Proposed Subdivision -Preliminary Geotechnical Assessment

898 New England Highway, and Wyndella Road, Lochinvar

Allower

NEW22P-0012-AB 4 March 2022



GEOTECHNICAL I LABORATORY I EARTHWORKS I QUARRY I CONSTRUCTION MATERIAL TESTING

4 March 2022

Lindsay Bennelong Developments Pty Ltd PO Box 7105 BAULKHAM HILLS NSW 2153

Attention: Mr Steve Chatfield

Dear Steve,

RE: PROPOSED RESIDENTIAL SUBDIVISION 898 NEW ENGLAND HIGHWAY AND WYNDELLA ROAD, LOCHINVAR, NSW PRELIMINARY GEOTECHNICAL ASSESSMENT

Please find enclosed our Preliminary Geotechnical Assessment report for the proposed residential subdivision to be located at 898 New England Highway and Wyndella Road, Lochinvar, NSW.

The purpose of the Preliminary Geotechnical Assessment is to inform the due diligence assessment being carried out prior to purchase, and potentially to support a Development Application (DA) submission to Maitland City Council at a later date.

The report includes preliminary recommendations for suitability of the site for development from a geotechnical perspective including assessment of the risk of slope instability and associated geotechnical constraints.

Additional detailed geotechnical investigation work will be required for design purposes at a later stage, including site classification for footings and pavement design for subdivision roads.

If you have any questions regarding this report, please do not hesitate to contact Shannon Kelly or the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd

Jason Lee Principal Geotechnical Engineer

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1.0 Introduction

Qualtest Laboratory NSW Pty Ltd (Qualtest) is pleased to present this report to Lindsay Bennelong Developments Pty Ltd (LBD) for the proposed land acquisition for a residential subdivision to be located at 898 New England Highway and Wyndella Road, Lochinvar, NSW.

The site comprises Lots 2, 3, 4, 5, 6 and 9 DP 747391, Lot 1 DP 65706 and Lots 12 and 13 DP1219648. Lot 1 DP 65706 is currently zoned RU1 Primary Production, the remainder of the site is zoned R1 General Residential. Lot 1 DP 65706 covers an area of approximately 34.83ha and the remainder of the site covers an area of approximately 22ha (total site area 56.8ha).

Based on LBD's email dated 16 December 2021 and phone call on 11 January 2022, the following scope of works have been requested for the site;

- Geotechnical
 - Desktop and preliminary site investigation over the R1 zoned land; and
 - Desktop preliminary investigation over the RU1 zoned land".

The scope of work for the preliminary geotechnical assessment included providing discussion and recommendations on the following:

- Description of the surface and subsurface conditions based upon desktop study, brief site walkover and test pits;
- Site capability assessment Assessing the suitability of the site for development from a geotechnical perspective, including risk of slope instability and associated geotechnical constraints;
- Preliminary advice on foundation design parameters, site preparation, excavation conditions, and earthworks procedures.

This report presents the results of the field work investigations, and provides recommendations for the scope outlined above.

2.0 Desktop study

2.1 **Previous Reports**

No previous geotechnical information for the subject site has been provided to Qualtest during this assessment. Qualtest has undertaken assessment and reporting for a number of nearby subdivision developments to the south of the New England Highway, with results of those assessments given consideration during this assessment.

A Preliminary Contamination Assessment (PCA) has been prepared concurrently to this PGA by Qualtest (ref. NEW22P-0012-AA, March 2022). Selected information from the PCA is included in this report. Reference should be made to the PCA report for further details.

2.2 Acid Sulfate Soil Risk Map

The 1:25,000 Greta Acid Sulfate Soil Risk Map shows the site is located in an area of no known occurrence of Acid Sulfate Soils.

2.3 Geology Map

Reference to the 1:100,000 Newcastle Coalfield Regional Geology Sheet 9231 indicates the site to be underlain by the "Lochinvar" Formation (PdI) of the "Dalwood" Group, which is characterised by basalt, siltstone and sandstone rock types.

An overlay of the Newcastle Coalfield Regional Geology Series Sheet 9231 on a Google Earth image is shown below.



Figure 1: Newcastle Geology Map Overlay: Geological units are labelled in purple text. Approximate site boundary shown in red.

2.4 Soil Landscape Map

The soil landscape map published on the Department of Planning, Industry and Environment (DPIE) eSPADE version 2.1 is shown as follows.



Figure 2: Soil Landscape Map Overlay: Soil landscape units are labelled in yellow text. Approximate site boundary shown in white.

The northern area is mostly mapped as the North Eelah Landscape (nex), and typical qualities and limitations include the following: localised shallow soils, localised rock outcrop hazard, widespread foundation hazard, widespread productive arable land, widespread recharge zone, localised gully erosion hazard, widespread sheet erosion hazard, localised high run-on, localised seasonal waterlogging.

The southern area is mapped as the Lovedale Landscape (Ivv), and typical qualities and limitations include the following: localised non-cohesive soils, widespread foundation hazard, localised discharge zone, localised salinity hazard, localised gully erosion hazard, widespread sheet erosion hazard, localised streambank erosion hazard, widespread high run-on, widespread poor drainage, localised permanent waterlogging, localised seasonal waterlogging, localised flood hazard.

3.0 Field Work

Field work investigations were carried out on 3, 4 and 7 February 2022 and comprised of:

- DBYD search and visual check of proposed test locations for the presence of underground services;
- Site walkover to make observations of surface features at the property and in the immediate surrounding area;

- Excavation of 55 test pits (TP01 to TP54 and TP1A) using a 2.7 tonne excavator equipped with a 450mm wide bucket. Test pits were terminated at depths of between 0.50m and 2.00m. A number of additional delineation test pits were carried out as part of the Preliminary Contamination Assessment (PCA), and details of those are not included within this report; and,
- Test pits were backfilled with the excavation spoil and compacted using the excavator bucket and tracks.

Investigations were carried out by an experienced Environmental Scientist from Qualtest who located the test pits, carried out the testing and sampling, produced field logs of the test pits, and made observations of the site surface conditions.

Engineering logs of the test pits are presented in Appendix A. Approximate test pit locations are shown on the attached Figure AB1. Test pits were located in the field by handheld GPS and relative to existing site features including topographic features, lot boundaries, existing developments and trees.

The site was also visited on 3 February 2022 by an experienced Senior Geotechnical Engineer from Qualtest who carried out site walkover to make observations of surface features at the property and in the immediate surrounding area.

4.0 Site Description

4.1 Surface Conditions

The site comprises Lots 2, 3, 4, 5, 6 and 9 DP 747391, Lot 1 DP 65706 and Lots 12 and 13 DP1219648, located at 898 New England Highway and Wyndella Road, Lochinvar, as shown on Figure AB1. Lot 1 DP 65706 covers an area of approximately 34.83ha on the northern part of the site, and the remainder of the site covers an area of approximately 22ha (total site area 56.8ha).

Lot 1 DP 65706 is currently zoned RU1 Primary Production, the remainder of the site is zoned R1 General Residential. Field observations with respect to urban capability for potential residential development were mostly limited to the R1 zoned portion of the site, in accordance with the requested scope.

The site is bounded to the south by the New England Highway, to the southwest, west and north by lots containing low density rural-residential housing and farmland, and to the east by Wyndella Road.

With reference to the Spatial Information Exchange maps which shows surface elevation in 10m contour intervals, ground levels are understood range from about RL 25m (AHD) in the vicinity of a tributary of Lochinvar Creek in the south-western corner of Lot 1 DP 65706, up to about RL 65m in the south-eastern corner of Lot 1 DP 65706.

Lot 1 DP 65706 is positioned on a locally prominent northwest trending spur formation, with the crest and upper slopes occupying the south-eastern to north-western part of Lot 1 DP 65706. The north to north-eastern area of the Lot is positioned on the mid to lower north facing slopes, and drains towards a tributary of Lochinvar Creek which is located along the northern boundary of the site.

The south-western to west area of the Lot is positioned on the mid to lower southwest facing slopes, and drains towards a tributary of Lochinvar Creek which crosses the south-western corner of the lot, and then drains along the western boundary of the site.

Site slopes on Lot 1 DP 65706 are observed or interpolated to mostly be in the order of 4° to 10°, with areas of steeper slopes of about 15° to 20° generally on the mid-slopes of the northern and parts of the south-western facing sides of the spur.

Field observations were made in the R1 General Residential zoned area and the nearby areas (the middle to southern part) of the site. This area is mostly positioned on the south-west facing mid to lower slopes of the spur formation. The north-eastern corner of the R1 zoned area is positioned on the upper slopes, with slopes measured to be in the order of 5° to 7°. Slopes in the order of 3° to 5° were observed on the mid to lower slopes, with some locally steeper slopes on the edges of dams, mounds and locally steeper areas on the edges of drainage depressions.

A prominent drainage tributary crosses the southern side of the site. The watercourse receives water from a multi pipe culvert which crosses beneath Wyndella Road near the south-eastern corner of the site. The watercourse drains across the site towards the west-northwest. Standing water was present in most of the length of the watercourse at the time of the site visit.

Two main drainage depressions drain in a general southwest direction across the site and join with the southern watercourse to the west of the site. The northern-most depression is roughly in line with a farm dam shown on Figure AB2, and a second depression is located south of the existing barn building.

The area adjacent to the southern boundary generally slopes at about 3° to 5° towards the north, draining into the primary watercourse and the low lying adjacent areas discussed below.

During the site investigation which was carried out following significant rainfall, the majority of the site appeared well drained primarily by way of surface runoff towards drainage depressions and creek tributaries. A relatively broad area of boggy ground and/or surface water was observed in the south to south-western areas. This included low lying areas alongside the primary watercourse, and the area in the south-western corner of the site receiving runoff from drains passing under the adjacent New England Highway formation.

Rock outcrops were observed in the northern part of the R1 zoned area and in the southern part of Lot 1 DP 65706. The rock appeared to include Conglomerate and Pebbly Sandstone of estimated very high strength based upon limited surface observations. Some areas of uneven ground potentially indicative of past surface disturbance, minor erosion and possibly surface slumping or creep movement were observed in the vicinity of the outcrops near the southern boundary of Lot 1 DP 65706.

There are a number of farm dams and ponds located on the site, including two dams and two ponds within the R1 area as shown on Figure AB2.

The majority of the site is undeveloped. A masonry clad building is located near the middle of the R1 zoned area. The site is divided in places by timber post and wire fencing.

Several areas of buried fill scattered across the site were identified during the contamination investigation, most of which are shown on Figures AB2 and AB3.

Vegetation generally comprises moderate grass cover and a few scattered trees, with a stand of trees near the western boundary alongside the watercourse, as shown on Figure AB2.

The majority of the site was judged to have good trafficability by way of 4WD vehicle on the day of the field investigation. The area to the south of the watercourse was not accessible due to the watercourse and wet ground in the vicinity.

Photographs of the site taken during the site walkover and mapping by Qualtest Senior Geotechnical Engineer are shown as follows.



Photograph 1: From Wyndella Road approx. 400m north of New England Highway (NEH) near site entry gate, facing south.



Photograph 2: From Wyndella Road approx. 400m north of NEH, facing southwest.



Photograph 3: From Wyndella Road approx. 400m north of NEH, facing northwest.



Photograph 4: From Wyndella Road approx. 400m north of NEH, facing north.



Photograph 5: From south-eastern portion of site, beside watercourse, facing east. Culvert under Wyndella Road visible in background.



Photograph 6: From south-eastern portion of site, beside watercourse, facing southeast. Intersection of Wyndella Road and NEH visible in background.



Photograph 7: From south-eastern corner of site facing northwest.



Photograph 8: From south-eastern corner of site facing north.



Photograph 9: From south-western corner of site facing north. Area of wet / boggy ground visible.



Photograph 10: From south-western corner of site facing northeast. Area of wet / boggy ground receiving runoff from NEH visible.



Photograph 11: From western boundary at corner in southern area of site facing north.



Photograph 12: From western boundary at corner in southern area of site facing east.



Photograph 13: From south-western portion of site, beside watercourse, facing east.



Photograph 14: From south-western portion of site, beside drainage depression, facing southeast towards pond.



Photograph 15: From beside western boundary in southern part of site, facing northeast.



Photograph 16: From beside western boundary in southern part of site, facing east.



Photograph 17: Facing southwest in drainage depression crossing southern side of site.



Photograph 18: Facing northeast towards barn building near the middle of the R1 zoned area.



Photograph 19: From northeast of Dam located on western side of R1 zoned area, facing southeast.



Photograph 20: From northeast of Dam located on western side of R1 zoned area, facing southwest towards dam.



Photograph 21: From northeast of Dam located on northern side of R1 zoned area, facing southwest towards dam.



Photograph 22: From northeast of Dam located on northern side of R1 zoned area, facing north.



Photograph 23: From western boundary at corner located near halfway along western side of R1 zoned area facing north.



Photograph 24: From western boundary at corner located near halfway along western side of R1 zoned area facing east.



Photograph 25: From north-western corner of R1 zoned area, facing east.



Photograph 26: From north-western corner of R1 zoned area, facing southeast.



Photograph 27: From near north-western corner of R1 zoned area, on Lot 1 DP 65706 facing west towards area of buried fill.



Photograph 28: From southern part of Lot 1 DP 65706 facing northeast towards area of buried fill.



Photograph 29: From south-western quadrant of Lot 1 DP 65706 facing southwest towards dam / excavation.



Photograph 30: From south-western quadrant of Lot 1 DP 65706 facing northwest towards dam / excavation.



Photograph 31: From north-western quadrant of Lot 1 DP 65706, on crest of spur facing west.



Photograph 32: From north-western quadrant of Lot 1 DP 65706, on crest of spur facing northwest.



Photograph 33: From north-eastern quadrant of Lot 1 DP 65706, on crest of spur facing north.



Photograph 34: From north-eastern quadrant of Lot 1 DP 65706, on crest of spur facing east.



Photograph 35: From south-eastern quadrant of Lot 1 DP 65706, near northern boundary of R1 zoned area facing south.



Photograph 36: From south-eastern quadrant of Lot 1 DP 65706, near northern boundary of R1 zoned area facing southwest.



Photograph 37: Facing southwest towards fill mound near boundary of Lot 1 DP 65706 and R1 zoned area.



Photograph 38: Outcropping rock near southern boundary of Lot 1 DP 65706.



Photograph 39: Outcropping rock near northern boundary of R1 zoned area.



Photograph 40: Outcropping rock in northeastern part of R1 zoned area.



Photograph 41: From north-eastern corner of R1 zoned area, facing south.



Photograph 42: From north-eastern corner of R1 zoned area, facing southwest.

4.2 Subsurface Conditions

Table 1 presents a summary of the typical soil types encountered at test pit locations during the field investigation, divided into representative geotechnical units.

Unit	Soil Type	Description
		CLAY - medium to high plasticity, brown, trace fine grained sand.
		CLAY - low to medium plasticity, dark brown, with some silt.
1A	FILL – TOPSOIL	Sandy CLAY - low to medium plasticity, dark brown, fine to medium grained sand, with some asbestos containing material and some metal flaking in places.
		Clayey SAND - fine grained, dark brown, fines of low plasticity.
		Root affected to variable depths.
		Sandy Gravelly CLAY, Gravelly CLAY – low to medium plasticity, brown / dark grey-brown with some orange-brown and white, fine grained sub-rounded to angular gravel.
		Sandy CLAY, CLAY - low to medium plasticity, brown to dark brown and grey-brown, fine to medium grained sand, trace gravel in places.
1B	UNCONTROLLED FILL	Sandy GRAVEL - fine to medium grained, sub-rounded to sub- angular, fine to medium grained sand.
		CLAY - medium to high plasticity, brown, trace red-brown and orange-brown.
		With varying mixtures of (refer to logs): concrete, bricks, terracotta pipe, wood, asbestos containing material, some steel, plastic, coal, asphalt.
		Root affected surface zone in places.
		Silty CLAY, CLAY - low to medium plasticity, brown to dark brown, some fine grained sand.
		Sandy CLAY - low to medium plasticity, grey-brown, dark brown, fine grained sand, with fine to coarse grained rounded to sub-angular gravel / Gravelly in places.
2	TOPSOIL	CLAY - medium to high plasticity, brown to dark brown, some fine grained sand in places, trace fine grained sub-rounded gravel in places.
		Gravelly CLAY / Clayey GRAVEL in places.
		Root affected to variable depths.
		Silty CLAY, CLAY - low to medium plasticity, brown to grey-brown.
3	SLOPEWASH	Sandy CLAY, CLAY - medium plasticity, brown / grey to grey-brown, fine grained sand, with fine to coarse grained rounded to sub-rounded gravel / Gravelly in places.

TABLE 1 – SUMMARY OF GEOTECHNICAL UNITS AND SOIL TYPES

Unit	Soil Type	Description
		CLAY - medium to high plasticity, mixtures of brown, dark brown, pale brown, dark grey, red-brown, with some grey-brown, orange-brown, trace fine grained sand in places, some fine to medium / coarse grained rounded to sub-angular gravel in places.
		Sandy CLAY - medium plasticity, pale brown to brown, fine grained sand.
		Sandy CLAY / Clayey SAND - low to medium plasticity, brown to orange-brown, fine grained.
4	RESIDUAL SOIL	Gravelly CLAY, Sandy Gravelly CLAY - medium to high plasticity, brown with some red-brown, fine to medium grained, sub-angular to sub-rounded gravel, with some extremely weathered rock.
		Clayey SAND / Sandy CLAY - fine to medium / coarse grained, brown, orange-brown, fines of low to medium plasticity, gravelly in places.
		Clayey GRAVEL – fine to coarse grained, sub-rounded to rounded, pale grey – brown, dark brown, fines of low to medium plasticity, some sand.
		Borderline Extremely Weathered Rock in places. With some highly weathered rock in places.
		Andesite: breaks down into Sandy CLAY - medium plasticity, pale brown to brown, fine grained sand, trace highly weathered rock.
5	EXTREMELY WEATHERED (XW) ROCK with	Sandstone: breaks down into Clayey SAND / Sandy CLAY - fine grained, orange-brown to brown, fines of low to medium plasticity, with some highly weathered sandstone.
	soil properties	Sandstone: breaks down into Sandy CLAY - medium plasticity, brown to orange-brown, fine grained sand, with some highly weathered SANDSTONE - fine grained, orange-brown, estimated low to medium strength.
	HIGHLY WEATHERED	SANDSTONE - fine grained, pale brown to brown / white, orange- brown, estimated low strength.
6	(HW) TO MODERATELY WEATHERED (MW) ROCK	SANDSTONE - fine to medium grained, brown to pale brown and orange-brown, estimated high strength, with some Sandy CLAY.

Slow groundwater inflow was observed at TP09 and TP50 at depths of 1.20m and 1.90m, respectively. No other groundwater inflows or water levels were encountered in the other test pits during the limited time that they remained open on the day of the field investigations.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

Table 2 contains a summary of the distribution of the above geotechnical units at the test pit locations.

