1	CH silty sandy CLAY, grey mottled red-brown and brown-orange, stiff, high plasticity fines, fine to coarse sand, moist		Stiff	D		3
114.5				1.6	SANDSTONE, dark red with orange lenses, low strength, fine to medium grained, highly weathered, moist		Low Strength	D		
114.0					Test Pit terminated at 1.9 m. 20T CAT Excavator refusal on low strength sandstone.					
	2.0									
113.5										
	2.5									
113.0										
	3.0									

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

TEST PIT 14

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
106.5	0			0	TOPSOIL/GRASS - SM silty SAND, dark brown, very loose, fine to coarse sand, low plasticity fines, moist					5 10 15 20
	0.1			0.1	GP GRAVEL with sand trace silt, pale brown, very loose, fine to medium gravel, fine to coarse sand, low plasticity fines, wet		Very Loose	D		1
	0.3			0.3	- seepage					2
	0.4			0.4	SM silty SAND with clay, orange, medium dense, fine to coarse sand, low plasticity fines, moist		Medium Dense	D		3
106.0	0.6			0.6	CH silty CLAY with sand, orange mottled white and red, stiff, high plasticity fines, fine to coarse sand, moist		Stiff	D	PP=200 kPa	3
	0.9			0.9	- very stiff		Very Stiff			3
105.5	1.3			1.3	- hard		Hard			3
105.0	1.6			1.6	SANDSTONE, orange-brown, very low strength, fine to medium grained, dry; friable		Very Low Strength			
	2.1			2.1	- pale yellow with white lenses					
	2.2			2.2	- dark orange					
	2.3			2.3	Test Pit terminated at 2.3 m. 20T CAT Excavator refusal on low strength sandstone.					
104.5	2.5			2.5						
104.0	3.0			3.0						

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
115.5	0.0			0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse sand, low plasticity fines, moist					1
	0.2			0.2	SP SAND with silt and gravel, brown, loose, fine to coarse sand, low plasticity fines, fine to medium gravel, moist		Loose	D		2
	0.5			0.5	- red-brown					2
115.0	0.7			0.7	SANDSTONE, red-brown with orange-brown lenses, very low strength, fine to medium grained, dry		Very Low Strength			5
	1.0			1	- low strength		Low Strength			13
114.5	1.3				Test Pit terminated at 1.3 m. 20T CAT Excavator refusal on medium strength sandstone.					20 / 20 mm
114.0	1.5									
113.5	2.0									
113.0	2.5									
	3.0									



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
104.0	0.0			0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse grained, low plasticity fines, moist		Loose	-0.1		1
	0.1			0.1	GP GRAVEL with sand trace silt, pale brown, loose, fine to medium gravel, low plasticity fines, fine to coarse sand, moist					2
	0.2			0.2	- medium dense		Medium Dense			3
	0.4			0.4	CH silty CLAY with sand, brown-orange mottled pale brown, stiff, high plasticity fines, fine to coarse sand, moist			-0.4		4
103.5	0.5			0.5				0.5	PP=150 kPa	2
	1.0			1.0			Stiff			3
103.0	1.3			1.3	SANDSTONE, pale red-brown, medium strength, fine to medium grained, moderately weathered, moist; excavation difficulty increased		Medium Strength	-1.3		3
102.5	1.5			1.5	Test Pit terminated at 1.5 m. 20T CAT Excavator refusal on medium strength sandstone.			-1.5		3

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
106.0	0			0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse sand, low plasticity fines, moist					5 10 15 20
	0.1			0.1	SM silty SAND with clay, brown, loose, low plasticity fines, fine to coarse sand, moist; boulders throughout		Loose			1
	0.3			0.3	- medium dense					1
	0.5									2
	0.7			0.7	SC silty clayey SAND with gravel, red-brown, medium dense, fine to coarse sand, low plasticity fines, moist; lenses of low strength sandstone		Medium Dense			24
	1.0									7
	1.5									22
	1.6			1.6	CH silty sandy CLAY, red-brown, stiff, fine to medium sand, high plasticity fines, moist		Stiff			17
	2.0									14
	2.4			2.4	- seepage					8
	2.55			2.55	SANDSTONE, red-brown, medium strength, fine to medium grained, moderately weathered, moist; excavation difficulty increased		Medium Strength			
	2.6			2.6	Test Pit terminated at 2.6 m. 20T CAT Excavator refusal on medium strength or stronger sandstone.					
103.5	3.0									

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

TEST PIT 18

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
113.0	0.0			0	TOPSOIL/GRASS - SM silty SAND trace gravel, dark brown, very loose, fine to coarse sand, low plasticity fines, fine gravel, moist			D		5 10 15 20
	0.1			0.1	SP SAND with silt, pale brown, very loose, fine to coarse sand, low plasticity fines, wet		Very Loose	D		1
	0.5			0.5	- loose					1
	0.6			0.6	SC silty clayey SAND, brown mottled pale brown and grey, loose, fine to coarse sand, medium plasticity fines, moist		Loose	D		1
	0.9			0.9	- medium dense		Medium Dense			2
	1.2			1.2	- dense		Dense			1
	1.5			1.5	SANDSTONE, pale brown, very low strength, fine to medium grained, dry; friable		Very Low Strength			3 *DCP Restarted
	1.8			1.8	- low strength		Low Strength			15
	2.1			2.1	- medium strength, excavation difficulty increased		Medium Strength	B		12
	2.3			2.3	Test Pit terminated at 2.3 m. 20T CAT Excavator refusal on medium strength sandstone.					12
111.0	2.5									10/30 mm
110.5	3.0									



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
117.5	0			0	TOPSOIL/GRASS - SM silty SAND, dark brown, very loose, fine to coarse sand, low plasticity fines, moist			D		1
	0.1			0.1	SP SAND with silt, pale brown, very loose, fine to coarse grained, low plasticity fines, moist		Very Loose	B		1
	0.3			0.3	- loose		Loose			0
	0.4			0.4	CH silty sandy CLAY, orange-brown mottled red and grey, stiff, high plasticity fines, fine to medium sand, moist			D	PP=100 kPa	2
117.0	0.5			0.5						1
	1.0			1.0			Stiff	1	PP=250 kPa	2
116.5	1.0			1.0						2
	1.5			1.5						3
	1.5			1.5	SANDSTONE, pale brown with brown-orange lenses, very low strength, fine to medium grained, dry; friable		Very Low Strength	D		3
116.0	1.5			1.5						3
	1.7			1.7	- dark brown lensing, low strength		Low Strength			4
115.5	2.0			2.0						4
	2.1			2.1	Test Pit terminated at 2.1 m. 20T CAT Excavator refusal on low strength or stronger sandstone.					8
	2.5			2.5						*DCP Restarted
115.0	2.5			2.5						20/ 80 mm
	3.0			3.0						



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
				0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse sand, low plasticity fines, moist		Loose	D		2
				0.2	SC silty clayey SAND with gravel, brown, dense, fine to coarse sand, medium plasticity fines, moist		Dense	D	PP=125 kPa	4 12 13 13/50 mm
122.5	0.5									
				0.6	SANDSTONE, brown with white and brown-orange lenses, very low strength, fine to medium grained, dry; friable		Very Low Strength			
122.0	1.0									
				1.7	- low strength, unable to break by hand		Low Strength	D		
121.5	1.5									
121.0	2.0									
					Test Pit terminated at 2 m. 20T CAT Excavator refusal on low strength or stronger sandstone.					
120.5	2.5									
120.0	3.0									

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
				0	TOPSOIL/GRASS - SM silty SAND, dark brown, very loose, fine to coarse sand, low plasticity fines, moist - medium dense		Very Loose			0
				0.1			Medium Dense			3
110.0				0.3	SM silty SAND, brown-orange, very dense, fine to coarse sand, low plasticity fines, wet; seepage		Very Dense	B		5
	0.5									20/90 mm
109.5				0.7	SANDSTONE, pale orange, low strength, fine to medium grained, highly weathered, wet		Low Strength	D		
	1.0			0.75	- dark-red, medium strength, excavation difficulty increased		Medium Strength			
					Test Pit terminated at 1 m. 20T CAT Excavator refusal on medium strength or stronger sandstone.					
109.0										
	1.5									
108.5										
	2.0									
108.0										
	2.5									
107.5										
	3.0									