Location	Unit 1A	Unit 1B	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
	Fill – Topsoil	Uncontrolled Fill	Topsoil	Slopewash	Residual Soil	XW Rock	HW to MW Rock
TP01	0.00 - 0.10	0.10 - 0.35	0.35 - 0.50	-	0.50 - 1.00	-	-
TP1A	-	0.00 - 1.60	-	-	1.60 - 1.90	-	-
TP02	-	-	0.00 - 0.35	-	0.35 - 0.90	-	-
TP03	-	-	0.00 - 0.10	0.10 - 0.25	0.25 - 0.90	-	-
TP04	-	-	0.00 - 0.15	-	0.15 - 0.80	-	-
TP05	-	-	0.00 - 0.15	-	0.15 - 0.70	-	-
TP06	-	-	0.00 - 0.20	-	0.20 - 2.00	-	-
TP07	-	-	0.00 - 0.30	-	0.30 - 0.70	-	-
TP08	-	-	0.00 - 0.10	-	0.10 - 0.70	-	-
TP09	-	-	0.00 - 0.15	-	0.15 - 2.00	-	-
TP10	0.00 - 0.20	0.20 - 0.50	-	-	0.50 - 0.90	-	-
TP11	-	-	0.00 - 0.05	-	0.05 - 0.60	-	-
TP12	-	-	0.00 - 0.10	0.10 - 0.25	0.25 - 0.65	-	-
TP13	-	-	0.00 - 0.10	0.10 - 0.25	0.25 - 2.00	-	-
TP14	-	0.00 - 0.15	-	0.15 - 0.25	0.25 - 0.70	-	-
TP15	-	-	0.00 - 0.05	-	0.05 - 0.60	-	-
TP16	-	-	0.00 - 0.10	-	0.10 - 1.80	1.80 - 2.00	-
TP17	-	-	0.00 - 0.10	-	0.10 - 0.70	-	-

TABLE 2 – SUMMARY OF GEOTECHNICAL UNITS ENCOUNTERED AT TEST LOCATIONS

Location Unit 1A		Unit 1B	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6				
Fill – Topsoil		Uncontrolled Fill	Topsoil	Slopewash	Residual Soil	XW Rock	HW to MW Rock				
	Depth in metres (m)										
TP18	-	-	0.30 - 0.70	-	-						
TP19	-	-	0.00 - 0.03	0.03 - 0.23	0.23 - 1.00	-	1.30 - 1.32*				
TP20	-	-	0.00 - 0.15	-	0.15 - 0.65	_	-				
TP21	-	-	0.00 - 0.10	-	0.10 - 0.60	-	-				
TP22	-	-	-	-	0.00 - 0.50	-	-				
TP23	-	0.00 - 0.30	-	0.30 - 0.45	0.45 - 2.00	-	-				
TP24	-	-	0.00 - 0.10	0.10 - 0.20	0.20 - 0.65	-	-				
TP25	0.00 - 0.15	-	-	-	0.15 - 0.70	-	-				
TP26	-	-	0.00 - 0.10	0.10 - 0.20	0.20 - 0.70	-	-				
TP27	0.00 - 0.10	-	-	-	0.10 - 0.80	-	-				
TP28	0.00 - 0.10	-	-	-	0.10 - 0.60	-	-				
TP29	-	-	0.00 - 0.10	-	0.10 - 0.70	-	-				
TP30	-	-	0.00 - 0.10	-	0.10 - 0.60	0.60 - 0.70	-				
TP31	-	-	0.00 - 0.05	-	0.05 - 0.60	-	-				
TP32	-	0.00 - 0.35	-	-	0.35 - 0.75	-	-				
TP33	-	0.00 - 0.20	-	-	0.20 - 0.65	-	-				
TP34	-	-	-	-	0.00 - 0.60	-	-				
TP35	-	-	0.00 - 0.10	0.10 - 0.25	0.25 - 0.70	_	-				
TP36	-	-	0.00 - 0.10	0.10 - 0.20	0.20 - 0.70	-	-				

Location	Unit 1A	Unit 1B	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
	Fill – Topsoil	Uncontrolled Fill	Topsoil	Slopewash	Residual Soil	XW Rock	HW to MW Rock
TP37	-	-	0.00 - 0.10	0.10 - 0.30	0.30 - 1.20	1.20 - 1.60	1.60 - 1.70*
TP38	-	0.00 - 0.60	0.60 - 0.80	-	0.80 - 1.30	-	-
TP39	-	-	0.00 - 0.10	-	0.10 - 0.60	-	-
TP40	-	-	0.00 - 0.10	0.10 - 0.30	0.30 - 0.70	-	-
TP41	-	-	0.00 - 0.10	0.10 - 0.30	0.30 - 0.70	-	-
TP42	-	-	0.00 - 0.20	-	0.20 - 0.70	-	-
TP43	-	-	0.00 - 0.20	-	0.20 - 0.85	-	0.85 - 1.10^
TP44	-	-	0.00 - 0.10	-	0.10 - 0.60	-	0.60 - 0.80
TP45	-	-	0.00 - 0.10	0.10 - 0.30	0.30 - 0.60	-	-
TP46	-	-	0.00 - 0.20	-	-	-	0.20 - 0.51*
TP47	-	-	0.00 - 0.20	-	0.20 - 0.80	-	-
TP48	-	-	0.00 - 0.10	-	0.10 - 0.70	-	-
TP49	-	-	0.00 - 0.10	-	0.10 - 0.90	-	-
TP50	-	0.00 - 1.50	-	-	1.50 - 2.00	-	-
TP51	-	0.00 - 0.80	-	-	-	-	-
TP52	-	-	0.00 - 0.10	-	0.10 - 0.80	-	-
TP53	0.00 - 0.10	0.10 - 0.35	-	-	0.35 - 1.10	_	-
TP54	-	0.00 - 1.20	-	-	1.20 - 1.40	_	-

5.0 Discussion and Recommendations

5.1 General

The site is considered suitable for residential development from a geotechnical viewpoint provided that development is carried out in accordance with sound engineering principles and good hillside practice (as set out in Appendix C), and with respect to the constraints and recommendations of this report, including geotechnical input during the design and construction phases.

Based upon the limited site testing and observations carried out during this preliminary assessment, geotechnical issues affecting site capability for residential development identified at the site include:

- The presence of wet/boggy areas in lower lying parts of the site, as well as watercourses, drainage depressions, farm dams and ponds. These may include areas or layers of inadequate bearing capacity for support of footings / earthworks and construction plant. There is also potential for abnormal moisture conditions associated with prolonged wet conditions. It is recommended that these potential issues are investigated prior to development in the vicinity of these areas, and addressed during earthworks prior to filling and footing construction. Measures such as drainage improvements, over-excavation, deepened footings, subgrade treatment or bridging layers may be required.
- The presence or inferred presence of localised areas of uncontrolled fill. Residential footings and pavements should be founded in suitable material beneath all uncontrolled fill, or the fill should be removed and replaced under engineering supervision.

Further geotechnical investigation and/or advice should be carried out during detailed design phase including for site classification, earthworks procedures, footing/retention design conditions and pavement design where required.

5.2 Slope Stability and Recommended Geotechnical Constraints

The site subject to slope stability assessment, including site walkover observations, comprises the R1 zoned area as shown on Figure AB1; however, the constraints are generally applicable to all areas of proposed development at the site.

5.2.1 Basis of Assessment

The risk of slope instability has been assessed from the observed site conditions using methods consistent with those presented in the Australian Geomechanics Society (AGS) publication "Practice Note Guidelines for Landslide Risk Management, 2007". Based on those methods, the risks to property associated with slope instability on the subject area have been assessed using the terms presented in AGS 2007, Landslide Risk Assessment Qualitative Terminology for Use in Assessing Risk to Property, extracts of which are attached in Appendix B.

The report provides an assessment of the risk of slope instability on the proposed development area (R1 zoned area). The report also recommends some geotechnical constraints for the site development in light of the slope instability assessment. The assessed risk to the proposed development is based on the geotechnical constraints and recommendations provided in this report being implemented. The onus is on the owner, potential owner, or interested party to decide whether the assessed level of risk is acceptable taking into account the likely consequences of the risk and the recommended geotechnical constraints.

5.2.2 Principal Site Features and Evidence of Instability

The assessment of the risk of slope instability has been based on the site observations recorded in Section 4 and the principal site features summarised below:

- Site situated in an area of gently to moderately undulating topography, mostly on the south-west facing mid to lower slopes of a locally prominent northwest trending spur formation;
- Ground surface slopes are generally in the order of about 3° to 7° across the majority of the site, with localised steeper slopes on the edges of dams, mounds and locally steeper areas on the edges of drainage depressions;
- Soil depths are assessed to be variable but generally in the range of about 0.2m to 2.0m on the mid to upper slopes, and generally greater than 2.0m on the lower to foot slopes;
- Soil profile generally comprising topsoil to depths in the order of 0.1m to 0.2m, overlying slopewash, and residual clay soils typically of stiff to hard consistency, with localised areas of filling;
- No evidence of seepage was observed and the site generally appeared moderately to well drained, mostly by way of downhill surface runoff. Some water was ponded at the low points of drainage depressions. A relatively broad area of boggy ground and/or surface water was observed in the south to south-western areas. This included low lying areas alongside the primary watercourse, and the area in the south-western corner of the site receiving runoff from drains passing under the adjacent New England Highway formation;
- There are a number of farm dams and ponds located on the site, including two dams and two ponds within the R1 area as shown on Figure AB2.
- Rock outcrops were observed in the northern part of the R1 zoned area and in the southern part of Lot 1 DP 65706. Some areas of uneven ground potentially indicative of past surface disturbance, erosion and possibly surface slumping or creep movement were observed in the vicinity of the outcrops near the southern boundary of Lot 1 DP 65706
- No evidence of deep soil erosion was observed at the site at the time of the field work;
- No obvious evidence of overall slope instability or significant damage attributable to ground movement was observed on or in the vicinity of the site during the field work.

5.2.3 Hazard Identification

Elements at risk for the identified hazards are the proposed subdivision developments, which may include proposed residences, sheds, swimming pools, roads and driveways and / or other site infrastructure.

The following hazards that could potentially impact on this site are assessed as follows:

- H1. Potential broad deep seated instability;
- **H2.** Potential shallow instability such as overloading of slopes by excessive loads, unsuitable batters/support or unsuitable founding depths, or failure of fill not placed in a proper manner or subject to erosion by concentrated surface flows.
- H3. Potential shallow ground 'creep' movements or slumping.

5.2.4 Risk Evaluation for the Proposed Development

The matrix below evaluates the hazards outlined above and their likelihood of occurring based on the proposed development of the site, and assuming the geotechnical constraints and recommendations of this report are implemented. If these recommendations are not followed, the likelihood of hazards occurring may increase and the level of risk may change. Further advice should be sought where necessary.

Hazard	Location	Consequence	Likelihood	Risk
H1	Overall Site (R1 zoned area)	Major	Rare	Low
H2	Overall Site (R1 zoned area)	Medium	Unlikely	Low
H3	Overall Site (R1 zoned area)	Minor	Unlikely	Low

Based on the above, the proposed development is assessed as having a "Low" risk of slope instability.

It would be normal practice in the Maitland City Council local government area for development to proceed on a site with a risk level classification of Low.

Development should be carried out in accordance with sound engineering principles and good hillside practice (as set out in Appendix B), and the geotechnical constraints outlined in this report.

5.2.5 Recommended Geotechnical Constraints for Residential Development

Type of Structure:

There are no particular geotechnical constraints on the type of structures provided they are founded on footings designed and constructed in accordance with AS2870, 'Residential Slabs and Footings'; however, it is recommended that development be designed to accommodate the natural slope profile where possible.

Flexible structures of timber, brick veneer or similar construction are preferred. Split level and suspended design is considered appropriate to limit slope modification in sloping areas of the site.

Area for Development:

The site is considered feasible for development from a slope stability viewpoint; however, suitability for development is conditional upon the geotechnical constraints and recommendations provided in this report being implemented.

Specific advice should be followed for potentially problematic areas such as areas with uncontrolled fill or potential wet/boggy ground and/or inadequate bearing capacity, (particularly for any development proposed in the lower lying affected areas of the site).

Development of the site should be undertaken in accordance with good hillside construction practice and sound engineering principles as presented in the excerpts from AGS 2007 provided in Appendix B.

Care should be taken in the design of any developments in the vicinity of any existing excavations, fill platforms, embankments and dams, particularly if they involve surcharge loads or excavations.

Foundation Type:

This assessment should not be regarded as an assessment of foundation conditions for the proposed development at the site; however, preliminary recommendations are provided based on the information obtained during the preliminary assessment.

Strip / pad footings, pier and beam systems or split level raft slabs would be feasible from a slope stability viewpoint (broad raft slabs may not be suited to sloping areas of the site due to the slope modifications required).

Footings should not be founded within any existing uncontrolled fill. If uncontrolled fill is encountered, this will require piered foundations founded beneath the fill, removal of the fill, or removal and replacement of the fill to engineering specification.

Foundations should be designed and constructed in accordance with the recommendations and advice of AS2870, 'Residential Slabs and Footings'.

Foundations near the crest of excavations should be taken to rock or founded behind or below a 1V:2H projection from the toe of the excavation.

Footings are to be founded outside of or below all zones of influence resulting from existing or future service trenches.

Excavations:

Excavations should be supported by properly designed and constructed retaining walls or else battered at 1V:2H or flatter and protected from erosion.

Excavations in competent bedrock (below the level of backhoe / excavator refusal) may be battered at 1V:1H.

Temporary excavations to depths of up to 1.2m in competent compact material with sufficient cohesion, such as clay of stiff consistency or better may be battered vertically, subject to inspection during excavation by the geotechnical authority.

The safe working procedures of Work Cover NSW Excavation work code of practice, dated January 2020 should be followed

Excavations should be designed for surcharge loading from slopes, retaining walls, structures and other improvements in the vicinity of the excavation.

Care should be taken not to disturb or destabilise existing underground services or structures. Excavations should remain outside a 1V:2H projection from the base of any structural footings.

Drainage measures should be implemented above and behind all temporary and permanent excavations to avoid concentrated water flows on the face of the cut or infiltration into the soil/rock profile behind the cut. Surface water flows from upslope areas should be diverted away from the cut face.

Filling:

The depth of unsupported fill on the site should preferably not exceed 1.5m and should be battered at 1V:2H or flatter and protected against erosion. All fill greater than 1.5m deep should preferably be supported by engineer designed retaining walls.

Where fill is to be placed on slopes in excess of 1V:8H (7°), a prepared surface should be benched or stepped into the slope.

Care should be taken during backfilling of any dams, gully areas or drainage depressions to reduce the risk of leaving a preferential underground drainage path which could result in softening of the surrounding area, piping erosion and/or localised seepage.

If backfilling depressions within the lower lying areas, it is likely to be necessary to divert drainage flows and/or provide dedicated sump and pump areas to prevent water ponding in areas of proposed fill placement. It is likely that excavation of over-wet material will be required prior to placement of fill in dams, drainage depressions and low lying wet areas.

Earthworks should be carried out in accordance with the recommendations outlined in AS3798-2007 'Guidelines for Earthworks for Commercial and Residential Developments'.

It is recommended that existing fill on site in any areas of proposed settlement sensitive development be removed and replaced with approved clean materials. The placement of such fill should be witnessed and documented by a geotechnical authority, carried out to 'Level 1' criteria as defined in Clause 8.2 – Section 8, of AS3798-2007.

Recommendations for earthworks procedures are provided in following sections of this report. Further geotechnical advice should be sought with regards to site preparation and fill construction procedures at the time of detailed geotechnical investigations and design.

Retaining Walls

All structural retaining walls and all landscaping walls in excess of 1.0m should be designed by an experienced engineer familiar with the site conditions.

All retaining walls should be designed for surcharge loading from slopes, structures and other existing/future improvements in the vicinity of the wall. Adequate subsurface and surface drainage should be provided behind all retaining walls.

Excavations for the construction of retaining walls result in a temporary reduction in the stability of the adjacent area particularly during wet weather until the wall is complete. This increased risk can be managed or reduced by appropriate construction planning, using temporary support, staged excavation and control of drainage.

Drainage and Sewage Disposal:

Adequate surface and storm water drainage should be installed and maintained on the site in accordance with local government requirements.

All collected stormwater run-off should be piped into the street / interallotment drainage system or discharged into existing storm water drains or watercourses in a controlled manner that limits erosion. Surface and sub-soil drains may be required to improve drainage.

Potential effects of site modifications on surface runoff and groundwater flowing from upslope should also be considered, with provision of subsurface drainage to intercept and redirect groundwater where assessed to be necessary.

Septic wastes should be connected to the reticulated disposal system.

Other:

Inspection should be carried out by a geotechnical authority during construction to confirm the conditions assumed in this report and in the design.

Further recommendations are provided in following sections of this report. Additional recommendations may be provided during further stages of the project.

5.3 Foundations

Site investigation and specific engineering foundation design should be carried out for any significant structures.

Footings should be founded below any existing uncontrolled fill, topsoil, deleterious or soft to firm / very loose to medium dense material, or other potentially deleterious material.

Shallow footings founded on stiff or better Residual Clay (Unit 4), or approved controlled fill (placed under Level 1 supervision in accordance with AS3798-2007) may be proportioned for a maximum allowable bearing pressure of 100kPa.

Shallow footings founded on very stiff or better Residual Clay (Unit 4) or Extremely Weathered Rock (Unit 5) may be proportioned for a maximum allowable bearing pressure of 150kPa.

Shallow footings founded on weathered rock below the depth of backhoe or excavator bucket refusal may be proportioned for a maximum allowable bearing pressure of 600kPa.

The recommended allowable bearing pressures assume that settlements will be less than about 1% of least footing width; although, relevant ground movements related to moisture changes in reactive clay would also apply.

Site classification in accordance with the classification system presented in AS2870-2011 'Residential Slabs and Footings' should be undertaken following further detailed geotechnical investigation of the site once site layout and site regrade designs are known.

Site classification will depend on a number of factors including depth of topsoil, depth of fill and residual soil, depth to rock, and reactivity of the natural soil and any fill material placed. Based upon experience with nearby projects, a preliminary indication is that lots may potentially be mostly classified Class 'H1', 'H2' or 'E'.

If any areas of uncontrolled fill of depths greater than 0.4m are encountered, footings should be designed in accordance with engineering principles for Class 'P' sites.

Recommendations for deep footings such as piles, and/or other parameters may be provided if required as part of future assessments.

5.4 Excavation Conditions and Depth to Rock

The depths of fill, topsoil, slopewash, residual soils and weathered rock, together with depths of slow progress or refusal of the 2.7 tonne excavator where encountered are summarised in Table 2.

As a general summary based upon the limited number of test pits taken to depths of 2.0m or prior refusal, soil depths are assessed to be variable but generally in the range of about 0.2m to 2.0m on the mid slopes, and generally greater than 2.0m on the lower / foot slopes. Rock outcrops were observed in the northern part of the R1 zoned area and in the southern part of Lot 1 DP 65706. The rock appeared to include Conglomerate and Pebbly Sandstone of estimated very high strength based upon limited surface observations.

In terms of excavation conditions, site materials can generally be divided into:

- Clayey and Granular Soils (Units 1, 2, 3 & 4). It is anticipated that these materials could be excavated by a conventional excavator or backhoe bucket;
- Weathered Rock (Units 5 & 6). Rippability is dependent on rock strength, depth, degree of weathering and number of defects within the rock mass which can vary significantly.

It is anticipated that the material encountered could be excavated by conventional 2.7 tonne excavator or equivalent at least to the depths indicated on the appended test pit logs.

It is expected that material below the depth of excavator bucket refusal will be excavatable by ripping to some greater depth, although this has not been assessed as part of the current investigation.

It is recommended that targeted investigations (e.g. cored boreholes and/or excavation trials) are carried out if significant excavations are proposed where bedrock depth or excavatability is important to design or construction.

The use of toothed buckets, ripping tines, and/or hydraulic rock hammers may be required if hard bands of weathered rock are encountered or for deep confined excavations such as for service trenches.

Groundwater may exist at some areas of the site such as within the topsoil / slopewash profile, from water perched above the residual clay / bedrock profile. It is possible that slow water inflow may be encountered from such layers, particularly if earthworks are carried out during or following periods of wet weather.

Recommended geotechnical constraints for excavation are provided in Section 5.2.5.

5.5 Site Preparation

Site preparation and earthworks suitable for pavement support and site re-grading should consist of:

- Following any bulk excavation to proposed subgrade level, all areas of proposed pavement construction or site re-grading should be stripped to remove all existing uncontrolled fill, vegetation, topsoil, root affected or other potentially deleterious materials;
- Stripping is generally expected to be required to depths of about 0.1m to 0.3m to remove topsoil and root affected material, and slopewash where required;
- Stripping of greater depths of fill material in addition to topsoil and root affected material is anticipated in areas affected by fill mounds or surface filling;
- Additional stripping may be required in any areas where poor, wet or saturated subgrade conditions are encountered (e.g. in the southern area of the site). Excavation of over-wet sandy/gravelly material may be required in areas of deeper slopewash in or near drainage depressions prior to placement of fill;
- Following stripping, the exposed subgrade should be proof rolled (minimum 10 tonne static roller), to identify any wet or excessively deflecting material. Any such areas should be over excavated and backfilled with an approved select material;
- The moisture content of the subgrade materials and therefore the need for moisture conditioning or over-excavation and replacement, will be largely dependent on preexisting and prevailing weather conditions at the time of construction;
- Subgrade preparation should be carried out using a tracked excavator equipped with a smooth sided ('gummy') bucket to minimise the risk of over-disturbance of soils;
- Protect the area after subgrade preparation to maintain moisture content as far as practicable. The placement of subbase gravel would normally provide adequate protection; and,
- Site preparation should include provision of drainage and erosion control as required, as well as sedimentation control measures.

Subgrade soils are likely to have a propensity to soften relatively quickly with moisture ingress; therefore, it is particularly important that care be taken to ensure that the subgrade is not exposed to wet conditions.

The required time period to prepare the subgrade is likely to be dependent on the prevailing weather conditions at the time of construction.

If over-wet subgrades exist at the time of construction or deleterious materials are encountered at subgrade level, these materials should be over-excavated and be replaced with well graded granular select material with CBR of 15% or greater, or other material approved by the geotechnical authority as appropriate to the site conditions. The requirement for, and extent of subgrade replacement, should be confirmed by the geotechnical authority at the time of construction.

5.6 Fill Construction Procedures

Earthworks for pavement construction or support of foundations should consist of the following measures:

- Approved fill beneath pavements should be compacted in layers not exceeding 300mm loose thickness to the compaction requirements provided in an approved pavement design;
- The top 300mm of natural subgrade below pavements or the final 300mm of road subgrade fill should be compacted to a minimum density ratio of 100% Standard Compaction to provide a subgrade that is within the moisture range of 60% to 90% of Optimum Moisture Content (OMC);
- Site fill beneath structures should be compacted to a minimum density ratio of 98% Standard Compaction within ±2% of OMC in cohesive soils;
- All fill should be supported by properly designed and constructed retaining walls or else battered at 1V:2H or flatter and protected against erosion;
- Where fill is to be placed on slopes in excess of 1V:8H (7°), a prepared surface should be benched or stepped into the natural slope;

Earthworks should be carried out in accordance with the recommendations outlined in AS3798-2007 'Guidelines for Earthworks for Commercial and Residential Developments'.

6.0 Limitations

The findings presented in the report and used as the basis for recommendations presented herein were obtained using normal, industry accepted geotechnical design practices and standards. To our knowledge, they represent a reasonable interpretation of the general conditions of the site.

The extent of testing associated with this assessment is limited to discrete test locations. It should be noted that subsurface conditions between and away from the test locations may be different to those observed during the field work and used as the basis of the recommendations contained in this report.

If subsurface conditions encountered during construction differ from those given in this report, further advice should be sought without delay.

Data and opinions contained within the report may not be used in other contexts or for any other purposes without prior review and agreement by Qualtest. If this report is reproduced, it must be in full.

If you have any further questions regarding this report, please do not hesitate to contact Shannon Kelly or the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd.

she her

Jason Lee Principal Geotechnical Engineer

FIGURES:

FIGURE AB1: Site Location Plan & Approximate Test Locations

FIGURE AB2: Site Features – Southern Portion

FIGURE AB3: Site Features – Northern Portion







APPENDIX A:

Results of Field Investigations



ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP01 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

PAGE:

DATE:

BS 3/2/22

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ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

PAGE:

DATE:

JOB NO:

TP01A 1 OF 1

NEW22P-0012

LOGGED BY:

BS 3/2/22

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ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

TP02 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

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PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP03 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

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DATE:

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		WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type characteristics,colour,minor co	, plasticity/particle mponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			F				CL	TOPSOIL: Silty CLAY - low to med	lium plasticity,					TOPSOIL
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EW22P-0012 I					-	-								
- TEST PIT NI					-									
9 NON-CORED BOREHOLE		END: T Wat (Dat Wat Wat a Cha	er Level e and time sl er Inflow er Outflow anges	hown)	Notes, Sa U ₅₀ CBR E ASS B	mples a 50mm Bulk s Enviro (Glass Acid S (Plasti Bulk S	nd Tes Diame ample f onmenta s jar, se Sulfate S ic bag, a Sample	ts ter tube sample for CBR testing al sample saled and chilled on site) Soil Sample air expelled, chilled)	Consiste VS F St VSt Fb	ency Very Soft Soft Firm Stiff Very Stiff Hard Friable		U 28 50 10 20 20	<u>CS (kPa</u> 25 5 - 50 0 - 100 00 - 200 00 - 400 400	a) <u>Moisture Condition</u> D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
QT LIB 1.1.GLB L		Gi tra Do st	radational or ansitional stra efinitive or dis rata change	ata stict	Field Test PID DCP(x-y) HP	t <u>s</u> Photo Dynar Hand	ionisatio nic pene Penetro	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	<u>Density</u>	V L ME D VD		ery Lo bose lediun ense ery D	n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

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TP04

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E			'Е: н·	2.7 T(2.0 m		EXCA	VATOR	S	URFACE RL:					
-	Dri	Iling and Sar	nplina	2.0 11			Material descri	iption and profile informat	ion			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DES character	CRIPTION: Soil type, pla	sticity/particle onents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E 0.10m				СІ	TOPSOIL: CI trace fine gra	LAY - medium plasticity, c ined sand.	lark brown,					TOPSOIL
	Intered	0.30m		-			0.15m CLAY - medir		grey.	-		-		RESIDUAL SOIL
ш	Not Enco	E <u>(0.40m</u>		0. <u>5</u>		СН	Grey-brown.			M > w _P	St	HP HP	200 150	
				-			0.80m					HP	150	
							Hole Termina	ated at 0.80 m						
				- 1. <u>5</u> -	-									
				- 2. <u>0</u> -	-									
L	EGEND /ater	:		Notes, Sa U50	imples a 50mn	Ind Tes	ts ter tube sample		Consiste	ncy /ery Soft	t		CS (kPa 25	a) <u>Moisture Condition</u> D Dry M Maint
	 ✓ Water Level (Date and time shown) ✓ Water Inflow ✓ Water Outflow Strata Changes 			E ASS B	Enviro (Glass Acid S (Plast Bulk S	sample f onmenta s jar, se Sulfate S ic bag, s Sample	or CBR testing al sample aled and chilled on site Soil Sample air expelled, chilled)	e)	F F St S VSt V H F Fb F	irm Stiff /ery Stiff lard friable	ŗ	25 50 10 20 >4	9 - 50 0 - 100 00 - 200 00 - 400 400	W Woist W Wet W _p Plastic Limit W _L Liquid Limit
	(ti [Gradational or ransitional stra Definitive or dis trata change	ata stict	Field Tes PID DCP(x-y) HP	<u>ts</u> Photo Dynai Hand	ionisatio mic pen Penetro	on detector reading (p etrometer test (test de meter test (UCS kPa)	pm) pth interval shown))	Density	V L MI D VE	V La D M D D	ery Lo bose lediun ense ery D	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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	EQUIPMENT TYPE: 2.7 TONNE EXCAVA TEST PIT LENGTH: 2.0 m WIDTH:					ONNE	EXCA	VATOR	SURFACE RL	:				
		Dril	ling and San	npling	2.0 11			Material description and profile in	formation			Fiel	d Test	
_	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil ty characteristics,colour,minor	pe, plasticity/particle components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E 0.10m		_		CL	TOPSOIL: Silty CLAY - low to n brown, root affected.	edium plasticity,	4 × k				TOPSOIL
		tered			-		 CI	0.15m Sandy CLAY / CLAY - medium 0.25m grained sand.	plasticity, brown, fine					RESIDUAL SOIL
	ш	Encount	0.30m E		-			CLAY - medium to high plasticit brown, trace fine grained sand.	γ, brown to pale		н	HP	500	
		Not	<u>0.40m</u>		0. <u>5</u>		СН			M ~ M		HP	300	
					-						VSt	HP	200	
_								0.70m Hole Terminated at 0.70 m						
					-	-								
					1. <u>0</u>	-								
o					-									
nd In Situ To					-									
atgel Lab ar					-	-								
0.01.00.01 E					1.5									
22 09:10 10					-	-								
>> 04/03/20					-	-								
DrawingFile					2.0									
GS.GPJ <<					-	-								
2P-0012 LO					-	-								
T PIT NEW2					-									
LE - TES	LEG	END:			Notes, Sa	mples a	nd Tes	ts	Consis	tency			C <u>S (kP</u> a) Moisture Condition
DREHOI	Wate	<u>er</u>	or Lovel		U₅₀ CBR	50mm Bulk s	n Diame ample f	eter tube sample for CBR testing	VS S	Very Soft Soft	t	<2 25	25 5 - 50	D Dry M Moist
RED B(-	vva (Da	te and time s	hown)	Е	Enviro (Glass	onmenta s jar, se	al sample aled and chilled on site)	F St	Firm Stiff		50 10) - 100)0 - 200	W Wet W _p Plastic Limit
ON-CO	► -	Wa Wa	ter Inflow ter Outflow		ASS	Acid S (Plast	Sulfate S ic bag,	, Soil Sample air expelled, chilled)	VSt H	Very Stiff Hard	Ŧ	20 >2	00 - 400 100	W_ Liquid Limit
Log N	<u>Stra</u>	ta Ch	anges radational cr		B <u>Field</u> Tes	Bulk S	Sample		Fb Density	Friable / V	V	ery Lo	ose	Density Index <15%
.1.GLB		transitional strata Definitional strata DCP(x-y) DCP(x-y) DCP(x-y)								L N/r	Lo Lo	, oose ledium	1 Denso	Density Index 15 - 35%
DT LIB 1.		Definitive or distict strata change DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)								D V		ense erv Di	ense	Density Index 65 - 85% Density Index 85 - 100%
0										۷L		י ט יי בי בי		2010kg 1100/00 - 100/0



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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-	EQUIPMENT TYPE: TEST PIT LENGTH: Drilling and Sampli				2.7 TC 2.0 m	NNE W	EXCA	VATOR 0.5 m	SURF.	ACE RL: M·					
F		Drill	ing and Sar	npling	2.0			Material descriptio	n and profile information				Fiel	d Test	
	MEIHOU	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCR characteristic	IPTION: Soil type, plasticity ss,colour,minor component:	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E 0.10m		-		СІ	TOPSOIL: CLAY root affected in to	′ - medium plasticity, dark b op 0.1m.	rown,					TOPSOIL
			0.30m E 0.40m		- - 0. <u>5</u> -		сн	0.20mCLAY - medium 1	to high plasticity, dark grey-	brown.		VSt	HP	250 250	RESIDUAL SOIL
L	ш	Not Encountered			- - 1. <u>0</u>			CLAY - medium f	to high plasticity, grey-brow	n. – – – – – – – – – – – – – – – – – – –	M > %		HP	200 180	
.00.01 Datgel Lab and In Situ Tool					- - 1.5_		СН	Brown. Trace fine graine	d, sub-rounded to sub-ang	ular		St	HP	200	
0.000 03/2022 09:10 10:01							СН	Gravelly CLAY fine to medium g gravel, with some	medium to high plasticity, b rained, sub-angular to sub- e extremely weathered rock	rown, rounded 		VSt	HP	280	
FEST PIT_NEW22P-0012 LOGS.GPJ_<<					-	-		Hole Terminated	at 2.00 m						
3 Log NON-CORED BOREHOLE - 1		END: er (Dat (Dat Wat Wat	er Level te and time s er Inflow er Outflow anges radational or	hown)	Notes, Sa U ₅₀ CBR E ASS B Field Test	mples a 50mn Bulk s Envin (Glas Acid s (Plas Bulk s	n Diame sample f onmenta s jar, se Sulfate S tic bag, a Sample	is is or CBR testing al sample aled and chilled on site) Soil Sample air expelled, chilled)		Consister VS V S S F Fi St S VSt V H H Fb Fi Density	L ery Soft oft tiff ery Stiff ard riable V	V	U 25 50 10 20 >2	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400 5000	I) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15%
QT LIB 1.1.GLB		tra – De st	ansitional stra efinitive or di rata change	ata stict	PID DCP(x-y) HP	Photo Dyna Hand	oionisatio mic pene Penetro	on detector reading (ppm) etrometer test (test depth i meter test (UCS kPa)	interval shown)		L ME D VD	La D M D V	oose lediun ense ery De	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

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LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY: DATE:

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BS

	EQ TES	UIPN ST P	MENT TYP IT LENGTI	E: H:	2.7 TC 2.0 m	NNE W	EXCA	VATOR 0.5 m		SURF/ DATU	ACE RL: M:					
		Dril	ling and San	npling				Material des	scription and profile inf	ormation				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL D charao	ESCRIPTION: Soil typ teristics,colour,minor (e, plasticity components	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		ncountered	E 0.10m 0.20m E 0.30m		-		СІ	TOPSOIL: brown, tra Brown, no 0.30m Clayey SA	CLAY - medium plast ce fine grained sand, r roots.	icity, brown oot affected	to dark J. 	M > wp	St	HP	150	TOPSOIL RESIDUAL SOIL
	Ш	Not Er			0. <u>5</u>		SC CI	0.50m CLAY - me fine graine sub-round 0.70m	rown, fines of low to m edium plasticity, brown d sand, trace fine grai ed gravel.	edium plast	wn, trace	$M > W_P$ $M \sim W_P$	St	HP	90 180	
GLB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS/GPJ < <drawingfile>> 04103/2022 08:10 10:01.00.01 Datgel Lab and In Situ Tool</drawingfile>		END: er Wa (Da Wa Wa ta Ch	ter Level te and time sl ter Inflow ter Outflow anges iradational or ansitional stra	nown)		mples a 50mm Bulk s Enviro (Glas: Acid s (Plast Bulk s Enviro	nd Tess Diame ample f onmenta s jar, se Sic bag, a Sample ionisatio	ts ter tube sample for CBR testing al sample aled and chilled on Soil Sample air expelled, chilled	site)		Consister VS V S S F F St S VSt V H H Fb F Density	tery Soft oft irm tiff ard riable V L	V	U 42 25 50 10 20 20 20 20 20 20 20	CS (kP2 55 5-50 0-100 00-2000 100 100 100	 Moisture Condition D Dry M Moist W Wet W Wet W Plastic Limit W Liquid Limit Density Index <15% <p>Density Index <15%</p>
QT LIB 1.1		— D si	efinitive or dis trata change	stict	DCP(x-y) HP	Dynai Hand	nic pen Penetro	etrometer test (test ometer test (UCS kl	depth interval shown) Pa)			ME D VD) M D V	lediun ense ery De	n Dense ense	 Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

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LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

LOGGED BY: BS

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	EQUIPMENT TYPE: 2.7 TONNE E TEST PIT LENGTH: 2.0 m WI					NNE	EXCA	VATOR	SURFACE RL:					
┢		Dril	ling and Sam	nplina	2.0 11			Material description and profile infor	mation			Fiel	d Test	
_	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, characteristics,colour,minor co	plasticity/particle mponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E				СН	TOPSOIL: CLAY - medium to high	plasticity, dark					TOPSOIL
	ш	Not Encountered	0.10m		- - - 0.5_ -		СН	0.10m Drown, root anected. CLAY - medium to high plasticity, p root affected to 0.2m. Dark brown.	ale grey-brown,	M > Wp	St	HP	180	RESIDUAL SOIL
.B. Log. NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfile>> 0403/2022 09:10 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>		END: EX (Da Wa' Wa' Changer State Changer State Changer St	ter Level te and time sh ter Inflow ter Outflow anges radational or	nown)		mples a 50mn Bulk s Envirc (Glas: Acid S (Plast Bulk S	nd Tes Diame ample f onmenta s jar, see Luifate S ic bag, a Sample	Hole Terminated at 0.70 m Hole Terminated at 0.70 m	Consiste VS S F St VSt H Fb Fb	ncy /ery Soft Stiff /ery Stiff /ard /riable V		UI <2 25 50 100 22 24	CS (kP2 25 5-50 -100 00 - 200 100	Moisture Condition D Dry M Moist W Wet Wp. Plastic Limit WL Liquid Limit Density Index <15%
QT LIB 1.1.GL		Gradautorial of transitional strata PID Photoionisation detector reading (ppm) Definitive or distict strata change DCP(x-y) Dynamic penetrometer test (test depth interval shown)								L ME D VD	D M D D V	bose lediun ense ery De	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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	EQ TES	UIPN ST PI	IENT TYP T LENGTI	E: H:	2.7 TC 2.0 m	NNE W	EXCA I DTH :	VATOR 0.5 m	SURFACE DATUM:	E RL:					
ŀ		Drill	ing and San	npling				Material description and pro	file information				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: S characteristics,colour,r	Soil type, plasticity/part ninor components	ticle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E 0.10m		_		CL	TOPSOIL: Silty CLAY - lov brown.	v to medium plasticity,	,	1 < W _P				TOPSOIL
Situ Tool	Е	/ur)	0.30m E 0.40m		- - - - - - - - - - - - - - - - - - -		СН	0.15m CLAY - medium to high pla orange-brown, trace fine g	asticity, brown with sor rained sand.	me	M > w _P	St- VSt	HP HP HP	250 200 230 190 220	RESIDUAL SOIL
CDrawingFile>> 04/03/2022 09:10 10.01.00.01 Datgel Lab and In S		(417)			- 1. <u>5</u> - - - 2.0			2.00m				St	HP	130 170	
OREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ <	LEG Wate	END: er	er l evel			mples a 50mr Bulk s	nd Test Diame ample f	<u>s</u> ter tube sample or CBR testing	- 	onsistence 'S Ver S Sot	کل ry Soft ft		<u>U(</u> <2 25	CS (kPa 25 5 - 50) <u>Moisture Condition</u> D Dry M Moist
LIB 1.1.GLB Log NON-CORED BI	± <u>Stra</u> 	Water Level CBR Bulks (Date and time shown) E Envir · Water Inflow ASS Acid 4 Water Outflow (Plass • Water Outflow B Bulks • Water Outflow B Bulks • Gradational or transitional strata PID Phote • Definitive or distict strata change DCP(x-y) Dyna				Enviro (Glass Acid S (Plast Bulk S S Photo Dynar Hand	onmenta s jar, sea Sulfate S ic bag, a Sample ionisatic nic pene	I sample aled and chilled on site) soil Sample air expelled, chilled) on detector reading (ppm) etrometer test (test depth interval shi meter test (UCS kPa)	F Si VS H Fl De	F Firr St Stif St Ver H Hau <u>b Fria</u> ensity	m ry Stiff rd able V L MD D	Ve Lc D M	50 10 20 >2 ery Lo pose ediun ense	0 - 100 00 - 200 00 - 400 400 pose n Dense	W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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	EQUIPMENT TYPE: TEST PIT LENGTH:			2.7 TC	ONNE I	EXCA	VATOR		SURF	ACE RL:						
	TES	ST P	T LENGT	4:	2.0 m	W	IDTH:	0.5 m		DATU	M:					
		Dril	ing and San	npling				Material o	description and profile	information				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL chai	. DESCRIPTION: Soi racteristics,colour,mir	type, plasticity for components	//particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E <u>0.10m</u> ,		-		CL	FILL-TC dark bro	OPSOIL: CLAY - low to own, with some silt, ro	o medium plas ot affected in to	ticity, op 0.1m.	M > Wp				FILL - TOPSOIL
	Ш	t Encountered	E 0.30m 0.50m		0.5		CL	FILL: Sa brown, f	andy CLAY - low plass ine grained sand.	ticity, brown to	 pale	M < w _p	н	HP	>600	FILL / POSSIBLE SLOPE WASH
		No	E (0.60m)				СН	CLAY - brown w Brown.	medium to high plasti vith some fine grained	city, brown to c I, sub-angular (dark gravel.	M > w _P	VSt	HP	250	RESIDUAL SOIL
					-			0.90m							210	
					1.0			Hole Te	rminated at 0.90 m							
HOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 08:10 10.01.00.01 Daggel Lab and In Situ Tool</drawingfile>	LEG	END:			1.5 - - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	nd Tess Diame	tster tube sample			<u>Consister</u> VS V	ncy erv Soft			<u>CS (kP2</u>	a) <u>Moisture Condition</u> D Dry
g NON-CORED BOREH		Water 0 550 Sofiniti Diarited Water Level CBR Bulk sample for (Date and time shown) (Glass jar, sea Water Inflow ASS Acid Sulfate Si Water Outflow (Plastic bag, a Strata Changes B Bulk Sample				for CBR testing al sample aled and chilled Soil Sample air expelled, chill	on site) ed)		S S F Fi St S VSt V H H Fb Fi	oft irm tiff ery Stiff lard riable		25 50 10 20 >4	5 - 50) - 100)0 - 200)0 - 400 400	M Moist W Wet W _p Plastic Limit W _L Liquid Limit		
QT LIB 1.1.GLB Log	<u></u>	ata Changes B Bulk Sample Gradational or transitional strata Field Tests Definitive or distict strata change PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)						n)	<u>Density</u>	V L ME D VD	V La D D V	ery Lo bose lediun ense ery De	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%		



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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E	EQUIPMENT TYPE: TEST PIT LENGTH:				2.7 TC	ONNE	EXCA	VATOR		SUI	RFACE RL:					
	TES	ΤP	T LENGTI	H:	2.0 m	w	IDTH:	0.5 m		DA	TUM:					
		Drill	ing and San	npling				Material	description and	I profile information	ı	-1		Fiel	d Test	
CONFIN	MEIHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIA cha	L DESCRIPTIC aracteristics,col	N: Soil type, plasti our,minor compone	city/particle ents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
L	ш	Not Encountered	E 0.20m E 0.30m		0.5_		СН	0.05m TOPSC root aff CLAY - Brown 1 0.60m Hole Te	DIL: CLAY - me ected medium to hig with some oran	dium plasticity, dar — — — — — — h plasticity, dark br ge-brown. 50 m	k brown, own.	M > w _p	St	HP	170	TOPSOIL
					_											
DLE - TEST PIT NEW22P-0012 LOGS.GPJ ≪DrawingFie≫ 04/03/2022 09:10_10.01.00.01_Datgel Lab and in Situ Tool	LEGB	ND:			1.0_ 		nd Tes:	<u>15</u>			Consiste				CS (kP#) Moisture Condition
NEH(Nate	<u>r</u>	or Louis		U₅₀ CBR	50mm Bulk s	uame) ample f	eer tube sample for CBR testing				rery Soft Soft		<2 25	∠5 5 - 50	M Moist
ED BC	_	Wat (Dat	er Level e and time sl	hown)	Е	Enviro	nmenta	al sample	on cita)		F F	irm		50) - 100	W Wet
-COR	-	Wat	er Inflow	ĺ	ASS	Acid S	s jar, se Sulfate S	aieu and chilled Soil Sample	on site)		VSt V	/ery Stiff		20	0 - 200 00 - 400	W _L Liquid Limit
	∢ Strat:	Wat	er Outflow		В	(Plast Bulk S	c bag, a ample	air expelled, chi	lled)		H H Fb F	lard riable		>4	400	
EB Loc		G	radational or		Field Test	Dhot-	ionicati	n datactar ro	ling (ppm)		Density	V	V	ery Lo	oose	Density Index <15%
1.1.GL		transitional strata PID Photoionisation detector reading (ppm) — Definitive or distict DCP(x-y) Dynamic penetrometer test (test depth interval shown)							al shown)		L ME	Lo D M	bose lediun	n Dense	Density Index 15 - 35% Density Index 35 - 65%	
QT LIB		st	Definitive or distict DCP(x-y) Dynamic penetrometer test (test depth interval shown) strata change HP Hand Penetrometer test (UCS kPa)								D VD	D V	ense ery Do	ense	Density Index 65 - 85% Density Index 85 - 100%	