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)	
								Type	Results & Comments		
120.0	0.0	[Hatched]	[Dotted]	0	TOPSOIL/GRASS - SM silty SAND, dark brown, loose, fine to coarse sand, low plasticity fines, moist	[None]	Loose	-0.4	B	1	
	0.1			SP SAND with silt, pale brown, loose, fine to coarse sand, low plasticity fines, moist	2						
119.5	0.5	[Hatched]	[Dotted]	0.9	SANDSTONE, red-brown mottled pale grey, very low strength, fine to medium grained, highly weathered, moist	[None]	Very Low Strength	-0.7		1	
119.0	1.0				2						
118.5	1.5			1.5	- low strength					1	
				1.7	- excavation difficulty increased		Low Strength			2	
					Test Pit terminated at 1.8 m. 20T CAT Excavator refusal on medium strength or stronger sandstone.					1	
	2.0	[Hatched]	[Dotted]							2	
118.0	2.5										1
117.5	3.0										1

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

RL (m)	Depth (m)	Drilling Method	Graphic Log	Layer Depths	Material Description	Water	Strength (Consistency, Relative Density, Rock Strength)	Sampling & Testing		Dynamic Penetrometer Test (blows per 100 mm)
								Type	Results & Comments	
126.0	0			0	TOPSOIL/GRASS - SM silty SAND, dark brown, dense, fine to coarse sand, low plasticity fines, moist					8
	0.1			0.1	GP GRAVEL with sand trace silt, brown, dense, fine to coarse gravel, fine to coarse sand, low plasticity fines; trace cobbles		Dense			13
	0.4			0.4	CH silty sandy CLAY trace gravel, red-brown mottled yellow and grey, very stiff, high plasticity fines, fine to coarse sand, coarse gravel, moist		Very Stiff	0.4 D 0.5 0.6 0.7	PP=200 kPa	13 12 12
125.0	1			1	SANDSTONE, orange mottled white, very low strength, fine to medium grained, highly weathered, moist		Very Low Strength			
	1.2			1.2	- low strength					
	1.3			1.3	- excavation difficulty increased		Low Strength			
124.5	1.5			1.5	Test Pit terminated at 1.4 m. 20T CAT Excavator refusal on medium strength or stronger sandstone.					

PROTEST- TEST PIT (PORTRAIT) 1 PHOTO PTP_08869 - TEST PIT LOGSA.GPJ DRAFT.GDT 14/4/22



Remarks:
Surface elevations from 2014 LiDAR data as available on Elvis Elevations

PROTEST
ENGINEERING

GEOTECHNICAL // ENVIRONMENTAL // TESTING SERVICES // STRUCTURAL

Appendix 3

LABORATORY TESTING

Atterberg Limits Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 1/1	
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	11/04/2022	
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-	
Project Number :	PTP/08869	Page 1 of 6		
Location :	Adare			
Test Methods :	AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.3.3.1, AS1289.2.1.1			
Material Description :	Silty Sandy Clay - Dark Red mottled Pale White			
Sample Number :	S/135304	Sampling Method :	AS1289.1.2.1 - cl6.5	
Date Tested :	8/04/2022	Time :	15:58	
Material Source :	In situ	Location 1 :	Test Pit 2	
For use as :	-	Location 2 :	0.5 m - 0.7 m	
Lot Number :	-	Location 3 :	-	
ATT Specification Number :	N/A	Location 4 :	-	
History of Sample :	Oven Dried			
Method of Preparation :	Dry Sieved			
Linear Shrinkage & Defects :	Nil Occurred			
Mould Length (mm) :	125			
Atterberg Limits Test Results	Liquid Limit (%) :	Plastic Limit (%) :	Plasticity Index (%) :	Linear Shrinkage (%) :
Results :	66	16	50	17.0
Specifications :				
Remarks :	-			
 <p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY			
	 Samuel Bamford - Signatory			