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

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EQ			E:	2.7 T(VATOR		SURF	ACE RL:					
			n.	2.0 111		חוטוי.	0.5 m	loscription and prof					Field	d Toet	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL	DESCRIPTION: S	oil type, plasticity	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш	Not Encountered	E 0.10m 0.30m E 0.40m		0.5		CL CI CH	TOPSO 0.10m grey-bro coarse o Sandy C fine grai 0.25m rounded CLAY - I orange-I Brown to 0.65m	IL: Sandy CLAY - Ic wn, fine grained sa grained, rounded gr LAY - medium plas ned sand, trace me gravel. gravel. medium to high plas brown.	w to medium pla nd, with trace fin avel, root affecte sticity, grey to gre edium to coarse g	sticity, e to d / y-brown, grained,	M < W	St	HP HP HP	150 190 190	TOPSOIL
LEC Wat	GEND: SEEND: ter Waa (Da - Waa (Da - Waa	ter Level te and time s ter Inflow ter Outflow	hown)	<u>Notes, S:</u> 2.0_ СВR Е АSS В	imples a 50mn Bulk s Envir (Glas Acid s (Plas Bulk s	Ind Tess n Diame sample pomenti s jar, se Sulfate :	ts ter tube sample for CBR testing al sample alaed and chilled of Soil Sample air expelled, chille	on site)		Consister VS \ S S F F St S VSt \ H Fb F	mcy /ery Soft Soft Firm Stiff /ery Stiff Hard Friable		U <22 50 10 20 20	CS (kP2 55 5-50 - 100 0- 2000 100 - 400	 Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit W_L Liquid Limit
	G tr D st	radational or ansitional stra efinitive or dia rata change	ata stict	Field Tes PID DCP(x-y) HP	<u>ts</u> Photo Dyna Hand	oionisati mic pen Penetro	on detector readi etrometer test (te ometer test (UCS	ng (ppm) est depth interval sho s kPa)	wn)	<u>Density</u>	V L MI D VE		ery Lo oose lediun ense ery De	n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%

QT LIB 1.1.GLB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ << DrawingFile>> 04/03/2022 08/10 10.01.00.01 Datgel Lab and In Stu Tool



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

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NEW22P-0012

JOB NO: LOGGED BY: DATE:

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EC	EQUIPMENT TYPE: TEST PIT LENGTH:				2.7 TO	NNE I	EXCA	VATOR	SURF	ACE RL:					
TE	ST P	IT LENGTI	H:	2	2.0 m	W	IDTH:	0.5 m	DATU	M:			-		
	Drill	ling and San	npling				1	Material description a	and profile information			1	Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	D)EPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPT characteristics,	FION: Soil type, plasticity colour,minor components	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E				3	CL	TOPSOIL- Sandy C brown, fine grained	CLAY - low to medium pla sand, root affected.	asticity,	. 4				TOPSOIL
		<u>0.10m</u>			-		CL	CLAY - low to medi some silt.	um plasticity, pale brown	, with	- × × E				SLOPE WASH / RESIDUAL SOIL
		0.30m E			_			CLAY - medium to I grey.	high plasticity, brown with	n some		н	HP	440	RESIDUAL SOIL
		<u>0.40m</u>			0.5								HP	190	
	ered				-		СН						HP	240	
ш	Not Encounte	Not Encountere						Grey with some bro	wn.		~		HP	230	
					-			Red-brown.			× ×	VSt	HP	300	
					- 1.5			CLAY - medium to I some fine to mediu rounded gravel.	high plasticity, red-brown m grained, sub-rounded	i, with to			HP	230	
							СН	2.00m					HP	200	
								Hole Terminated at	2.00 m						
					-										
			L		+00 0°		nd T	•		Consist			 	00 /1-0	
	EGEND: /ater			<u>No</u> U	ites, Sai J ₅₀	50mm	na les Diame	<u>s</u> ter tube sample		VS VS	<u>ency</u> Very Soft		<u>U</u> <2	сэ (кРа 25	D Dry
	<u>Vater</u> Vater Level			CB F	R	Bulk s	ample f	or CBR testing I sample		S S	Soft Firm		25 50	5 - 50) - 100	M Moist W Wet
	(Date and time shown)			2		(Glass	s jar, se	aled and chilled on site)		St	Stiff		10)0 - 200	W _p Plastic Limit
	 Water Inflow Water Outflow 				S	Acid S (Plast	Sulfate S ic bar	oil Sample air expelled, chilled)		VSt V	Very Stiff Hard		20 >4)0 - 400 100	W _L Liquid Limit
<u>Stra</u>	ata Cha	anges		В		Bulk S	Sample	a stronou, ormou)		Fb I	Friable				
(_ ·	G	radational or	, to	<u>Fie</u> F	eld Test PID	<u>s</u> Photo	ionisatio	n detector reading (ppm)		<u>Density</u>	V L	V Lo	ery Lo oose	ose	Density Index <15% Density Index 15 - 35%
	tra D	ansitional stra efinitive or dis	ata stict	DC	P(x-y)	Dynar	nic pen	etrometer test (test depth inte	erval shown)		ME) M	lediun	n Dense	e Density Index 35 - 65%
5	st	rata change		ŀ	ΗP	Hand	Penetro	meter test (UCS kPa)			D VD	D V	ense ery Do	ense	Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

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E	QUIP EST	MENT TYP	'E: H:	2.7 TC 2.0 m	DNNE E W I	EXCA I DTH :	VATOR 0.5 m	SURFACE RL: DATUM:					
	D	rilling and Sar	npling				Material description and profile inform	mation			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, characteristics,colour,minor co	plasticity/particle mponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E .0.10m				GP	FILL: Sandy GRAVEL - fine to mee sub-rounded to sub-angular, fine to sand with some asphalt	dium grained, o medium grained	D				FILL
	ered			-		CL	0.15m Silty CLAY - low plasticity, grey.		× 1	-			SLOPE WASH
ш	incounte	0.30m		-			CLAY - medium to high plasticity, b brown.	prown to pale			HP	330	RESIDUAL SOIL
	Not E	0.40m		-		СН			Š	VSt	HP	260	
						GIT			×	VOL	HP	280	
							0.70m Hole Terminated at 0.70 m				HP	220	
				-									
				1.0_									
				-									
Situ Tool				-									
ab and In S				-									
11 Datgel L				1.5_									
10.01.00.0				-									
2022 09:10				-	-								
>> 04/03/2				-									
DrawingFile				2.0									
S.GPJ <<[-									
-0012 LOG				-									
. NEW22P				-									
- TEST PI				-									
	EGENI ater ∠ W (C - W ≺ W	D: later Level bate and time s later Inflow later Outflow	hown)	Notes, Sa U ₅₀ CBR E ASS	mples an 50mm Bulk s Enviro (Glass Acid S (Plasti Bulk S	nd Tes Diame ample f nmenta jar, se culfate s c bag, a	ts ter tube sample for CBR testing al sample aled and chilled on site) Soil Sample air expelled, chilled)	Consiste VS F St VSt H	Very Soft Soft Firm Stiff Very Stiff Hard Friable		25 25 50 10 20 >2	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 100	Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit
1.GLB Log	<u></u>	Gradational or transitional stra	ata	Field Test	Photoi	onisatio	on detector reading (ppm)	<u>Density</u>	V L		ery Lo cose	ose	Density Index <15% Density Index 15 - 35%
ot Lib 1.		Definitive or di strata change	stict	HP	Uynan Hand I	Penetro	eu ometer test (test deptn interval shown) ometer test (UCS kPa)		ME D VE	, м Б О V	ealun ense ery De	i Dense	 Density index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

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	EQ		IENT TYP	E:	2.7 TC	DNNE I	EXCA	VATOR		SURFACE RL					
	IE	SIP		H:	2.0 m	vv		0.5 m		DATUM:					
		Dril	ing and Sar	npling			1	Material desc	ription and profile inform	nation		1	Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DE characte	SCRIPTION: Soil type, eristics,colour,minor coi	plasticity/particle nponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
						131131	CI	0.05m TOPSOIL: 0	CLAY - medium plasticit	y, dark brown,	_				TOPSOIL
			E 0.10m		-				<u>1</u>		7				RESIDUAL SOIL
		tered	0.20m		_			0.20m					ЦВ	450	
		coun	Е					CLAY - meo orange-brow	lium to high plasticity, b vn.	rown with some	×			430	
	ш	ot En	<u>0.30m</u>		-			5			Ň	VSt	HP	350	
		ž			-		СН						HP	310	
					0.5										
								0.60m							
					-			Hole Termir	nated at 0.60 m						
					-	-									
					-	-									
					-	1									
					1.0	1									
					-	-									
ō															
Situ To															
and In					-										
el Lab					-	-									
1 Datg					1.5										
1.00.0															
0 10.0					-										
22 09:1					-	-									
/03/202					-	-									
>> 04															
∕ingFile					-	1									
< <draw< td=""><td></td><td></td><td></td><td></td><td>2.0</td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></draw<>					2.0	-									
- GPJ					-	-									
LOGS															
-0012					-]									
EW22F					-	-									
РП N					-	-									
TEST															
- HOLE -	LEG	END:			<u>Notes, Sa</u> ປະດ	mples a 50mm	nd Tes Diame	ts ter tube sample		Consist VS	ency Very Soff	t	<u>U</u> <2	CS (kPa 25) Moisture Condition D Dry
BOREI		<u>u.</u> Wat	er Level		CBR	Bulk s	ample	for CBR testing		S	Soft		25	5 - 50) - 100	M Moist
DRED (•	(Da	te and time s	hown)	E	(Glass	s jar, se	aled and chilled on s	ite)	St	Stiff		50 10) - 100)0 - 200	W _p Plastic Limit
ON-CC		wat Wat	er Inflow er Outflow		ASS	Acid S (Plasti	Sulfate S ic bag,	Soil Sample air expelled, chilled)		VSt H	Very Stiff Hard	Ī	20 >4)0 - 400 400	W _L Liquid Limit
Log N	<u>Stra</u>	ta Ch	anges		B Field Teel	Bulk S	Sample	/		Fb	Friable V	14	ervle	056	Density Index <15%
GLB.		G tra	radational or ansitional stra	ata	PID	Photo	ionisati	on detector reading (ppm)		L	L	ory LC Dose		Density Index 15 - 35%
LIB 1.1		_ D	efinitive or dis	stict	DCP(x-y) HP	Dynar Hand	nic pen Penetro	etrometer test (test d ometer test (UCS kPa	epth interval shown) a)		ME D	M כ D	lediun ense	n Dense	Density Index 35 - 65% Density Index 65 - 85%
QT L		SI	ata onanye					-			VD) V	ery D	ense	Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

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				E: H·	2.7 TC 2.0 m	NNE N	EXCA	VATOR 0.5 m			ACE RL: M·					
┢		Dril	ing and Sar	nplina	2.0 11			Material de	scription and profile info	mation				Fiel	d Test	
_	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL D charae	DESCRIPTION: Soil type	, plasticity pmponent	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
T NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:10 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>	ш	Not Encountered	E 0.20m E 0.30m				CL CH CH	1.20m	: Sandy CLAY - low to m n, fine grained sand, roc AY - medium to high pla and. edium to high plasticity, edium to high plasticity, AY - medium plasticity, p e grained sand. Weathered Andesite wi wn into Sandy CLAY - n n to brown, fine grained d rock.	th soil pro- brown.	asticity, 	M > Wp	H VSt	HP HP HP HP HP	>600 600 450 480 320 350	TOPSOIL RESIDUAL SOIL TRESIDUAL SOIL TRESIDUAL SOIL TRESIDUAL SOIL TRESIDUAL SOIL
IB 1.1.GLB Log NON-CORED BOREHOLE - TEST	LEGEND: Mater Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes — — Gradational or transitional strata — Definitive or distict strata changen			Notes, Sa U ₅₀ CBR E ASS B Field Test PID DCP(x-y) HP	mples a 50mn Bulk s Envir (Glas Acid s (Plas Bulk s Bulk s Bulk s Bulk s Bulk s Bulk s Bulk s Bulk s	and Tes n Diame sample to onmenta s jar, se Sulfate S tic bag, s Sample bionisation mic pen Penetro	ts ter tube sample for CBR testing al sample aled and chilled on Soil Sample air expelled, chilled on detector reading terometer test (test meter test (USS k	ı site) I) I (ppm) t depth interval shown) Pa)		ConsisterVSVSSFFStSVStVHHFbFDensity	ncy ery Soft oft tiff ery Stiff lard riable V L ME D	Vi Lc D M	U	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400 00 - 400 400 00 - 400	 Moisture Condition D Dry M Moist W Wet W_p Plastic Limit W_L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 35 - 65% 	
ат		51										VD	V	ery Do	ense	Density Index 85 - 100%



EQUIPMENT TYPE:

TEST PIT LENGTH:

Drilling and Sampling

ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

2.7 TONNE EXCAVATOR

WIDTH:

2.0 m

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY

JOB NO:

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NEW ENGLAND HIGHWAY, LOC	HINVAR	LO	GGEE) BY	:	BS
		DA	TE:			4/2/22
TOR S 0.5 m D	URFACE RL: ATUM:					
Material description and profile informati	ion			Field	d Test	
MATERIAL DESCRIPTION: Soil type, pla characteristics,colour,minor compo	sticity/particle onents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
TOPSOIL: CLAY - medium plasticity, b brown, with some fine grained sand, ro	prown to dark pot affected.					TOPSOIL
CLAY - medium plasticity, brown to da some fine grained sand.	rk brown, with					RESIDUAL SOIL
CLAY - medium to high plasticity, brow brown.	/n to pale	M > w _P	VSt	ΗP	300	
					220	

METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC	2 CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plastici characteristics,colour,minor componer TOPSOIL: CLAY - medium plasticity, brow	ty/particle hts n to dark	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and addition observations
ц	Not Encountered	E 0.20m E 0.30m		0.5		сі сі сн	0.10m brown, with some fine grained sand, root a CLAY - medium plasticity, brown to dark b some fine grained sand. 0.30m CLAY - medium to high plasticity, brown to brown.	iffected.	M > Wp	VSt	HP	300 320	RESIDUAL SOIL
TPIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 0403/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>							Hole Terminated at 0.70 m						
	EGENI Vater W (D W W W trata C	ater Level late and time s ater Inflow ater Outflow hanges Gradational or transitional stra Definitive or di strata change	hown) ata stict	Notes, Sa U ₅₀ CBR E ASS B Field Tes PID DCP(x-y) HP	mples a 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S Bulk S Bulk S Photo Dynar Hand	nd Tes n Diame sample i onmenta s jar, se Sulfate S ic bag, Sample ionisatie mic pen Penetro	ts ter tube sample for CBR testing al sample aled and chilled on site) Soil Sample air expelled, chilled) on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	Consiste VS V S S F F St S VSt V H F Fb F Density	iery Soft oft irm tiff ery Stiff lard riable V L ME D VD	V L D M	U	CS (kPa 25 5 - 50) - 100 00 - 200 00 - 400 400 pose n Dense ense	 Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit Density Index <15% Density Index <15 - 35% Density Index 35 - 65% Density Index 45 - 85% Density Index 45 - 100



ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

LOGGED BY:

4/2/22

BS

E	QUIF	PMENT TYP	Е: н	2.7 TC	NNE	EXCA	VATOR 0.5 m	SURFACE RL:					
F	 D	Prilling and Sar	nplina	2.0 m			Material description and profile info	rmation			Fiel	d Test	
METUOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type characteristics,colour,minor c	e, plasticity/particle omponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E 0.10m		-		СІ	TOPSOIL: Sandy CLAY - mediun fine grained sand, with some silt.	n plasticity, brown,	M > W				TOPSOIL
	Intered	0.20m		-		CL	Silty CLAY - low to medium plasti grey-brown.		M < Wp		HP	>600	SLOPE WASH
U	Not Fincol	<u>0.30m</u>		- 0. <u>5</u> -		СН	CLAY - medium to high plasticity,	brown.	M > W _P	н	HP HP HP	>600 550 400	RESIDUAL SOIL
NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 0403/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>	EGEN Vater V	Date and time s /ater Level Date and time s /ater Inflow /ater Outflow	hown)	1.0_ 	mples a 50mm Bulk s Envird (Glas Acid S (Plast	ind Test b Diame sample fo pomenta s jar, see Sulfate S ic bag, a	Hole Terminated at 0.70 m	VS VS S F St S VS VS V F T	PINCY Very Soft Soft Tirm Stiff Very Stiff		U < 25 56 10 20 20	CS (kPa 25 5 - 50 0 - 100 00 - 2000 00 - 400	 Moisture Condition D Dry M Moist W Wet Wy, Plastic Limit W_L Liquid Limit
OT LIB 1.1.GLB Lo		Gradational or transitional stra Definitive or di strata change	ata stict	ionisatio nic pene Penetro	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	Density	V L ME D VE	D M D M	ery Lo bose lediun ense ery D	n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%		



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

TP19

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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1 OF 1 NEW22P-0012 BS 4/2/22

	EQI	JIPN	IENT TYP	E:	2.7 TC	ONNE	EXCA	VATOR		SURF	ACE RL:					
F	TES	ST PI	T LENGT	H:	2.0 m	W	IDTH:	0.5 m		DATU	M:					
		Drill	ing and San	npling	-			Material o	description and profile	e information				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL cha	. DESCRIPTION: Soi racteristics,colour,mir	l type, plasticity, lor components	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E <u>0.10m</u> , 0.20m		-		<u>CL</u> CI	0.03m TOPSO (fine grai CLAY -	IL: Sandy CLAY - low ned, root affected, medium plasticity, bro	/ plasticity, dark own to grey-bro	k brown, / / wwn.	M < w _P				TOPSOIL SLOPE WASH
		7	E <u>0.30m</u> ,		0.5		— — - СН	CLAY - brown.	medium to high plast	icity, brown to d	 Jark			HP	550	RESIDUAL SOIL
	ш	Not Encountered			-			0.75m				WP -		HP HP	450 >600	
					- 1. <u>0</u>		СН	CLAY - brown a	medium to high plast nd orange-brown with	icity, brown to p h some grey.	oale	ž	Н	HP	>600	
					-		СН	Sandy (and ora	CLAY - medium to hig nge-brown, fine grain	ih plasticity, pal ed sand.	e brown			HP	>600	
) al la						<u>,,,,,,</u>		1.32m SANDS	TONE - fine grained,	pale brown to b	prown			-		
irgei La					-	-		Hole Te	rminated at 1.32 m]					
- 1 - 1					1. <u>5</u>	-		Refusal								
00.10.0						-										
-																
0 2202					-											
100110					-	-										
1						-										
					2.0	-										
2000																
7100-					-											
					-	-										
2					-	-										
					Notor C	mela-	nd T				Consist					Moioture Condition
	LEG Wate	END: E			U ₅₀	50mm	nd Tes Diame	ts ter tube sample			VS V	ery Soft		<u>U</u> <2	<u>се (кра</u> 25	D Dry
	Ŧ	Wat	er Level	hown)	E	Bulk s Enviro	ample f onmenta	al sample			S S F Fi	rm		28 50	5 - 50) - 100	W Wet
	-	Wat	er Inflow		ASS	(Glas: Acid S	s jar, se Sulfate S	aled and chilled Soil Sample	on site)		St S VSt V	uff ery Stiff		10 20)0 - 200)0 - 400	W _p Plastic Limit W _L Liquid Limit
	◀ Strat	→ Water Outflow			в	(Plast Bulk S	ic bag, a Sample	air expelled, chill	ed)		H H Fb Fi	ard riable		>/	400	
		Gradational or			Field Tes PID	<u>ts</u> Photo	ionisatio	on detector readi	ing (ppm)		<u>Density</u>	V L	V Lo	ery Lo oose	oose	Density Index <15% Density Index 15 - 35%
		u'a D(efinitive or dis	stict	DCP(x-y) HP	Dynar Hand	nic pen Penetro	etrometer test (te	est depth interval show	n)		ME D	M (lediun ense	n Dense	Density Index 35 - 65% Density Index 65 - 85%
3		st	rata change		•••	und			···· ••,			VD	V	ery D	ense	Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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	EQ			E:	2.7 TC	NNE I		VATOR	SURFACE RL:	:				
-	IE			1.	2.0 m	VV	הוטו:	. U.D III Motorial description and profile info				Field	d Toot	
-	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type characteristics,colour,minor c	», plasticity/particle omponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E 0.10m				CL	TOPSOIL: Sandy CLAY - low to r brown, fine grained sand.	nedium plasticity,	4 × V				TOPSOIL
		untered	0.20m		-			0.15m CLAY - medium to high plasticity,	 brown.	2	н	НР	>600	RESIDUAL SOIL
	ш	Not Enco	<u>0.30m</u>		-		СН			~ w		HP	260	
					0.5_					Σ	VSt			
					-			0.65m With some orange-brown.				HP	360	
0N-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 08:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>		END: Ferd Wati Wati Wati	er Level te and time sh er Inflow	nown)		mples a 50mm Bulk s Envirc (Glass Acid S (Plasti	nd Tes Diame ample f onmenta jar, se siufate 3	Hole Terminated at 0.65 m	Consist VS S F St VSt H	ency Very Soft Soft Firm Stiff Very Stiff Very Stiff		U <22 50 10 200	CS (kPa 25 5 - 50 0 - 100 10 - 200 00 - 400	Moisture Condition D Dry M Moist W Wet Wp. Plastic Limit Wt. Liquid Limit
TLIB 1.1.GLB Log	<u>Stra</u>	Water Inflow ASS Aci Aci Water Outflow Gradational or transitional strata Definitive or distict strata change Strata change ASS Aci (Pi B Bu B Bu B CP(x-y) Dy HP Ha			Bulk S Photo Dynar Hand	ionisationisationisationisationisationis nic pen Penetro	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	Eb Density	Friable V L ME D VD	V La D M D	ery Lo bose ledium ense ery De	oose n Dense ense	Density Index <15%	