Atterberg Limits Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 1/1	
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	11/04/2022	
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-	
Project Number :	PTP/08869	Page 2 of 6		
Location :	Adare			
Test Methods :	AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.3.3.1, AS1289.2.1.1			
Material Description :	Clay with Sand and Silt - Brown-Orange and Grey			
Sample Number :	S/135305	Sampling Method :	AS1289.1.2.1 - cl6.5	
Date Tested :	8/04/2022	Time :	15:58	
Material Source :	In situ	Location 1 :	Test Pit 5	
For use as :	-	Location 2 :	0.3 m - 0.5 m	
Lot Number :	-	Location 3 :	-	
ATT Specification Number :	N/A	Location 4 :	-	
History of Sample :	Oven Dried			
Method of Preparation :	Dry Sieved			
Linear Shrinkage & Defects :	Curling Occurred			
Mould Length (mm) :	124			
Atterberg Limits Test Results	Liquid Limit (%) :	Plastic Limit (%) :	Plasticity Index (%) :	Linear Shrinkage (%) :
Results :	58	14	44	15.5
Specifications :				
Remarks :	-			
 <p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY  Samuel Bamford - Signatory			

Atterberg Limits Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 1/1	
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	11/04/2022	
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-	
Project Number :	PTP/08869	Page 3 of 6		
Location :	Adare			
Test Methods :	AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.3.3.1, AS1289.2.1.1			
Material Description :	Silty Clay with Sand - Brown-Orange mottled Pale Brown			
Sample Number :	S/135306	Sampling Method :	AS1289.1.2.1 - cl6.5	
Date Tested :	8/04/2022	Time :	15:58	
Material Source :	In situ	Location 1 :	Test Pit 16	
For use as :	-	Location 2 :	0.4 m - 0.7 m	
Lot Number :	-	Location 3 :	-	
ATT Specification Number :	N/A	Location 4 :	-	
History of Sample :	Oven Dried			
Method of Preparation :	Dry Sieved			
Linear Shrinkage & Defects :	Nil Occurred			
Mould Length (mm) :	125			
Atterberg Limits Test Results	Liquid Limit (%) :	Plastic Limit (%) :	Plasticity Index (%) :	Linear Shrinkage (%) :
Results :	63	19	44	18.0
Specifications :				
Remarks :	-			
 <p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY			
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Atterberg Limits Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 1/1	
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	11/04/2022	
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-	
Project Number :	PTP/08869	Page 4 of 6		
Location :	Adare			
Test Methods :	AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.3.3.1, AS1289.2.1.1			
Material Description :	Silty Sandy Clay - Brown-Orange mottled Red and Grey			
Sample Number :	S/135307	Sampling Method :	AS1289.1.2.1 - cl6.5	
Date Tested :	8/04/2022	Time :	15:58	
Material Source :	In situ	Location 1 :	Test Pit 10	
For use as :	-	Location 2 :	0.2 m - 0.5 m	
Lot Number :	-	Location 3 :	-	
ATT Specification Number :	N/A	Location 4 :	-	
History of Sample :	Oven Dried			
Method of Preparation :	Dry Sieved			
Linear Shrinkage & Defects :	Curling Occurred			
Mould Length (mm) :	125			
Atterberg Limits Test Results	Liquid Limit (%) :	Plastic Limit (%) :	Plasticity Index (%) :	Linear Shrinkage (%) :
Results :	56	14	42	18.0
Specifications :				
Remarks :				
 <p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY  Samuel Bamford - Signatory			

Atterberg Limits Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 1/1	
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	11/04/2022	
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-	
Project Number :	PTP/08869	Page 5 of 6		
Location :	Adare			
Test Methods :	AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.3.3.1, AS1289.2.1.1			
Material Description :	Silty Clay with Sand - Orange mottled White and Red			
Sample Number :	S/135308	Sampling Method :	AS1289.1.2.1 - cl6.5	
Date Tested :	8/04/2022	Time :	15:58	
Material Source :	In situ	Location 1 :	Test Pit 14	
For use as :	-	Location 2 :	0.6 m - 0.8 m	
Lot Number :	-	Location 3 :	-	
ATT Specification Number :	N/A	Location 4 :	-	
History of Sample :	Oven Dried			
Method of Preparation :	Dry Sieved			
Linear Shrinkage & Defects :	Cracking Occurred			
Mould Length (mm) :	126			
Atterberg Limits Test Results	Liquid Limit (%) :	Plastic Limit (%) :	Plasticity Index (%) :	Linear Shrinkage (%) :
Results :	71	18	53	15.0
Specifications :				
Remarks :	-			
 <p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY			
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Atterberg Limits Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 1/1	
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	11/04/2022	
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-	
Project Number :	PTP/08869	Page 6 of 6		
Location :	Adare			
Test Methods :	AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.3.3.1, AS1289.2.1.1			
Material Description :	Silty Clay with Sand - Orange mottled White and Red			
Sample Number :	S/135309	Sampling Method :	AS1289.1.2.1 - cl6.5	
Date Tested :	8/04/2022	Time :	15:58	
Material Source :	In situ	Location 1 :	Test Pit 18	
For use as :	-	Location 2 :	0.6 m - 0.8 m	
Lot Number :	-	Location 3 :	-	
ATT Specification Number :	N/A	Location 4 :	-	
History of Sample :	Oven Dried			
Method of Preparation :	Dry Sieved			
Linear Shrinkage & Defects :	Nil Occurred			
Mould Length (mm) :	122			
Atterberg Limits Test Results	Liquid Limit (%) :	Plastic Limit (%) :	Plasticity Index (%) :	Linear Shrinkage (%) :
Results :	37	16	21	9.5
Specifications :				
Remarks :				
 <p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY			
	 Samuel Bamford - Signatory			

Emerson Class Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 2/1
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	11/04/2022
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-
Project Number :	PTP/08869	Page 1 of 1	
Location :	Adare		

Test Methods :	AS1289.3.8.1
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Sample Number :	S/135310	S/135311	S/135312	S/135313	S/135314	S/135315
Date Sampled :	6/04/2022	6/04/2022	6/04/2022	6/04/2022	6/04/2022	6/04/2022
Date Tested :	8/04/2022	8/04/2022	8/04/2022	8/04/2022	8/04/2022	8/04/2022
Material Source :	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu
For Use As :	-	-	-	-	-	-

Sampling Method :	AS1289.1.2.1 - cl6.5					
Time :	15:58	15:58	15:58	15:58	15:58	15:58
Lot Number :	-	-	-	-	-	-
Location 1 :	Test Pit 2	Test Pit 10	Test Pit 18	Test Pit 16	Test Pit 14	Test Pit 6
Location 2 :	0 m - 0.1 m	0 m - 0.2 m	0.1 m - 0.3 m	0.1 m - 0.4 m	0.4 m - 0.6 m	0.3 m - 0.6 m
Location 3 :	-	-	-	-	-	-
Location 4 :	-	-	-	-	-	-

Water Type :	Distilled	Distilled	Distilled	Distilled	Distilled	Distilled
Soil Description :	Silty Sand - Brown	Silty Sandy Gravel - Pale Brown	Sand with Silt - Pale Brown	Silty Sandy Gravel - Pale Brown	Silty Sand with Clay - Orange	Silty Sandy Clay - Grey mottled Orange
Emerson Class Number :	4	2	4	4	4	4