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP21 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

PAGE:

DATE:

Itest PIT LENGTH: 2.0 m WIDTH: 0.5 m DATUM: Drilling and Sampling Material description and profile information Field Test 0 Image: Samples RL DEPTH Image: Samples MATERIAL DESCRIPTION: Soil type, plasticity/particle Image: Samples	
Drilling and Sampling Material description and profile information Field Test 0 H SAMPLES RL (m) DEPTH (m) 0	
QO HUN KL MATERIAL DESCRIPTION: Soil type, plasticity/particle WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soil type, plasticity, dark brown, with some fine WT MATERIAL DESCRIPTION: Soi	
u E CL TOPSOIL: Sandy CLAY - low to medium plasticity, dark brown, fine grained sand. VSt HP 220 u 0.20m CL CLAY - medium plasticity, dark brown, with some fine grained sand. VSt HP 220 E 0.30m CI CLAY - medium plasticity, dark brown, with some fine grained sand. VSt HP 220 0.30m CI CI Sandy CLAY - low to medium plasticity, brown to pale brown, with some orange-brown, fine grained sand, with some orange-brown, fine grained sand, with some highly weathered rock. HP >600 1.0 1.0 1.0 Hole Terminated at 0.60 m Image: sand sand sand sand sand sand sand sand	cture and additional observations
u 0.10m 0.10m 0.10m curve of the state of th	DIL
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UAL SOIL — — — — —
2 0.5 0.50m 0.60m 0.	
0.50m 0.50m HP >600 CL Sandy CLAY - low to medium plasticity, brown to pale brown, with some orange-brown, fine grained stand, with some highly weathered rock. HP >600 HOIL HOIL HOIL HOIL HOIL HOIL	
Hole Terminated at 0.60 m	
	turo Condition
Water User User <t< td=""><td>Dry</td></t<>	Dry
Water LevelCBR EBulk sample for CBR testingSSoft25 - 50MEEnvironmental sampleFFirm50 - 100W	Moist Wet
Water Inflow (Glass jar, sealed and chilled on site) St Stiff 100 - 200 Wp, Water Inflow ASS Acid Sulfate Soil Sample VSt Very Stiff 200 - 400 WL Water Outflow (Plastic bag, air expelled, chilled) H Hard >400	Plastic Limit Liquid Limit
Strata Changes B Bulk Sample Fb Friable Ordefined as Field Tests Density V VeryLoose Density	sity Index <15%
gi Gradauonal or transitional strata PID Photoionisation detector reading (ppm) L Loose Dense D POD(w) Dense Dense Dense Dense	sity Index 15 - 35%
Definitive or distict Strata change DV-(X-y) Dynamic penetrometer test (test deptin interval shown) MD Medium Dense Dens	sity Index 35 - 65% sity Index 65 - 85% sity Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP22 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job no: Logged by:

PAGE:

DATE:

	EQ	UIPN St Pi	IENT TYPI T LENGTH	E: 1:	2.7 TC 2.0 m	NNE E W	EXCA I DTH :	.VATOR : 0.5 m	SURFACE RL: DATUM:					
ŀ		Drill	ing and San	npling				Material description and profile info	mation			Field	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type characteristics,colour,minor co	, plasticity/particle mponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	ш	Not Encountered	E 0.10m 0.15m E 0.25m		-		СН	Sandy CLAY - medium to high pla orange-brown, fine grained sand, to coarse grained, sub-rounded to	sticity, brown and with some medium rounded gravel.	M > w _P	St	HP	180 200	RESIDUAL SOIL
					- 0.5			0.50m Increasing sand content			н	HP	420	
ŀ					0.5	//////		Hole Terminated at 0.50 m						
38 NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datget Lab and In Situ Tool</drawingfile>	LEG Watu Strav	END: Pr Wat (Dai Wat ta Chi	er Level te and time sh er Inflow er Outflow anges	nown)		mples a 50mm Bulk s Envirc (Glass Acid S (Plasti Bulk S	nd Tes Diame ample f unmenta i jar, se c bag, ample	ts ter tube sample for CBR testing al sample saled and chilled on site) Soil Sample air expelled, chilled)	Consiste VS S F St St St F F F St St F F F F F F F	Pincy /ery Soft Soft Stiff /ery Stiff /ery Stiff Hard Friable		U U <22 50 100 200 200 200	CS (kPa 25 5 - 50 5 - 100 100 - 200 100 - 400 400	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit
QT LIB 1.1.GLB		G tra D st	radational or ansitional stra efinitive or dis rata change	ita stict	PID DCP(x-y) HP	Photoi Dynan Hand	ionisatio nic pen Penetro	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)		L ME D VD	La D M D D	oose ledium ense ery De	n Dense ense_	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

TP23

1 OF 1 NEW22P-0012

JOB NO: LOGGED BY:

DATE:

PAGE:

	EQ	UIPN		: :	2.7 TC	NNE	EXCA	VATOR	SURF	ACE RL:					
	TES	ST P	T LENGTH	1:	2.0 m	W	IDTH:	0.5 m	DATU	M:			1		
_		Drill	ing and Sam	npling	-			Material desc	ription and profile information		1		Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DES characte	SCRIPTION: Soil type, plasticity ristics,colour,minor component	//particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E 0.10m 0.30m		-		CL	FILL: Sandy orange-brow	CLAY / Clayey SAND - low pla n, fine grained sand.	sticity,	M < w _P				POSSIBLE FILL
			E .0.40m		-		CL	5andy CLAY to dark grey-	 low to medium plasticity, dari brown, fine grained sand. 	k brown 	_		HP	240	RESIDUAL SOIL
					- 0.5			Sandy CLAY mostly medi	(/ CLAY - medium to high plast um plasticity, brown, fine graine	icity, d sand.		VSt	HP	280	RESIDUAL SOIL
		ountered			-								ΗP	250	
	Е	Not Enc			1.0		СН				M > w _P		HP	350	
2022 09:11 10.01.00.01 Datgel Lab and In Situ Too					- - 1. <u>5</u> -			Medium plas	sticity, brown and some grey.			н	HP	530	
DrawingFile>> 04/03					2.0		с – –	Sandy Grave Some grey, f grained, sub	elly CLAY - medium plasticity, b ine grained sand, fine to mediu -rounded gravel.	nown with	M < Wp		HP	>600	
og NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ <<	LEG Watt	END: er (Dat Wat Wat ta Cha	er Level e and time sh er Inflow er Outflow anges	nown)	Notes, Sa U ₅₀ CBR E ASS B	mples a 50mm Bulk s Envirc (Glass Acid S (Plast Bulk S	nd Tes: Diame ample f onmenta s jar, se Sulfate S ic bag, a Sample	ts ter tube sample for CBR testing al sample aled and chilled on si Soil Sample air expelled, chilled)	ateu at 2.00 m	Consister VS V S S F F St S VSt V H H Fb F	DCY ery Soft oft tiff ery Stiff ard riable		U <2 25 50 10 20 >2	CS (kPa 5 - 50) - 100 00 - 200 00 - 400 400) <u>Moisture Condition</u> D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
QT LIB 1.1.GLB 1		G tra D st	radational or ansitional stra efinitive or dis rata change	ta tict	PID PID DCP(x-y) HP	Photo Dynar Hand	ionisatio nic pen Penetro	on detector reading (p etrometer test (test de ometer test (UCS kPa	opm) epth interval shown))	Density	V L ME D VD	D D V V	ery Lo bose ediun ense ery Do	n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

PAGE:

DATE:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job no: Logged by:

E TI	QUIPN EST P	NENT TYPE	≣: 1:	2.7 TC 2.0 m	NNE W	EXCA I DTH :	0.5 m	SURFACE RL: DATUM:					
	Dri	lling and Sam	npling				Material description and profile infor	mation			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, characteristics,colour,minor co	plasticity/particle mponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	untered	E <u>0.10m</u> , <u>0.20m</u> E		-		CI CL	TOPSOIL: CLAY - medium plastici 0.10m with some fine grained, sub-round gravel, root affected. 0.20m Silty CLAY - low to medium plastici CLAY - medium to high plasticity, t	ty, dark brown, de to sub-angular ty, pale brown.	M < W > W				TOPSOIL SLOPE WASH RESIDUAL SOIL
ш	Not Enco	<u>0.30m</u> ,		- 0.5_		СН	Brown with some grey-brown.		M > Wp	н	HP	>600 550	
				-			0.65m				HP	300	
3 Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS/GPJ < <drawingfile>> 04/03/2022 09:11 10.01 00.01 Datgel Lab and In Situ Tool 19.01 10.01 Datgel Lab and In Situ Tool 19.01 10.01 10.01 10.01 10.01 10.01 10.01 10.01</drawingfile>	GGEND:	ter Level ter and time sh ter Inflow ter Outflow anges iradational or	nown)		mples a 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S	nd Testi Diame ample f nmenta si jar, ses ci bag, ɛ ci bag, ː ba	Hole Terminated at 0.65 m Is ter tube sample ter tube sample ter tube sample al sample aled and chilled on site) Soil Sample air expelled, chilled)	Consist VS S F St VSt H Fb Density	Pincy Very Soft Soft Firm Stiff Very Stiff Hard Friable V		U <2 25 50 10 20 20 20	CS (kP2 55 5-50 - 100 00 - 200 00 - 400 100	1) Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit Density Index <15%
QT LIB 1.1.GL	tr D s	ansitional stra efinitive or dis trata change	ta itict	DCP(x-y) HP	Pnoto Dynar Hand	nic pene Penetro	etrometer test (test depth interval shown) wheter test (UCS kPa)		L ME D VE	D M D D V	oose ediun ense ery De	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP25 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

PAGE:

DATE:

	EQUIPMENT TYPE:2.7 TONNE EXCAVATORTEST PIT LENGTH:2.0 mWIDTH:0.5 m						VATOR S	URFACE RL:						
┝	I E v			1.	2.0 111		חושו.	Material description and profile informa				Fiel	d Tost	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, pla characteristics,colour,minor comp	asticity/particle onents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E		_		CL	FILL-TOPSOIL: Sandy CLAY - low to plasticity, dark brown, fine to medium with some asbestos containing mater	medium grained sand, al and some	1 < Wp				FILL - TOPSOIL
	Э	Not Encountered	0.20m E 0.30m		- - 0. <u>5</u>		СН	0.15m metal flaking. CLAY - medium to high plasticity, brow grey-brown.		M > W	н	HP	>600 >600	RESIDUAL SOIL
s Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>	LEG Watt ∑ Stra	END: Wai (Da Wai ta Ch	ter Level ter and time sh ter Inflow ter Outflow anges radational or	nown)		mples a 50mm Bulk s Envirc (Glass Acid S (Plasti Bulk S	nd Tes Diame ample f onmenta jar, se Siufate S ic bag, a ample	ts ter tube sample for CBR testing al sample alaed and chilled on site) Soil Sample air expelled, chilled)	Consiste VS S F St St St VSt H H Fb Fb	PINCY Very Soft Soft Firm Stiff Very Stiff Hard Friable V		U <: 25 50 10 20 20 20 20 20 20 20 20 20 2	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400 mose	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit Density Index <15%
QT LIB 1.1.GL	transitional strata PID Photoionisation detector reading (ppm) Definitive or distict DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)									L ME D VE	D N D D V V	lediun ense ery D	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

TP26 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

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DATE:

	EQUIPMENT TYPE: 2.7 TO						EXCA	VATOR	SURF	ACE RL:					
	TES	ST P	T LENGT	H:	2.0 m	w	IDTH:	0.5 m	DATU	M:					
		Dril	ing and San	npling			1	Material description a	nd profile information				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPT characteristics,c	ION: Soil type, plasticity olour,minor component:	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E		-			TOPSOIL: Sandy Cl <u>0.10m</u> pale grey-brown to b sand.	AY - low to medium pla rown with some fine gra	asticity, ained /	M < Wp				TOPSOIL SLOPE WASH
		red	0.20m		-			0.20m to pale grey, brown.	o medium plasticity, grey	/-brown ⁄			-		
	Е	Not Encounter	E 0.30m		- 0.5_ -		СН	CLAY - medium to h orange-brown.	igh plasticity, brown, wit	h some	M > W _P	н	HP	>600	RESIDUAL SOIL
					_			0.70m							
Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>	LEG Watt	END: Per Wate Wate Wate Ta Ch	er Level te and time sl er Inflow er Outflow anges	hown)		mples a 50mm Bulk s Envito (Glass Acid S (Plast	nd Tes Diame ample t jar, se iulfate \$ c bag, i ample	IS IS Is Is Is Is Is Is Is Is Is Is		Consister VS V S S F Fi St S VSt V H H F Doositr	Incy Pry Soft Try Suff Try Stiff ard ard tiable		U <2 25 500 20 20	CS (kPz 25 5 - 50 0 - 100 00 - 2000 400	1) Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit
B 1.1.GLB 1		Gradational or transitional strata Definitive or distict H								<u>Density</u>	V L ME	Vi La D M	ery Lo bose ediun	oose n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65%
QT LI		Definitive or distict strata change HP Hand Penetrometer test (UCS kPa)									VD	ים ע ע	ense ery De	ense	Density Index 85 - 80%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

PAGE:

DATE:

JOB NO:

TP27 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

LOGGED BY:

	EQUIPMENT TYPE:2.7 TONNE ITEST PIT LENGTH:2.0 m				EXCA	VATOR 0.5 m		SURFACE F	RL:							
ŀ		Dril	ing and Sam	nplina				Material de	scription and profile infor	mation				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL D charae	ESCRIPTION: Soil type, cteristics,colour,minor co	plasticity/particl	le	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Ш	Not Encountered	E 0.20m E 0.30m		- - - 0.5_ -		СН	FILL-TOP plasticity, with some (metal flaki CLAY - m grey-brow Brown and	SOIL: Sandy CLAY - low dark brown, fine to mediu asbestos containing ma <u>ng.</u>	to medium um grained sanc tterial and some	, , 	$M > W_{P}$ $M < W_{P}$	Н	HP	>600	FILL - TOPSOIL
LB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfia>> 0403/2022 08-11 10 01 00 10 angel Lab and In Situ Tool</drawingfia>	LEG Watu	END: er Wat (Da Wat ta Ch	er Level te and time sh er Inflow er Outflow anges radational or	nown)		mples a 50mm Bulk s Envirc (Glass Acid S (Plasti Bulk S 25 Photo	nd Tesi Diame ample f inimenta jar, se iulfate S c bag, a ample	IS territoria for the sample al sample al sample al sample al chilled on Soil Sample air expelled, chilled	site)	Cons VS S F St VSt H Fb Dens	sistence Ver Sof Firm Ver Hau Fria Stiff	EX Ty Soft ft m ff try Stiff rd able V	V	U <25 50 10 20 20 20 20 20	CS (kP2 55 5 - 50 0 - 100 00 - 2000 100 - 400	 Moisture Condition D Dry Moist W Wet W_p Plastic Limit W_L Liquid Limit Density Index <15% Density Index 15 - 35%
2T LIB 1.1.G	Image: Construction of the construction of									– ME D VD) M D V	lediun ense ery D	n Dense ense	 Density Index 15 - 65% Density Index 65 - 85% Density Index 85 - 100% 		



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP28 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

PAGE:

DATE:

E	EQUIPMENT TYPE:2.7 TONNE EXCAVATORTEST PIT LENGTH:2.0 mWIDTH:0.5 m							SURFACE RL: DATUM:					
	Dri	lling and Sar	npling				Material description and profile inform	ation			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, p characteristics,colour,minor com	lasticity/particle ponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш	Not Encountered	E 0.10m 0.20m E 0.30m		- - - 0. <u>5</u>		CL	FILL-TOPSOIL: Sandy CLAY - low to plasticity, dark brown, fine to medium with some asbestos containing mate CLAY - medium to high plasticity, bro grey-brown. Brown and orange-brown.	o medium o grained sand, rial/ wm and	M ~ Wp M < Wp	Н	HP	>600	FILL - TOPSOIL
og NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ ≪DrawingFile≫ 04/03/2022 08-11 10.01.00.01 Datgel Lab and in Situ Tool	EGEND later (Da → Wa Irata Ch	ter Level ater Level ater Inflow ater Outflow	hown)	1.0 1.0 1.0 1.5 1.5 - - - - - - - - - - - - -	mples a 50mm Bulk s Envirc (Glass Acid S (Plasti Bulk S	nd Tes Diame ample f nmenta jar, see ulfate § c bag, a ample	ts ter tube sample for CBR testing al sample taled and chilled on site) Soil Sample air expelled, chilled)	Consiste VS V S S F F St S VSt V H P Fb F	ncy /ery Soft oft fery Stiff fery Stiff fard riable		U <2 29 50 100 20 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit
QT LIB 1.1.GL	Gradational or Field Tests transitional strata PID Photoionisation detector reading (ppm) Definitive or distict DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)								L ME D VD	Lo D M D V	oose lediun ense ery D	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP29 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

PAGE:

DATE:

	EQUIPMENT TYPE:2.7 TONNE EXCAVATORTEST PIT LENGTH:2.0 mWIDTH:0.5 m						VATOR	SURFACE RL	:					
ŀ		Dril	ling and San	npling	2.0 11			Material description and profi	e information			Fiel	d Test	
-	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: So characteristics,colour,m	il type, plasticity/particle nor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E				CL	TOPSOIL: Silty CLAY - low	o medium plasticity,	Å ×				TOPSOIL
		ountered	0.10m 0.20m E 0.30m		-			Sandy CLAY - low to mediu grained sand.	n plasticity, brown, fine	Ξ	н	HP	550	RESIDUAL SOIL
	Е	Not End			0. <u>5</u>		СН	CLAY - medium to high plas brown.	ticity, drown to dark	M > Wp	VSt	HP HP	300 220	
-								0.70m Hole Terminated at 0.70 m						
FPT NEW22P-0012 LOGS GPJ < <drawingfite>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and In Stu Tool</drawingfite>								Hole Terminated at 0.70 m						
og NON-CORED BOREHOLE - T	LEG Wat	END: er (Dat Wat Wat Wat	ter Level te and time sl ter Inflow ter Outflow anges	hown)	I Notes, Sa U ₅₀ CBR E ASS B	mples a 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S	nd Tes Diame ample f onmenta s jar, se Sulfate S ic bag, s Sample	t ts ter tube sample for CBR testing al sample aled and chilled on site) Soil Sample air expelled, chilled)	Consist VS F St VSt H Fb	ency Very Soft Soft Firm Stiff Very Stiff Hard Friable	t f	U <2 50 10 20 20 20 20	L CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
QT LIB 1.1.GLB L		Gradational or Gradational strata Definitive or distict strata change				Photo Dynar Hand	ionisatio nic pen Penetro	on detector reading (ppm) etrometer test (test depth interval show pmeter test (UCS kPa)	vn)	V L D VE	V Li D V D V C	ery Lo oose lediun ense ery D	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

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	EQUIPMENT TYPE:2.7TEST PIT LENGTH:2.0						EXCA	VATOR			ACE RL: M·					
┢		Dril	ing and Sam	nplina	2.0 m			Material d	lescription and profile info	rmation				Fiel	d Test	
	MEIHOU	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL char	DESCRIPTION: Soil type acteristics,colour,minor c	e, plasticity, omponents	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			Е				SC	TOPSO fines of	IL: Clayey SAND - fine gra	ained, dark	k brown,	м				TOPSOIL
ı	ш	Encountered	0.10m 0.20m E 0.30m		-			0.10m Into or Sandy C Sandy C to mediu	CLAY - medium to high pla um grained sand.		 own, fine	> Wp	St	HP	200	RESIDUAL SÕIL — — — —
		Not			- 0. <u>5</u>			0.60m	b orange-brown.		- <u> </u>	Σ	VSt	HP	320 500	EXTREMELY WEATHERED
					-	· · · · · · · · · · · · · · · · · · ·	SC	0.70m grained, grained, sandsto Hole Tel	own into Clayey SAND / orange-brown to brown, plasticity, with some high ne.	Sandy CLA fines of low	AY - fine v to red	D	н			ROCK
DLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and in Situ Tool</drawingfile>	LEGB	END:				- - - - - - - - - - - - - - - - - - -	nd Tes	1010 T.			Consiste				CS (kP#) Moisture Condition
og NON-CORED BOREHO	LEGEND: U ₅₀ <u>Water</u> U ₅₀			U₅0 CBR E ASS B	Somm Bulk s Enviro (Glass Acid s (Plast Bulk s	ample f ample f onmenta s jar, se Sulfate S ic bag, a Sample	ter tube sample for CBR testing al sample aled and chilled o Soil Sample air expelled, chillo	on site) ed)		VS V S S F F St S VSt V H H Fb F	Yery Soft Soft Tirm Stiff Yery Stiff Iard Friable		<2 25 50 10 20 >2	25 5 - 50 0 - 100 00 - 200 00 - 400 400	D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit	
QT LIB 1.1.GLB L	Strata Changes B Gradational or Field Gradational strata PI Definitive or distict DCF strata change HI				PID PID DCP(x-y) HP	r <u>s</u> Photo Dynar Hand	ionisatio nic pen Penetro	on detector readi etrometer test (te ometer test (UCS	ng (ppm) est depth interval shown) 5 kPa)		<u>Density</u>	V L ME D VE	V La D M D D V	ery Lo bose lediun ense ery De	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

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	EQUIPMENT TYPE:2.7TEST PIT LENGTH:2.0				2.7 TC	NNE I	EXCA	VATOR		SUR	FACE RL:					
╞	TES	ST P		-1:	2.0 m	W	IDTH:	0.5 m		DAT	UM:				<u></u>	
		Dril	ling and San	npling	1		_	Material o	description and p	profile information			-	Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL cha	. DESCRIPTION racteristics,color	l: Soil type, plastic ır,minor componer	ity/particle nts	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	Ш	Not Encountered	E 0.20m E 0.30m		- - - 0.5_		CL	0.05m TOPSC affected CLAY - fine gra	IL: Silty CLAY - 	low plasticity, brow y, brown to pale b ad gravel. /n. /m.	/n, root / rown, trace	M > W _P M < W _P	Н	HP	>600	TOPSOIL RESIDUAL SOIL
GLB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 0403/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>	LEG Watu	END: er Wa (Da Wa ta Ch tr	ter Level te and time sh ter Inflow ter Outflow anges iradational or ansitional stra	nown)		mples a 50mm Bulk s Envirc (Glass Acid S (Plasti Sulk s Envirc	nd Tes Diame ample 1 Juifate S c bag, J ample	ts ter tube sample or CBR testing al sample aled and chilled Soil Sample air expelled, chill	on site) ed)		Consiste VS VS S S F F St S VSt V H H Fb F Density	ncy /ery Soft Stiff /ery Stiff /ery Stiff /ard /riable V L		U: <22 50 10 20 ery Lo coose	CS (kPa 25 5 - 50 - 100 00 - 200 00 - 400 400	a) Moisture Condition D Dry M Moist W Vet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35%
QT LIB 1.1.G	Image: Strata change PID Photoionisation detector reading (ppm) PID Photoionisation detector reading (ppm) Definitive or distict strata change DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa)					shown)		– ME D VE	D M D D	lediun ense ery D	n Dense ense	Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%				



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job no: Logged by:

TE	ST P	IT LENGTH	с: Н:	2.7 TC 2.0 m	DTH:	0.5 m DATU	JM:						
	Dril	lling and San	npling				Material description and profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity characteristics,colour,minor component	y/particle ts	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	ountered	E 0.20m		-		CI	FILL: Sandy Gravelly CLAY - medium plast brown, fine to medium grained sand, fine to grained, sub-angular to angular gravel, with steel, concrete, bricks, plastic, asbestos co material.	icity, dark medium some ntaining	M < w _p				FILL
ш	Not Enc	0.40m E 0.50m		- 0. <u>5</u> -		CI	Sandy CLAY - medium plasticity, brown and orange-brown, fine grained sand. Increasing sand content.	<u> </u>	M > w _p			-	RESIDUAL SOIL
GLB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfite>> 04003/2022 08:11 10.01.00.01 Datgel Lab and in Situ Tool</drawingfite>	BEND: BET UP (Da (Da (Da (Da (Da (Da (Da (Da (Da (Da	ter Level ter and time st ter Inflow ter Outflow anges Gradational or ansitional stra	hown)		mples ar 50mm Bulk s Enviro (Glass Acid S (Plasti Bulk S S Photoi	nd Tesi Diame ample f nmenta jar, se ulfate S c bag, a ample onisatic	Hole Terminated at 0.75 m Hole Terminated at 0.75 m Its ter tube sample ter tube sample al sample aled and chilled on site) Soil Sample air expelled, chilled) on detector reading (ppm)	ConsisteVSVSSFFStSVStVHFFbFDensity	ncy /ery Soft Stiff /ery Stiff /ard /riable V L		U <2 5 5 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400 xose	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit Density Index <15%
QT LIB 1.	— D si	efinitive or dis trata change	Penetro	meter test (UCS kPa)		D VD	, M D V	eaiun ense ery Di	ense	Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%			



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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EG TE	QUIPMENT TYPE: 2.7 TONNE EXCAVATOR EST PIT LENGTH: 2.0 m WIDTH: 0.5 m							SURFACE RL: DATUM:					
	Dri	lling and Sam	npling				Material description and profile infor	mation			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type characteristics,colour,minor cc	plasticity/particle mponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	pa	E <u>0.10m</u> ,		-		CL	FILL: Sandy CLAY - low to medium fine grained sand, trace fine graine gravel, root affected in top 0.1m.	n plasticity, brown, d, sub-rounded	M < W				FILL
ш	Not Encounter	E 0.30m		- - 0. <u>5</u>		сн	0.50m Gravelly CLAY - medium to high plasticity, h Gravelly CLAY - medium to high p some red-brown, fine grained, sub sub-rounded gravel.	asticity, brown with -angular to	M~ ₩	н	HP	>600	RESIDUAL SOIL
og NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ ≪DrawingFile>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and In Silu Tool	GEND: ter (Da 4 Wa ata Ch	ter Level ter and time sh ter Inflow ter Outflow anges	nown)		mples and 50mm Bulk s Enviro (Glass Acid S (Plasti Bulk S	nd Tesi Diame ample f nmenta jar, sea ulfate S c bag, a ample	Hole Terminated at 0.65 m Hole Terminated at 0.65 m	Consiste VS S F St VSt Fb	PINCY Very Soft Soft Firm Stiff Very Stiff Hard Friable		Uu <2 25 50 100 20 22	CS (kPa) 25 5 - 50 0 - 100 00 - 200 00 - 400 400	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit
QT LIB 1.1.GLB	 Gradational or transitional strata Definitive or distict strata change Field Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown) HP Hand Penetrometer test (UCS kPa) 								L ME D VE	La D M D D V	ense ery De	n Dense ense	Density Index 35 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR LOGGED BY:

	EQ	EQUIPMENT TYPE: 2.7 TONNE EXCAVATOR TEST PIT LENGTH: 2.0 m WIDTH: 0				VATOR		SURF	ACE RL:							
	TES	ST P	T LENGT	H:	2.0 m	W	IDTH:	0.5 m		DATU	IM:					
		Drill	ing and San	npling				Material o	lescription and p	ofile information				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL chai	DESCRIPTION: acteristics,colour	Soil type, plasticity ,minor component	γ/particle is	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	ш	Not Encountered	E 0.20m E 0.30m				СН	CLAY - grained 0.60m Hole Te	medium to high p sand, root affecto minated at 0.60	lasticity, brown, tra ed to 0.03m. m	ace fine	M > Wp	VSt	HP	300 220	RESIDUAL SOIL
Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfile>> 04003/2022 09:11 10.01.00.01 Datgel Lab and in Situ Tool</drawingfile>	LEG Watu	END: er Uat Uat Wat ta Ch:	er Level te and time si er Inflow er Outflow anges	hown)		mples a 50mm Bulk s Enviro (Glass Acid S (Plasti Bulk S	nd Tes Diame ample f iulfate S c bag, a ample	ts ter tube sample for CBR testing al sample aled and chilled of Soil Sample air expelled, chill	on site) ed)		Consister VS V S S F F St S VSt V H H Foorier	incy /ery Soft Soft /ery Stiff /ery Stiff /ard -riable			CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400) Moisture Condition D Dry M Moist W Wet Wp. Plastic Limit WL Liquid Limit
QT LIB 1.1.GLB		Gradational or masitional strata Definitive or distict strata change Strata Change Build Tests PID Photoionisation detector DCP(x-y) Dynamic penetrometer test					on detector readi etrometer test (te ometer test (UCS	ng (ppm) est depth interval s kPa)	hown)	Donaity	L ME D VD	La D N D D V	oose lediun ense ery D	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%	



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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E	QUIPI	MENT TYP	E: 4·	2.7 TC	NNE W	EXCA IDTH·	VATOR SU	RFACE RL:					
<u> </u>	Dri	lling and San	npling	2.0 m			Material description and profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plast characteristics,colour,minor compon	city/particle ents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		Е				CL	TOPSOIL: Silty CLAY - low to medium p	asticity,					TOPSOIL
	ered	0.10m 0.20m		-		 CL	CLAY / Sitty CLAY - low to medium plast to grey-brown, with some fine grained sa	city, brown nd.	M < W				SLOPE WASH
ш	Not Encounte	E 0.30m		- 0.5_		сн	CLAY - medium to high plasticity, brown dark brown, trace fine grained sand and grained, sub-rounded gravel.	with some some fine	M > WP	н	HP HP HP	>600 >600 >600	RESIDUAL SOIL
						CI	brown, fine grained sand, trace fine grain sub-angular to sub-rounded gravel.	-brown to ied,	× ⊻		HP	>600	
D BOREHOLE - TEST PIT NEWZZP-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:11 10.01 00 01 Datget Lab and In Situ Tool</drawingfile>	GEND ter Waa	ter Level			mples a 50mr Bulk s Envirc	nd Tesi Diame ample f	Hole Terminated at 0.70 m	Consiste VS V S S F F				CS (kPa 25 5 - 50 0 - 100) <u>Moisture Condition</u> D Dry M Moist W Wet
	Water Level (Date and time shown) CBR E Bulk sample Environmer (Glass jar, s Water Inflow ASS Acid Sulfate (Plastic bag Water Outflow B Bulk Sample B Bulk Sample B						aled and chilled on site) Soil Sample air expelled, chilled)	St St VSt V H H Fb F	Stiff /ery Stiff Hard Friable		1(2(>/	00 - 200 00 - 400 400	W _p Plastic Limit W _L Liquid Limit
QT LIB 1.1.GLB I	Strata Changes B Bulk Sample Gradational or transitional strata Field Tests Definitive or distict strata change PID Photoionisation detector reading (ppm) Definitive or distict strata change DCP(x-y) Dynamic penetrometer test (test depth interval s HP							Density	V L ME D VD	V La D M D D V	ery Lo oose lediun ense ery D	n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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				E: 4·	2.7 TC	NNE	EXCA	VATOR		SURF	ACE RL:					
┢		Dril		nlina	2.0 11			Material d	escription and pr					Fiel	d Test	
,	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL	DESCRIPTION: acteristics,colour	Soil type, plasticity, minor component	y/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		ġ	E <u>0.10m</u> , 0.20m		-		CL CL	TOPSOI 0.10m brown, fil sub-roun Sandy G 0.20m brown fil	L: Sandy CLAY - ne grained sand, ided gravel, root ravelly CLAY - lo	low to medium pla trace fine grained affected. w to medium plas	asticity, l, / ticity,	M < W				TOPSOIL SLOPE WASH
	ш	Not Encountere	E 0.30m		- - 0. <u>5</u> -		СН	Sandy C	LAY / CLAY - me d orange-brown	fille grained, sub-	/ icity, d.	M > Wp	н	HP	300 350	RESIDUAL SOIL
3LB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>	LEG Watu Stra	END: Pr Wata (Da Wata Th The The The The The The The The The	ter Level te and time sl ter Inflow ter Outflow anges radational or raditional or	nown)		mples a 50mm 50mm 60mm 60mm 60mm 60mm 60mm 60mm	Ind Test In Diame sample fo onmenta s jar, se Sulfate S tic bag, a Sample	Hole Ter Hole Ter	minated at 0.70 r m site) ed)	m	Consiste VS V S S F F St S VSt V H H Fb F Density	ncy Very Soft Soft irm Stiff 'ery Stiff irable V L		U <25 56 10 20 50 6 10 20 50 50 10 20 50 50 10 20 50 50 10 20 50 50 10 10 20 50 50 10 10 10 10 10 10 10 10 10 10 10 10 10	CS (kPz 25 5-50) - 100 00 - 200 00 - 400 100	a) Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit Density Index <15% Density Index 15 - 35%
QT LIB 1.1.	transitional strata Definitive or distict strata change HP Hand Penetrometer test (UCS kPa)							hown)		ME D VE	N C D V (V	lediun)ense ′ery <u>D</u>	n Dense ense	 Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100% 		



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

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LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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	EQUIPMENT TYPE:			2.7 TONNE EXCAVATOR			VATOR	SURFACE RL:						
						Material description and profile info	LATOW.			Field	d Test			
-	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type characteristics,colour,minor c	», plasticity/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			F			3 3	CL	TOPSOIL: Silty CLAY - low to me	dium plasticity,	Å.				TOPSOIL
			0.10m 0.20m E		-		 CI	0.10m brown, root affected. Sandy CLAY - medium plasticity,	 brown, fine grained.	- <u>\$</u>	VSt	HP	210	SLOPE WASH
01.00.01 Datgel Lab and In Situ Tool	ш	Not Encountered	<u>u.sum</u> ,		- 0.5 - - - 1.0_ -		CI	Sandy CLAY - medium plasticity, t orange-brown, fine grained sand. Medium to high plasticity, brown a	brown, trace	- ~ W ~ ~ W		HP	600 550	RESIDUAL SOIL
								with some highly weathered sand	stone.		н	HP	600	
					- - 1. <u>5</u>			Extremely Weathered Sandstone breaks down into Sandy CLAY - r brown to orange-brown, fine grair highly weathered SANDSTONE - orange-brown, estimated low to n	with soil properties: nedium plasticity, ied sand, with some fine grained, nedium strength.	D - M			2000	EXTREMELY TO HIGHLY WEATHERED ROCK
09:11 10.								Estimated medium strength, fine orange-brown.	grained, brown and					HIGHLY WEATHERED ROCK
- TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 (</drawingfile>					2.0			Hole Terminated at 1.70 m Refusal						
LIB 1.1.GLB Log NON-CORED BOREHOLE	HegenD: Water Y Water Level (Date and time shown) → Water Inflow → Water Outflow Strata Changes → Gradational or transitional strata → Definitive or distict strata change				Notes, Sa U ₅₀ CBR E ASS B Field Tes PID DCP(x-y) HP	mples a 50mm Bulk s: Enviro (Glass Acid S (Plasti Bulk S ts Photoi Dynan Hand I	nd Test Diame ample f nmenta jar, se ulfate S c bag, a ample onisation penetro	s ter tube sample or CBR testing il sample aled and chilled on site) soil Sample air expelled, chilled) on detector reading (ppm) etrometer test (test depth interval shown) meter test (UCS kPa)	Consiste VS V S S F F St S VSt V H H Fb f Density	Consistency VS Very Soft S Soft F Firm St Stiff VSt Very Stiff H Hard Fb Friable Density V Verup Mark L LC MD MD D D			CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 00 - 400 000 00se	Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15%
ы		01								VD	Ve	ery De	ense	Density Index 85 - 100%


PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job no: Logged by:

E	QUIPI EST F	MENT TYP	E: H:	2.7 TC 2.0 m	DNNE I W	EXCA I DTH :	VATOR 0.5 m	SURF	ACE RL: M:					
	Dri	lling and Sar	npling				Material description and	profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,colo	N: Soil type, plasticity ur,minor component	//particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш	Not Encountered	E 0.10m 0.60m E 0.70m 0.80m		- - - 0. <u>5</u> -		CH CL	FILL: CLAY - medium tred-brown and orange- 0.60m TOPSOIL: Silty CLAY - trace rootlets.	o high plasticity, brov brown. low plasticity, grey-b	vn, trace	M < Wp				FILL TOPSOIL
I In Situ Tool		E 0.90m		- 1. <u>0</u> -		СН	Sandy CLAY - medium some grey and orange-	to high plasticity, bro brown, fine grained :	own with sand.	M > w _P	Н	HP	>600	RESIDUAL SOIL
39 NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfile>> 04/03/2022 09:11 10.01 00:01 Datgel Lab and 19 ▼ ・ ▲ ★ ★ ★ 日</drawingfile>	EGEND fater (Da Wa ⊲ Wa Arrata Cl	tter Level ater Inflow ater Outflow ater Outflow	hown)		mples a 50mm Bulk s Envirc (Glass Acid S (Plast Bulk S	nd Test Diame ample f nmenta i jar, se c bag, a ample	Hole Terminated at 1.3 S ter tube sample or CBR testing I sample aled and chilled on site) ioil Sample iir expelled, chilled)	U m	Consister VS V4 S S4 F Fi St S1 VSt V4 H H Fb Fi	ncy ery Soft oft mm ard ard		U <: 22 56 10 20 20	CS (kPa 25 5 - 50) - 100 00 - 2000 0400	 Moisture Condition D Dry M Moist W Wet W_p Plastic Limit W_L Liquid Limit
	Strata Changes B — Gradational or Fiel transitional strata P Definitive or distict DCI strata change H			Field Test PID DCP(x-y) HP	<u>ts</u> Photo Dynar Hand	ionisatio nic pene Penetro	n detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	<u>Density</u>	V L D VD		ery Lo bose lediur ense <u>ery</u> D	n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



METHOD

ENGINEERING LOG - TEST PIT

PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR LOGGED BY:

PAGE:

DATE:

MD

D

VD

Medium Dense

Dense

Very Dense

Density Index 35 - 65%

Density Index 65 - 85%

Density Index 85 - 100%

JOB NO:

BS 4/2/22

EQI TES	JIPN ST PI	MENT TYP	E: H:	2.7 TC 2 0 m	NNE I W	EXCA	VATOR 0.5 m			ACE RL: M·					
	Drill	ling and Sar	npling				Material des	scription and profile info	ormation				Field	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL D charao	DESCRIPTION: Soil typ cteristics,colour,minor c	e, plasticity/ components	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш	Not Encountered	E 0.20m E 0.30m		- - - 0. <u>5</u>		CL CH	0.10m CLAY - me grey-brown	: Sandy CLAY - low to r grey-brown, fine grained edium to high plasticity n, trace fine grained sa nge-brown.	medium pla d sand.	sticity, 	M > W _P M < W _P	St	HP	160	TOPSOIL
				- - 1.0 - - - - - - - - - - - - - - - - - - -				Infated at 0.60 m							
LEG Wate	LEGEND: Water Water Level (Date and time shown) Water Inflow Water Outflow Strata Changes Gradational or transitional strata		hown)	Notes, Sa U ₅₀ CBR E ASS B Field Test PID	mples a 50mm Bulk s Enviro (Glass Acid S (Plasti Bulk S <u>s</u> Photo	nd Test Diame ample f onmenta jar, se jar, se	ts ter tube sample or CBR testing al sample aled and chilled on Soil Sample air expelled, chilled on detector reading	n site) 1) g (ppm)		ConsisteVSVSSFFStSVStVHFFbFDensity	ncy /ery Soft Soft firm Stiff /ery Stiff lard riable V L	V	U <2 25 50 10 20 >4 ery Lo pose	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 200 00 - 400 00 00 00 00 00	Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15%

QT LIB 1.1.GLB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ <<DrawingFile>> 04/03/2022 09:11 10:01 00:01 Datgel Lab and In Situ Tool

DCP(x-y)

ΗP

Definitive or distict

strata change

Dynamic penetrometer test (test depth interval shown)

Hand Penetrometer test (UCS kPa)



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

PAGE:

DATE:

BS 4/2/22

	EQ	UIPN	IENT TYP	E:	2.7 TC	NNE	EXCA	VATOR		SURF	ACE RL:					
	TES	ST P	IT LENGT	H:	2.0 m	w	IDTH:	0.5 m		DATU	M:			1		
		Dril	ling and Sar	npling	-			Material o	description and pro	ofile information				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL cha	DESCRIPTION: acteristics,colour,	Soil type, plasticity minor components	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			F				CL	TOPSO	IL: Sandy Gravelly	/ CLAY - low to me	edium					TOPSOIL
		_	0.10m		-			<u>o.10m</u> plasticity grained sub-ang	sub-rounded to r ular gravel, root a	punded, with some	e / 	× ∧ ×				SLOPE WASH
		untered	E 0.30m		-		CL	Sandy (brown, f _{0.30m} sub-rou	Gravelly CLAY - lo ine grained sand, nded to rounded,	w to medium plast fine to medium gra with some sub-ang	icity, ained, gular	2				
	ш	ot Enco	0.3011					\gravel. CLAY - orange-	medium to high pl	asticity, brown, tra	/			НР	380	RESIDUAL SOIL
		ž			0.5			orango				Å.	Vet		400	
							СП					Σ	VSL		400	
					-			0.70m								
								Hole Te	rminated at 0.70 r	n						
					-											
					-											
					1. <u>0</u>											
					-											
L Tool					-											
nd In Situ					-											
el Lab ai					-											
01 Datg					1. <u>5</u>											
0.01.00					-											
09:11 1					_											
/03/2022					-											
ile>> 04					-											
DrawingF					2.0											
GPJ <<[_											
5 LOGS.					_											
22P-001					_											
T NEW2																
TEST PI																
- JOLE -	LEG	END:			Notes, Sa	mples a 50mm	nd Test Diame	t <u>s</u> ter tube sample			Consister	ncy ery Soff			CS (kPa 25	Moisture Condition D Drv
BOREH		Wai	ter Level		CBR	Bulk s	ample f	or CBR testing			S S	oft		25	5 - 50	M Moist
ORED	_	(Date and time shown) → Water Inflow								St S	tiff		50 10) - 100)0 - 200	W _p Plastic Limit	
ION-CC		Water Inflow ASS Acid Sulfate Soil Sample Water Outflow (Plastic bag, air expelled, chilled)								VSt V H H	ery Stiff ard		20 >2)0 - 400 100	W _L Liquid Limit	
Log N	<u>Stra</u>	rata Changes B Bulk Sample								Fb Fi	riable v	1/	ervic	056	Density Index <15%	
.GLB		Gradational or transitional strata								,	Density	Ľ	Le	oose		Density Index 15 - 35%
- LIB 1.1		Definitive or distict strata change DCP(x-y) Dynamic penetrometer test (test depth interval shown)							iown)		ME D	ע M D	iediun ense	n Dense	Density Index 35 - 65% Density Index 65 - 85%	
Ø												VD	v V	ery De	ense	Density index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