Remarks :	-
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 <p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY  Samuel Bamford - Signatory
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California Bearing Ratio Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 6/1
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	14/04/2022
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-
Project Number :	PTP/08869	Page 1 of 4	
Location :	Adare		
Test Methods :	AS1289.6.1.1, AS1289.5.1.1, AS1289.2.1.1		
Material Description :	SAND - Brown		
Sample Number :	S/135300	Sampling Method :	AS1289.1.2.1 - cl6.5
Date Tested :	12/04/2022	Time :	15:58
Material Source :	In situ	Location 1 :	Test Pit 3
For Use As :	-	Location 2 :	0.2 m - 0.4 m
Lot Number :	-	Location 3 :	-
Sample Date :	6/04/2022	Location 4 :	-
MDD (t/m ³) : 1.96		Nominated % of MDD : 100.0%	
OMC (%) : 9.4		Nominated % of OMC : 100.0%	
Target Dry Density (t/m ³) : 1.96		Achieved % of MDD : 100.5%	
Target Moisture Content (%) : 9.4		Achieved % of OMC : 97.0%	
Compactive Effort :	Standard	<p style="text-align: center;">CBR 1 Point Graph</p>	
Dry Density Before Soak (t/m ³) :	1.97		
Dry Density After Soak (t/m ³) :	1.94		
Field Moisture Content (%) :	12.0%		
Compaction Moisture Content (%) :	9.1%		
After Penetration - Top Moisture (%) :	10.0%		
After Penetration - Total Moisture (%) :	9.7%		
Period of Soaking (Days) :	4		
Mass of Surcharge (kg) :	4.5		
Oversize (%) :	0.0%		
Oversize Included :	Excluded		
Method of Determining Plasticity :	Tactile/Visual Assessment		
CBR Sample Curing Time :	24 Hours		
-	-		
-	-		
Swell (%) :	1.5%		
CBR Value at 5mm :	10%		
Pre-treatment (CA _n) :	-	<p style="text-align: center;">APPROVED SIGNATORY</p> <p style="text-align: center;"><i>Sam Bamford</i></p> <p style="text-align: center;">Sam Bamford - Signatory</p>	
Pre-treatment (W _n) :	-		
Mass Retained (R) :	-		
Remarks :	-		
<p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>			

California Bearing Ratio Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 3/1
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	14/04/2022
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-
Project Number :	PTP/08869	Page 2 of 4	
Location :	Adare		
Test Methods :	AS1289.6.1.1, AS1289.5.1.1, AS1289.2.1.1		
Material Description :	SAND - Brown		
Sample Number :	S/135301	Sampling Method :	AS1289.1.2.1 - cl6.5
Date Tested :	12/04/2022	Time :	15:58
Material Source :	In situ	Location 1 :	Test Pit 7
For Use As :	-	Location 2 :	0.2 m - 0.4 m
Lot Number :	-	Location 3 :	-
Sample Date :	6/04/2022	Location 4 :	-
MDD (t/m ³) : 2.00		Nominated % of MDD : 100.0%	
OMC (%) : 8.2		Nominated % of OMC : 100.0%	
		Target Dry Density (t/m ³) : 2.00	
		Target Moisture Content (%) : 8.2	
		Achieved % of MDD : 100.0%	
		Achieved % of OMC : 97.0%	
Compactive Effort :	Standard	<p>CBR 1 Point Graph</p>	
Dry Density Before Soak (t/m ³) :	2.00		
Dry Density After Soak (t/m ³) :	2.02		
Field Moisture Content (%) :	8.0%		
Compaction Moisture Content (%) :	8.0%		
After Penetration - Top Moisture (%) :	8.6%		
After Penetration - Total Moisture (%) :	8.3%		
Period of Soaking (Days) :	4		
Mass of Surcharge (kg) :	4.5		
Oversize (%) :	0.0%		
Oversize Included :	Excluded		
Method of Determining Plasticity :	Tactile/Visual Assessment		
CBR Sample Curing Time :	23 Hours		
-	-		
-	-		
Swell (%) :	-1.0%		
CBR Value at 5mm :	60%		
Pre-treatment (CA _n) :	-		
Pre-treatment (W _n) :	-		
Mass Retained (R) :	-		
Remarks :	-		
<p>Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast</p> <p>Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>	APPROVED SIGNATORY Sam Bamford - Signatory		