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BS 4/2/22

	EQ			E:	2.7 TC		EXCA	VATOR		SURF	ACE RL:					
┢	IE:			1:	2.0 m	VV	IDTH:	0.5 m		DAIU	M:			F :-1	d T 4	
		Dril	ing and Sam	npling			7	Material	description and p	rofile information				Fiel	dlest	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL cha	_ DESCRIPTION racteristics,colou	: Soil type, plasticity r,minor component	//particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			Е				CL	TOPSC	IL: Sandy Grave	Ily CLAY - low to m	edium nedium					TOPSOIL
		ountered	0.10m 0.20m E 0.30m		-		CL	0.10m provide grained sub-ang Sandy (brown, 0.30m sub-rou	, sub-rounded to gular gravel, root Gravelly CLAY - I fine grained sand inded to rounded	affected ow to medium plas I, fine to medium gr , with some sub-an	e / ticity, rained, gular	M < W				SLOPE WASH
	ш	Not Enc			0.5_		сн	Gravel. Gravelly fine to r gravel.	y CLAY - medium nedium grained,	n to high plasticity, b rounded to sub-rou	prown, nded	1 > W	VSt	HP	270	RESIDUAL SOIL
					-		СН	0.70m Hole Te	rown and orange ded gravel.	-brown, trace sub-r	ounded	2		HP	300	
0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datget Lab and In Situ Tool</drawingfile>					- - 1.0_ - - - - - - - - - - - - - - - - - - -			0.70m Hole Te	erminated at 0.70	m						
- TEST PIT NEW22	. 50				-						0					
39 NON-CORED BOREHOLE	LEGEND: Notes, S Water U₅₀ ✓ Water Level (Date and time shown) ► Water Inflow ▲ Water Outflow Strata Changes B				Notes, Sa U ₅₀ CBR E ASS	mples a 50mm Bulk s Envirc (Glass Acid S (Plast Bulk S	no les Diame ample f onmenta s jar, se Sulfate S c bag, a Sample	ter tube sample or CBR testing al sample aled and chilled Soil Sample air expelled, chil	on site) led)		VS V S S F F St S VSt V H H Fb F	ri cy oft irm tiff ery Stiff ard riable		U 25 50 10 20 >2	<u>us (kPa</u> 25 5 - 50 0 - 100 00 - 200 00 - 400 400	Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit
QT LIB 1.1.GLB Lo	Strata Changes E Gradational or transitional strata E Definitive or distict strata change E				Field Test PID DCP(x-y) HP	<u>s</u> Photo Dynar Hand	ionisatio nic peno Penetro	on detector read etrometer test (t ometer test (UCS	ing (ppm) est depth interval s 5 kPa)	shown)	<u>Density</u>	V L ME D VD	V La D D V V	ery Lo bose lediun ense ery Do	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP42 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

PAGE:

DATE:

	EQUIPMENT TYPE: TEST PIT LENGTH:					NNE W	EXCA	VATOR 0.5 m		SURF	ACE RL:					
		Dril	ling and San	npling				Material de	escription and pr	ofile information				Fiel	d Test	
	MEIHOU	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL I chara	DESCRIPTION: acteristics,colour	Soil type, plasticit minor component,	y/particle ts	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		а	E <u>0.10m</u> ,		-		CL	TOPSOIL medium p medium o with some	: Gravelly CLA) plasticity, brown grained, sub-rou e fine to medium	/ / Clayey GRAVE to dark brown, fine nded to rounded o grained sand.	L - low to e to gravel,	M < w _p				TOPSOIL
ı	ш	Encountered	E 0.30m		-		CI	Gravelly brown, fir rounded	CLAY - medium ne to medium gra gravel, trace fine	plasticity, brown to ained, sub-rounde grained sand.	 o dark ed to			HP	>600	RESIDUAL SOIL
		Not			- 0. <u>5</u> -		сн	0.40m	nedium to high p rown, trace fine sub-rounded gra	lasticity, brown to grained sand, trac vel.	— — — — ·	M > W _P	н	HP	>600	
B Log NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00 01 Datget Lab and In Situ Tool</drawingfile>	_EGBW Watee 	END:	ter Level ter and time sh ter Inflow ter Outflow anges radational or	nown)		mples a 50mn Bulk s Envir (Glas Acid s (Plast Bulk s	nd Test Diame ample f sjar, se Sulfate S Sic bag, a Sample	Hole Terr Hole Terr <u>Is</u> ter tube sample or CBR testing al sample aled and chilled on Soil Sample aled and chilled on soil Sample	n site)	m	Consiste VS V S S F F St S VSt V H H Fb F Density	ncy /ery Soft Soft irm Stiff /ery Stiff irable V		U <: 24 56 10 20 20 20 20 20 20 20 20 20 20 20 20 20	CS (kPa 25 5 - 50) - 100 00 - 200 100 - 400	A) Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit Density Index <15%
QT LIB 1.1.GL		tra – D st	ansitional stra efinitive or dis rata change	ita stict	PID DCP(x-y) HP	Pnoto Dynai Hand	nic pene Penetro	etrometer test (tes prometer test (tes proter test (UCS I	y (ppm) st depth interval s kPa)	hown)		L ME D VD	D N D D V	lediur Iediur Iense Iery D	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

TP43 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

PAGE:

DATE:

	EQ	UIPN ST PI	IENT TYPI T LENGTI	E: H:	2.7 TC 2.0 m	DNNE E W	EXCA I DTH :	VATOR 0.5 m	SURFACE RL	:				
		Drill	ing and San	npling	2.0			Material description and profile	information			Field	d Test	
-	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil characteristics,colour,mir	type, plasticity/particle or components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
-			E 0.10m				sc	TOPSOIL: Clayey SAND - fin dark brown, fines of low plast	e grained, brown to city, root affected.	D M				TOPSOIL
			<u>0.20m</u> E <u>0.30m</u> ,		-		sc	0.20m Clayey Gravelly SAND - fine brown, fine to medium graine of low plasticity.	grained, brown to pale d, rounded gravel, fines	D-M				RESIDUAL SOIL
		ncountered			- 0. <u>5</u>			CLAY - medium to high plast brown, with some orange-bro sand.	city, grey-brown to wn, traces fine grained			ΗP	280	
		Not E			-		СН	With some highly to moderate SANDSTONE - fine grained.	∋ly weathered orange-brown.	M > w	VSt	ΗP	320	
					- 1. <u>0</u>			0.85m SANDSTONE - fine grained, some brown and pale brown, strength.	orange-brown, with estimated medium	-				HIGHLY TO MODERATELY WEATHERED ROCK
								1.10m Hole Terminated at 1.10 m						
- TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>		FND			- - - - - - - - - - - - - - - - - - -		nd Tes	Very slow progress	Consist	ency) Moisture Condition
NON-CORED BOREHOL	LEGEND: Notes, Samples and lest Water Uso 50mm Diamet ✓ Water Level (Date and time shown) CBR Bulk sample fill ► Water Inflow ASS Acid Sulfate S ✓ Water Outflow (Plastic bag, as ► Bulk sample Bulk sample fill				50mm Bulk s Enviro (Glass Acid S (Plasti Bulk S	Diame ample f nmenta jar, se sulfate s c bag, s ample		VS S F St VSt H Fb	Very Soft Soft Firm Stiff Very Stiff Hard Friable		<2 25 50 10 20 >4	25 5 - 50 0 - 100 00 - 200 00 - 400 100	$\begin{array}{ccc} D & Dry \\ M & Moist \\ W & Wet \\ W_p, & Plastic Limit \\ W_L & Liquid Limit \end{array}$	
QT LIB 1.1.GLB Log	Strata Changes B Bulk Sample Gradational or transitional strata Field Tests Definitive or distict strata change PID Photoionisation DCP(x-y) Dynamic penetr HP Hand Penetrom					Photoi Dynan Hand	ionisationisationisationisationisationisationen nic penetro	on detector reading (ppm) etrometer test (test depth interval show ometer test (UCS kPa)	n)	V L MD D VD	Vi La D D Vi	ery Lo oose edium ense ery De	n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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TP44 1 OF 1

NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job no: Logged by:

EC TE	QUIPN ST P	/IENT TYPI	E: - :	2.7 TC 2.0 m	NNE I W	EXCA I DTH :	VATOR 0.5 m	SURFACE RL: DATUM:					
	Dri	ling and San	npling				Material description and profile inform	ation			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, p characteristics,colour,minor corr	lasticity/particle ponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E <u>0.10m</u> ,		-		CL	TOPSOIL: Sandy CLAY - low to me dark brown, fine grained sand, trace sub-rounded to rounded gravel. CLAY - medium to high plasticity, da	lium plasticity, fine grained, / rk brown, trace					TOPSOIL RESIDUAL SOIL
	Icountered	E 0.30m		-		СН	tine grained sand. Brown and orange-brown, trace poo	kets of	M > W _P	VSt	HP	220	
ш	Not Er			0.5_			sandstone.			н	HP	>600 >600	
				-			SANDSTONE - fine grained, pale br estimated low strength.	own to white,					HIGHLY WEATHERED
				- 1.0_			Hole Terminated at 0.80 m						
u Tool				-									
atgel Lab and In Sit				-									
:11 10.01.00.01 D				1.5									
e>> 04/03/2022 09				-									
GPJ < <drawingfil< td=""><td></td><td></td><td></td><td>2.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></drawingfil<>				2.0									
:W22P-0012 LOGS.				-									
E - TEST PIT NE	GEND			Notes Sa	mples a	nd Tee	15	Consisto	ncv			CS (kP) Moisture Condition
	LEGEND: Notes, Samples and Tests Water U₅₀ 50mm Diameter tube ✓ Water Level (Date and time shown) CBR Bulk sample for CBR ✓ Water Inflow ASS Acid Sulfate Soil Sam (Plastic bag, air expell ✓ Water Outflow B Bulk Sample						ter tube sample for CBR testing al sample aled and chilled on site) Soil Sample air expelled, chilled)	VS V S S F F St S VSt V H F Fb F	/ery Soft Soft Firm Stiff /ery Stiff lard Friable		25 25 50 10 20 >2	25 5 - 50 0 - 100 00 - 200 00 - 400 400	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit
QT LIB 1.1.GLB Lo	G tr D s	iradational or ansitional stra lefinitive or dis trata change	ita stict	Field Test PID DCP(x-y) HP	<u>s</u> Photo Dynar Hand	ionisatio nic pen Penetro	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	<u>Density</u>	V L ME D VC		ery Lo bose lediun ense ery De	n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

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E	EQUIPMENT TYPE:2.7 TONNE EXCAVATORSTEST PIT LENGTH:2.0 mWIDTH:0.5 mD												
	Dri	lling and Sar	npling				Material description and profile information	on			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plas characteristics,colour,minor compo	ticity/particle nents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
	lot Encountered	E 0.10m 0.30m E		-		CL CL	TOPSOIL: Sandy CLAY - low to mediuu brown to dark brown, fine grained sand affected. Sandy CLAY - low to medium plasticity, grey-brown, fine grained sand.	n plasticity, , root / brown to a and sand with	$M \sim W_P M < W_P$		-		TOPSOIL SLOPE WASH
	z	0.40m		0.5_		СІ	0.60m	wn to pale n strength.	M > Wp	н	HP	>600	
BOREHOLE - TEST PIT NEW22P-0012 LOGS GPJ < <drawingfile>> 0403/2022 08:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>	EGEND ater Z Wa	: ter Level			mples a 50mm Bulk s	nd Tes Diame ample 1	Hole Terminated at 0.60 m	Consiste VS V S S	ncy fery Soft			CS (kPa 25 5 - 50) <u>Moisture Condition</u> D Dry M Moist W Wet
LB Log NON-CORED	(Da — Wa ◀ Wa <u>rata Ch</u>	ate and time s ater Inflow ater Outflow a anges Gradational or	hown)	ASS B <u>Field Test</u>	(Glass Acid S (Plasti Bulk S	s jar, se sulfate s c bag, s ample	aled and chilled on site) Soil Sample air expelled, chilled)	St S VSt V H H Fb F Density	Stiff /ery Stiff lard Friable V	Vi	1(2(>4	00 - 200 00 - 400 400	Wp Plastic Limit WL Liquid Limit Density Index <15%
at lib 1.1.G	Gradational or Transitional strata Definitive or distict strata change Gradational or The Tests PID Photoionisation detector reading (ppm) DCP(x-y) Dynamic penetrometer test (test depth interval shown HP Hand Penetrometer test (UCS kPa)								L ME D VD	D M D D V	lediun ense ery D	n Dense ense	Density Index 15 - 33% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

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DATE:

	EQ TES	QUIPMENT TYPE:2.7 TONNEIST PIT LENGTH:2.0 mW						VATOR 0.5 m	SU	RFACE RL: TUM:					
ł		Dril	ing and San	npling	-			Material descripti	ion and profile informatior	1			Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCI characterist	RIPTION: Soil type, plasti tics,colour,minor compon	city/particle ents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		ntered	E <u>0.10m</u>		-		CL	TOPSOIL: Sand fine grained sar	dy CLAY - low plasticity, ond, root affected.	lark brown,	M < W				TOPSOIL
	ш	Not Encou	0.30m E 0.40m		- 0.5			SANDSTONE - pale brown and strength, with so plasticity, brown	fine to medium grained, orange-brown, estimater ome Sandy CLAY - medii with some orange-brown	brown to d high um to high n.		-			HIGHLY WEATHERED ROCK - RESIDUAL SOIL
- TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 0403/2022 09:11 10.01.00.01 Datgei Lab and In Situ Tool</drawingfile>					0.5 0.5 - - - - - - - - - - - - -			0.50m SANDSTONE Orange-brown. Hole Terminate Refusal	fine grained, brown and d at 0.51 m						MODERATELY
-og NON-CORED BOREHOLE	LEG <u>Wate</u> ▼ <u>Stra</u>	LEGEND: Notes, Samples and Tests Water U₅₀ 50mm Diametr ✓ Water Level (Date and time shown) CBR Bulk sample for E Environmental ✓ Water Inflow ASS Acid Sulfate So (Plastic bag, ai ✓ Water Outflow B Bulk Sample ✓ Water Outflow Field Tests					nd Test n Diame ample f onmenta s jar, se Sulfate S ic bag, a Sample	<u>s</u> ter tube sample or CBR testing all sample aled and chilled on site) soil Sample air expelled, chilled)		Consiste VS V S S F F St S VSt V H F Fb F	rincy /ery Soft Soft Firm Stiff /ery Stiff Hard Friable		U <2 50 10 20 >4	<u>CS (kPa</u> 25 5 - 50 0 - 100 00 - 200 00 - 400 400	Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit
QT LIB 1.1.GLB L		G tra D st	radational or ansitional stra efinitive or dis rata change	ita stict	PID PID DCP(x-y) HP	Photo Dynar Hand	ionisatio nic pene Penetro	on detector reading (ppm etrometer test (test depth meter test (UCS kPa)	n) n interval shown)	<u>Density</u>	V L MC D VD	V La D M D D V	ery Lo bose lediun ense ery D	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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JOB NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

LOGGED BY:

E	QUIPN	MENT TYP	E:	2.7 TC	NNE	EXCA	VATOR		SURFAC	E RL:					
Т	EST P	IT LENGT	H:	2.0 m	W	IDTH:	0.5 m		DATUM:						
	Dri	lling and Sar	npling				Material descr	iption and profile inform	mation				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DES characte	SCRIPTION: Soil type, ristics,colour,minor co	plasticity/par mponents	rticle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		E .0.10m		-		CL	TOPSOIL: S fine grained	andy CLAY - low plast sand, root affected to (icity, dark bro).1m.	own,	M < W _P				TOPSOIL
	itered	0.30m		-	/•/•	GC	Clayey GRA 0.30m sub-rounded	VEL- fine to coarse gra to rounded, pale grey	ained, -brown, fines	s of	D				RESIDUAL SOIL
ш	Not Encour	E <u>0.40m</u>		- 0.5		СІ	Sandy CLAY orange-brow	/ - medium plasticity, b n, fine to medium grain	rown and ned.	/	M > W _P		HP	>600	
				-	 	sc	Clayey SANI orange-brow	D - fine to coarse grain n, fines of low to medi	ed, brown ar um plasticity.	nd .	D - M	Н	HP HP	>600 >600	
					/./	,	0.80m sandstone.	igniy to moderately we							
- IESI PII NEW22P-3012 LOGS.GFJ < <drawing-rie>> 040/3/2022 09:11 10.01 Judgel Lab and in Situ 1001</drawing-rie>				1.0_ - - - 1.5_ - - - - - - - - - - - - - - - - - - -											
	Water Vulses, Water Uso (Date and time shown) E Water Inflow ASS ≪ Water Outflow B				50mn Bulk s Envire (Glass Acid s (Plast Bulk s	n Diame sample f onmenta s jar, se Sulfate S ic bag, a Sample	ter tube sample for CBR testing al sample aled and chilled on sit Soil Sample air expelled, chilled)	ie)		VS Ve S So F Fir St Sti St Ve H Ha Fb Fri	ery Soft oft m iff ery Stiff ard iable		-<2 2 50 10 20 >2	25 5 - 50 0 - 100 00 - 200 00 - 400 400	D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
	Strata Changes Field Tests Gradational or transitional strata Field Tests Definitive or distict strata change DCP(x-y)						on detector reading (p etrometer test (test de meter test (UCS kPa	pm) epth interval shown))		ensity	V L MD D VD	Vi La D D Vi	ery Lo bose ediun ense ery D	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 65 - 85%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

TEST PIT NO:

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

Job No: Logged by:

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E	EQUIPMENT TYPE:2.7 TONNE EXCAVATORSTEST PIT LENGTH:2.0 mWIDTH:0.5 m							SURFACE RL	:				
-	Dri	lling and Sam	npling	2.0 m			Material description and profile inform	ation			Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, p characteristics,colour,minor con	plasticity/particle aponents	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		Е				CL	TOPSOIL: Sandy CLAY - low to me	dium plasticity,	× K				TOPSOIL
	untered	0.10m		-		GC	0.10m dark brown, fine grained sank, foor a Clayey GRAVEL - fine to coarse gra dark brown, fines of low plasticity, w grained sand. Pale brown to pale grey-brown.	ined, rounded, th some fine	D-M				RESIDUAL SOIL
ш	Not Encol	E 0.40m		- 0. <u>5</u> -		CI	Sandy CLAY - medium plasticity, br orange-brown, fine to medium grain some fine to medium grained, sub-r sub-angular and rounded gravel.	wn and ed sand, with punded to	M > W	Н	HP HP HP	>600 >600 >600	
1 Leg NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <drawingfile>> 04/03/2022 08:11 10.01.00.01 Datgel Lab and In Silu Tool</drawingfile>	GEND ater ⊆ Wa (Da = Wa a Wa arata Ch	ter Level ter Inflow ter Outflow tanges radational or	nown)		mples a mples a 50mm Bulk s Envirc (Glass Acid S (Plast Bulk S	nd Tes Diame ample f onmenta s jar, se Sic bag, a ample	ts ts ter tube sample for CBR testing al sample alaed and chilled on site) Soil Sample air expelled, chilled)	Consist VS S F St VSt H Fb Density	ency Very Soft Soft Firm Stiff Very Stiff Hard Friable V		U <2 50 10 20 >2	CS (kP2 25 5 - 50 0 - 100 00 - 200 00 - 400 400) Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit Density Index <15%
QT LIB 1.1.GLB	tr D	Fradational or ransitional stra Definitive or dis trata change	ita stict	PID DCP(x-y) HP	Photo Dynar Hand	ionisatio nic pen Penetro	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	Density	L ME D VD	D D D	ediun ense ery D	n Dense	Density Index 15 / 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

TP49 1 OF 1

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	EQUIPMENT TYPE: 2.7 TONNE EXCAVATOR							SURF	ACE RL:							
	TES	ST PI	T LENGTI	H:	2.0 m	W	IDTH:	0.5 m		DATU	M:					
		Drill	ing and San	npling			1	Material c	lescription and pr	ofile information		1		Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL chai	DESCRIPTION: racteristics,colour	Soil type, plasticity minor component	//particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
-			E				CL	TOPSO dark bro	IL: Sandy CLAY -	low to medium pla sand, root affected	asticity, I.					TOPSOIL
		Β	0.10m 0.20m E		-		GC	Clayey (dark bro grained	GRAVEL - fine to wn, fines of low p sand.	coarse grained, ro blasticity, with some	ounded, e fine	M < W				RESIDUAL SOIL7 SLOPE WASH
	ш	Not Encountered	<u>0.30m</u>		- 0. <u>5</u> - -		СН	0.30m Gravelly dark bro rounded	CLAY - medium wn, fine to coars I gravel.	to high plasticity, b e grained, sub-rou	prown to inded to	M > W _P	VSt H	HP HP HP	400 250 210 470	RESIDUAL SOIL
ľ								Hole Te	rminated at 0.90	m						
rEST PIT NEW22P-0012 LOGS GPJ < <drawingfile>> 04/03/2022 09:11 10.01.00.01 Datgel Lab and In Situ Tool</drawingfile>					1. <u>5</u> - - - - - - - - - - - - - - - - - - -											
LIB 1.1.GLB Log NON-CORED BOREHOLE	LEGEND: Water ✓ Water Level (Date and time shown) ► Water Inflow ✓ Water Outflow Strata Changes — Gradational or transitional strata Definitive or distict strata change			hown) ata stict	Notes, Sa U ₅₀ CBR E ASS B Field Tes PID DCP(x-y) HP	mples a 50mm Bulk s Envirc (Glass Acid S (Plasti Bulk S ts Photoi Dynar Hand	nd Tes Diame ample f onmenta s jar, se Sulfate S c bag, a c bag, a c bag, a conisation nic pen- Penetro	te tube sample for CBR testing al sample aled and chilled Soil Sample air expelled, chill on detector readi etrometer test (UCS	on site) ed) ng (ppm) est depth interval s i kPa)	hown)	Consister VS V S S F F St S VSt V H H Fb F Density	ncy /ery Soft Soft Stiff /ery Stiff Hard Eriable V L ME D	V L D D	U 25 50 10 20 20 20 20 20 20 20 20 20 20 20 20 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400 pose n Dense	Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85%
Б		31										VD	v v	ery D	ense	Density Index 85 -