California Bearing Ratio Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 3/1
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	14/04/2022
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-
Project Number :	PTP/08869	Page 3 of 4	
Location :	Adare		
Test Methods :	AS1289.6.1.1, AS1289.5.1.1, AS1289.2.1.1		
Material Description :	Silty Gravelly SAND - Dark Brown		
Sample Number :	S/135302	Sampling Method :	AS1289.1.2.1 - cl6.5
Date Tested :	12/04/2022	Time :	15:58
Material Source :	In situ	Location 1 :	Test Pit 12
For Use As :	-	Location 2 :	0.1 m - 0.3 m
Lot Number :	-	Location 3 :	-
Sample Date :	6/04/2022	Location 4 :	-
MDD (t/m ³) : 1.99		Nominated % of MDD : 100.0%	
OMC (%) : 8.9		Nominated % of OMC : 100.0%	
Target Dry Density (t/m ³) : 1.99		Achieved % of MDD : 100.0%	
Target Moisture Content (%) : 8.9		Achieved % of OMC : 100.0%	
Compactive Effort :	Standard	<p style="text-align: center;">CBR 1 Point Graph</p>	
Dry Density Before Soak (t/m ³) :	1.99		
Dry Density After Soak (t/m ³) :	1.99		
Field Moisture Content (%) :	6.0%		
Compaction Moisture Content (%) :	8.9%		
After Penetration - Top Moisture (%) :	9.9%		
After Penetration - Total Moisture (%) :	10.9%		
Period of Soaking (Days) :	4		
Mass of Surcharge (kg) :	4.5		
Oversize (%) :	15.7%		
Oversize Included :	Excluded		
Method of Determining Plasticity :	Tactile/Visual Assessment		
CBR Sample Curing Time :	19 Hours		
-	-		
-	-		
Swell (%) :	0.0%		
CBR Value at 5mm :	13%		
Pre-treatment (CA _n) :	-		
Pre-treatment (W _n) :	-		
Mass Retained (R) :	-		
Remarks :	-		
<p>NATA WORLD RECOGNISED ACCREDITATION</p>	Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208		APPROVED SIGNATORY Sam Bamford - Signatory
	Document Number : RF3		Date : 29/11/2021

California Bearing Ratio Report

Client :	Parklands at Adare Pty Ltd	Report Number :	SR/PTP/08869 - 3/1
Client Address :	Corporate House Building 5/22 Magnolia Drive, BROOKWATER, 4300, QLD	Report Date :	14/04/2022
Project Name :	63 Redbank Creek Road, Adare	Test Request :	-
Project Number :	PTP/08869	Page 4 of 4	
Location :	Adare		
Test Methods :	AS1289.6.1.1, AS1289.5.1.1, AS1289.2.1.1		
Material Description :	SAND - Brown		
Sample Number :	S/135303	Sampling Method :	AS1289.1.2.1 - cl6.5
Date Tested :	12/04/2022	Time :	15:58
Material Source :	Insitu	Location 1 :	Test Pit 19
For Use As :	-	Location 2 :	0.1 m - 0.4 m
Lot Number :	-	Location 3 :	-
Sample Date :	6/04/2022	Location 4 :	-
MDD (t/m ³) : 1.98		Nominated % of MDD : 100.0%	
OMC (%) : 10.3		Nominated % of OMC : 100.0%	
Target Dry Density (t/m ³) : 1.98		Achieved % of MDD : 99.0%	
Target Moisture Content (%) : 10.3		Achieved % of OMC : 98.5%	
Compactive Effort :	Standard	<p style="text-align: center;">CBR 1 Point Graph</p>	
Dry Density Before Soak (t/m ³) :	1.96		
Dry Density After Soak (t/m ³) :	2.02		
Field Moisture Content (%) :	10.5%		
Compaction Moisture Content (%) :	10.2%		
After Penetration - Top Moisture (%) :	10.8%		
After Penetration - Total Moisture (%) :	10.3%		
Period of Soaking (Days) :	4		
Mass of Surcharge (kg) :	4.5		
Oversize (%) :	0.0%		
Oversize Included :	Excluded		
Method of Determining Plasticity :	Tactile/Visual Assessment		
CBR Sample Curing Time :	20 Hours		
-	-		
-	-		
Swell (%) :	-3.0%		
CBR Value at 5mm :	50%		
Pre-treatment (CA _n) :	-		
Pre-treatment (W _n) :	-		
Mass Retained (R) :	-		
Remarks :	-		
	Accredited for Compliance with ISO/ IEC 17025 - Testing	<p style="text-align: center;">APPROVED SIGNATORY</p> <p style="text-align: center;">Sam Bamford - Signatory</p>	
	Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208		