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

TEST PIT NO:

TP50

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	EQUIPMENT TYPE:		2.7 TC	DNNE	EXCA	VATOR	SURFACE RL:									
	TE	ST P	IT LENGT	H:	2.0 m	w	IDTH:	0.5 m		DATU	M:					
		Dril	ling and Sar	npling				Material des	cription and profile info	mation				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DE charac	ESCRIPTION: Soil type teristics,colour,minor co	, plasticity pmponents	/particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
			E 0.20m 0.40m E 0.50m		- - - 0.5_ -			FILL: Sand plasticity, d sand, fine t gravel, rool bricks, con containing	y Gravelly CLAY - low ark grey-brown, fine to o coarse grained, roun t affected in top 0.1m, v crete, steel, plastic and material.	o medium coarse gra ded to ang vith some asbestos	ained gular asphalt,	νp				FILL
atgel Lab and In Situ Tool	Ш	ш <u>1.40m</u> CL CL								M < M						
DrawingFile>> 04/03/2022 09:11 10.01.00.01 Dat		►	E 1.60m 1.60m E 1.70m		1. <u>5</u> - - - 2.0		CI	1.50m Gravelly Cl red-brown, angular gra	AY - medium plasticity fine to medium grained ivel, with some extreme	, grey and I, rounded by weathe	l brown to I to rred rock.	M > Wp	St	HP HP HP	150 220 200 180	RESIDUAL SÕIL7 EXTREMELY WEATHERED ROCK
09 NON-CORED BOREHOLE - TEST PIT NEW22P-0012 LOGS.GPJ < <e< th=""><th>LEG Wat Stra</th><th>END: er (Da Wat Wat</th><th>ter Level te and time siter Inflow ter Outflow anges</th><th>hown)</th><th>Notes, Sa U₅₀ CBR E ASS B</th><th>mples a 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S</th><th>nd Test Diame ample f onmenta s jar, se Sulfate S ic bag, a Sample</th><th>Hole Termi</th><th colspan="4">Hole Terminated at 2.00 m Hole Terminated at 2.00 m r tube sample r CBR testing sample ed and chilled on site) ii Sample r expelled, chilled)</th><th></th><th>UU <2 50 10 20 >4</th><th>CS (kP 25 5 - 50 0 - 100 00 - 200 00 - 400 400</th><th>a) <u>Moisture Condition</u> D Dry M Moist W Wet W_p Plastic Limit W_L Liquid Limit</th></e<>	LEG Wat Stra	END: er (Da Wat Wat	ter Level te and time siter Inflow ter Outflow anges	hown)	Notes, Sa U ₅₀ CBR E ASS B	mples a 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S	nd Test Diame ample f onmenta s jar, se Sulfate S ic bag, a Sample	Hole Termi	Hole Terminated at 2.00 m Hole Terminated at 2.00 m r tube sample r CBR testing sample ed and chilled on site) ii Sample r expelled, chilled)					UU <2 50 10 20 >4	CS (kP 25 5 - 50 0 - 100 00 - 200 00 - 400 400	a) <u>Moisture Condition</u> D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
Gradational or transitional strata Definitive or distict strata change			on detector reading etrometer test (test ometer test (UCS kF	ing (ppm) est depth interval shown) S kPa)		<u>Density</u>	ty V Very Loose L Loose MD Medium Dense D Dense VD Very Dense		oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%						



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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7/2/22

BS

EC			E:	2.7 TC	DNNE	EXCA	VATOR		SURFA	ACE RL:					
	SIP	II LENGI	H:	2.0 m	vv	IDTH:	0.5 m		DATU	И:					
	Dril	ling and Sar I	npling			1	Material deso	cription and profile in	formation			1	Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DE charact	SCRIPTION: Soil ty eristics,colour,minor	pe, plasticity/ components	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш	ш Р ш Р ш Р 10.20m 0.20m 0.40m 0.40m 0.40m 0.5 0.5 0.5 0.5 0.5 0.80 0.80		FILL: Sandy plasticity, da sand, fine tr gravel, root slabs, some some coal.	y Gravelly CLAY - lo ark grey-brown, fine o coarse grained, rou affected in top 0.1m e bricks, asbestos co	w to medium to coarse gra unded to ang i, mostly cond intaining mat	ained jular crete lerial and	M < w _p				FILL				
				-	-		Hole Termir	nated at 0.80 m							
 NEW22P-0012 LOGS.GPJ <<drawingfie>> 0403/2022 09:11 10.01.00.01 Datget Lab and In Situ Tool</drawingfie> 				1.0											
EST PI															
	EGEND: atter (Date and time shown) Water Inflow Water Outflow trata Changes Gradational or transitional strata Definitive or distict strata change			I Notes, Sa U ₅₀ CBR E ASS B Field Test PID DCP(x-y) HP	mples a 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S Bulk S Photo Dynar Hand	nd Test Diame ample f onmenta s jar, se Sulfate S ic bag, a Sample ionisationis ationis ationi	tes tes ter tube sample for CBR testing al sample aled and chilled on s Soil Sample air expelled, chilled) on detector reading (etrometer test (test c ymeter test (UCS kP	itte) ppm) lepth interval shown) a)	-	ConsisterVSVSSFFStSVStVHHFbFDensity	L ery Soft oft irm tiff ery Stiff lard riable V L ME D VC	1 	LU 25 50 10 20 20 20 20 20 20 20 20 20 20 20 20 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400 pose n Dense ense	Moisture Condition D Dry M Moist W Wet Wp, Plastic Limit WL Liquid Limit Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



PROJECT: PROPOSED SUBDIVISION

CLIENT: LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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	EQ	UIPN		E:	2.7 TC	ONNE I	EXCA	VATOR		SURF	ACE RL:					
ļ	TES	ST P	T LENGT	H:	2.0 m	W	IDTH:	0.5 m		DATU	M:			1		
		Drill	ing and San	npling	-			Material d	lescription and profile ir	nformation		1		Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL char	DESCRIPTION: Soil ty acteristics,colour,mino	/pe, plasticity r components	//particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ŀ			E			131131	CI	TOPSO	IL: CLAY - medium pla	sticity, dark b	rown,					TOPSOIL
		untered	0.10m 0.20m E 0.30m		-			0.10m POOL affe	rcted. —	 brown.			н	HP	>600 600	RESIDUAL SOIL
	ш	Not Enco			0. <u>5</u>		СІ	Brown, r	nedium to high plastici	y.		M > W	VSt	HP	320 300	
-								0.80m Hole Ter	rminated at 0.80 m							
					10	-										
					-											
Situ Tool					-	-										
Lab and In S																
0.01 Datgel					1. <u>5</u>											
9:11 10.01.0					-											
04/03/2022 (-											
awingFile>>					2.0	-										
SS.GPJ < <di< th=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></di<>																
2P-0012 LOG					-											
ST PIT NEW2					-											
E - TES	LEG	END:		L	Notes. Sa	mples a	nd Test	ts			Consiste	ncv			CS (kPa) Moisture Condition
REHOL.	Water Use Somm Diameter tube sample 0 0 50mm Diameter tube sample			VS V	/ery Soft	I	<2	25	D Dry M Moist							
D BOF	Water Level CBR Bulk sample for CBR testing (Date and time shown) E Environmental sample			FF	irm		25 50) - 100	W Wet							
NON-CORE	(Juste and time snown) (Glass jar, sealed and chilled on site) Water Inflow ASS Acid Sulfate Soil Sample Water Outflow (Plastic bag, air expelled, chilled)		St S VSt V H H	Stiff /ery Stiff lard	:	10 20 >4	00 - 200 00 - 400 400	W _p Plastic Limit W _L Liquid Limit								
3 Log	Strata Changes D Duik Sample Gradational or Field Tests			Fb Friable Density V		V	Very Loose		Density Index <15%							
1.1.GLE	transitional strata PID Photoionisation detector reading (ppm) Definitive or distict DCP(x-y) Dynamic penetrometer test (test depth interval shown)				L Loose MD Medium Dense		Density Index 15 - 35% Density Index 35 - 65%									
QT LIB 1	Justice Definitive or distict Dot (x-y) Dynamic peneutometer lest (lest depth interval shown) strata change HP Hand Penetrometer test (UCS kPa)				D Dense Density VD Very Dense Density			Density Index 65 - 85% Density Index 85 - 100%								



PROJECT: PROPOSED SUBDIVISION

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NEW22P-0012

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

JOB NO: LOGGED BY:

EC	EQUIPMENT TYPE: TEST PIT LENGTH:			2.7 TC			VATOR SURF	ACE RL:					
	31 P		1.	2.0 m	vv	חוטו	Notarial description and profile information				Field	d Teat	
	Drill	ing and Sam	ipling			7	Material description and profile information				Fiel		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATIO SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity characteristics,colour,minor component	//particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
		۵.10 ^E				СІ	FILL-TOPSOIL: Sandy CLAY - medium plas dark brown, fine grained sand.	sticity,	1 > WP				FILL - TOPSOIL
		<u>0.10m</u> E <u>0.20m</u>		-		GP	FILL: Sandy GRAVEL - fine to medium, sub-rounded, brown, fine to coarse grained		D				
ш	Encountered	0.40m E 0.50m		0. <u>5</u>			CLAY - medium plasticity, dark brown, with to medium grained, sub-rounded to sub-ang gravel.	some fine gular	WP		HP	>600	RESIDUAL SOIL
	Not E	0.80m		-		CI	0.80m		∼W	н	HP	>600	
		E <u>(0.90m</u>		1. <u>0</u>		СН	CLAY - medium to high plasticity, brown to o brown with some grey.	dark	$M > w_{P}$	VSt	HP	380	
							1.10m						
	GEND: ter (Data - Wat	er Level le and time sh er Inflow	own)	- 1.5 - - - - - - - - - - - - - - - - - - -	mples a 50mm Bulks Envirc (Glass Acid S	nd Tes Diame ample Sulfate S	ts ter tube sample for CBR testing al sample valed and chilled on site) Soil Sample	Consisten VS V€ S Scc F Fir St St VSt V€	ey ery Soft iff iff rry Stiff		U <2 25 50 10 20	CS (kPa 25 5 - 50) - 100 00 - 200 00 - 400) <u>Moisture Condition</u> D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
<u>Stra</u>	→ Water Outflow Strata Changes B Gradational or transitional strata DCP				(Plast Bulk S <u>ts</u> Photo Dvnar	ic bag, Sample ionisati nic pen	air expelled, chilled) on detector reading (ppm) jetrometer test (test depth interval shown)	H Ha Fb Fri Density	ard iable V L MD	Ve Lo	ery Lo pose ediun	100 Dose	Density Index <15% Density Index 15 - 35% Density Index 35 - 65%
Strata change HP Hand Penetrometer test (UCS kPa)				ometer test (UCS kPa)		D	De	ense ery De	ense	Density Index 65 - 85% Density Index 85 - 100%			



LINDSAY BENNELONG PTY LTD

LOCATION: 898 NEW ENGLAND HIGHWAY, LOCHINVAR

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	EQ		MENT TYPI	E: -1:	2.7 TC 2.0 m	NNE I W	EXCA	VATOR 0.5 m			ACE RL:					
ł		Dril	ling and San	nplina	2.0			Material de	scription and profile info	mation				Field	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL [chara	DESCRIPTION: Soil type cteristics,colour,minor co	, plasticity/ pmponents	particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ab and In Situ Tool	Е	Not Encountered	E 0.10m		- - - - - - - - - - - - - - - - - - -		CL	FILL: San plasticity, sand, fine gravel, ro concrete, asbestos	dy Gravelly CLAY - low dark grey-brown, fine to to coarse grained, roun ot affected in top 0.1m, y steel, plastic and large a containing material.	o medium coarse gra ded to ang vith some t mounts of	ained ular pricks,	M < W _P				FILL RESIDUAL SOIL
bilb_Log_NON-CORED BOREHOLE - TEST PIT_NEW22P-0012 LOGS.GPJ_< <drawingfile>>_04/03/2022 08:11_10.01.00.01_Datgel</drawingfile>	LEG Watu Stra	END: Pr (Da Wa' Wa' ta Ch	ter Level te and time st ter Inflow ter Outflow anges radational or	nown)	1.5 - - - - 2.0 - - - - - - - - - - - - - - - - - - -	mples a 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S Bulk S S Photo	nd Tesi Diame ample f si jar, se sulfate S c bag, i ample sample	Hole Term <u>Is</u> ter tube sample for CBR testing a la sample aled and chilled or Soil Sample air expelled, chilled	n site) i)		Consister VS V S S F Fi St S VSt V H H Fb Fi Density	DCY ery Soft oft im tiff ery Stiff ard riable V L		U <2 25 50 20 20 20 20 20 20 20 20	CS (kPa 25 5 - 50 10 - 100 10 - 200 10	1) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit Density Index <15% Density Index 15 - 35%
QT LIB 1.1.GL	transitional strata PID Photoionisation detector reading (ppm) Definitive or distict DCP(x-y) Dynamic penetrometer test (test depth strata change HP Hand Penetrometer test (UCS kPa)			g (ppm) t depth interval shown) Pa)			L MC D VD	D D V	oose edium ense ery De	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%					

APPENDIX B:

Selected Excerpts from AGS 2007 -Practice Note Guidelines for Landslide Risk Management

APPENDIX C: LANDSLIDE RISK ASSESSMENT

QUALITATIVE TERMINOLOGY FOR USE IN ASSESSING RISK TO PROPERTY

QUALITATIVE MEASURES OF LIKELIHOOD

Approximate Annual ProbabilityIndicativeNotionalValueBoundary		Implied Indicati Recurrence	ve Landslide Interval	Description	Descriptor	Level
10-1	5x10 ⁻²	10 years	•	The event is expected to occur over the design life.	ALMOST CERTAIN	А
10-2	5-10 ⁻³	100 years	20 years 200 years 2000 years	The event will probably occur under adverse conditions over the design life.	LIKELY	В
10-3	5X10	1000 years		The event could occur under adverse conditions over the design life.	POSSIBLE	С
10-4	5x10-4	10,000 years	2000 vears	The event might occur under very adverse circumstances over the design life.	UNLIKELY	D
10-5	5×10^{-6}	100,000 years		The event is conceivable but only under exceptional circumstances over the design life.	RARE	Е
10-6 5X10		1,000,000 years	200,000 years	The event is inconceivable or fanciful over the design life.	BARELY CREDIBLE	F

Note: (1) The table should be used from left to right; use Approximate Annual Probability or Description to assign Descriptor, not vice versa.

QUALITATIVE MEASURES OF CONSEQUENCES TO PROPERTY

Approximate Cost of DamageIndicativeNotionalValueBoundary		Description	Descriptor	Level
200%	100%	Structure(s) completely destroyed and/or large scale damage requiring major engineering works for stabilisation. Could cause at least one adjacent property major consequence damage.	CATASTROPHIC	1
60%	100%	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.	MAJOR	2
20%	40%	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.	MEDIUM	3
5%	10%	Limited damage to part of structure, and/or part of site requiring some reinstatement stabilisation works.	MINOR	4
0.5%	1/0	Little damage. (Note for high probability event (Almost Certain), this category may be subdivided at a notional boundary of 0.1%. See Risk Matrix.)	INSIGNIFICANT	5

Notes: (2) The Approximate Cost of Damage is expressed as a percentage of market value, being the cost of the improved value of the unaffected property which includes the land plus the unaffected structures.

(3) The Approximate Cost is to be an estimate of the direct cost of the damage, such as the cost of reinstatement of the damaged portion of the property (land plus structures), stabilisation works required to render the site to tolerable risk level for the landslide which has occurred and professional design fees, and consequential costs such as legal fees, temporary accommodation. It does not include additional stabilisation works to address other landslides which may affect the property.

(4) The table should be used from left to right; use Approximate Cost of Damage or Description to assign Descriptor, not vice versa

APPENDIX C: – QUALITATIVE TERMINOLOGY FOR USE IN ASSESSING RISK TO PROPERTY (CONTINUED)

LIKELIHO	OD	CONSEQUENCES TO PROPERTY (With Indicative Approximate Cost of Damage)								
	Indicative Value of Approximate Annual Probability	1: CATASTROPHIC 200%	2: MAJOR 60%	3: MEDIUM 20%	4: MINOR 5%	5: INSIGNIFICANT 0.5%				
A – ALMOST CERTAIN	10-1	VH	VH	VH	Н	M or L (5)				
B - LIKELY	10 ⁻²	VH	VH	Н	М	L				
C - POSSIBLE	10-3	VH	Н	М	М	VL				
D - UNLIKELY	10 ⁻⁴	Н	М	L	L	VL				
E - RARE	10 ⁻⁵	М	L	L	VL	VL				
F - BARELY CREDIBLE	10 ⁻⁶	L	VL	VL	VL	VL				

QUALITATIVE RISK ANALYSIS MATRIX – LEVEL OF RISK TO PROPERTY

Notes: (5) For Cell A5, may be subdivided such that a consequence of less than 0.1% is Low Risk.

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

RISK LEVEL IMPLICATIONS

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

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

APPENDIX G - SOME GUIDELINES FOR HILLSIDE CONSTRUCTION

GOOD ENGINEERING PRACTICE

POOR ENGINEERING PRACTICE

ADVICE		
GEOTECHNICAL	Obtain advice from a qualified, experienced geotechnical practitioner at early	Prepare detailed plan and start site works before
ASSESSMENT	stage of planning and before site works.	geotechnical advice.
PLANNING	The first startest startest of the startest startest startest and the startest sta	Disc. is a large start of the start start of the D'si
SITE PLANNING	Having obtained geotechnical advice, plan the development with the risk arising from the identified bazards and consequences in mind	Plan development without regard for the Risk.
DESIGN AND CONS	STRUCTION	
	Use flexible structures which incorporate properly designed brickwork, timber	Floor plans which require extensive cutting and
HOUSE DESIGN	or steel frames, timber or panel cladding.	filling.
HOUSE DEDIGIN	Consider use of split levels.	Movement intolerant structures.
SITE CLEARING	Use decks for recreational areas where appropriate.	Indiscriminately clear the site
ACCESS &	Satisfy requirements below for cuts, fills, retaining walls and drainage.	Excavate and fill for site access before
DRIVEWAYS	Council specifications for grades may need to be modified.	geotechnical advice.
E + DETUNIO DV/G	Driveways and parking areas may need to be fully supported on piers.	Y 1 I I I I
EARTHWORKS	Retain natural contours wherever possible.	Indiscriminatory bulk earthworks.
CUTS	Support with engineered retaining walls or batter to appropriate slope.	Unsupported cuts.
0015	Provide drainage measures and erosion control.	Ignore drainage requirements
	Minimise height.	Loose or poorly compacted fill, which if it fails,
	Strip vegetation and topsoil and key into natural slopes prior to filling.	may flow a considerable distance including
FUIS	Use clean fill materials and compact to engineering standards. Batter to appropriate slope or support with engineered retaining wall	onto property below. Block natural drainage lines
1 1115	Provide surface drainage and appropriate subsurface drainage.	Fill over existing vegetation and topsoil.
		Include stumps, trees, vegetation, topsoil,
D		boulders, building rubble etc in fill.
& BOULDERS	Support rock faces where necessary	Disturb or undercut detached blocks or boulders
a boolblikb	Engineer design to resist applied soil and water forces.	Construct a structurally inadequate wall such as
RETAINING	Found on rock where practicable.	sandstone flagging, brick or unreinforced
WALLS	Provide subsurface drainage within wall backfill and surface drainage on slope	blockwork.
	above. Construct wall as soon as possible after cut/fill operation	Lack of subsurface drains and weepholes.
	Found within rock where practicable.	Found on topsoil, loose fill, detached boulders
FOOTINGS	Use rows of piers or strip footings oriented up and down slope.	or undercut cliffs.
100111005	Design for lateral creep pressures if necessary.	
	Engineer designed	
	Support on piers to rock where practicable.	
SWIMMING POOLS	Provide with under-drainage and gravity drain outlet where practicable.	
	Design for high soil pressures which may develop on uphill side whilst there	
DRAINAGE	may be nutle of no fateral support on downnin side.	
DivinivioL	Provide at tops of cut and fill slopes.	Discharge at top of fills and cuts.
	Discharge to street drainage or natural water courses.	Allow water to pond on bench areas.
SURFACE	Provide general falls to prevent blockage by siltation and incorporate silt traps.	
	Special structures to dissipate energy at changes of slope and/or direction.	
	Provide filter around subsurface drain.	Discharge roof runoff into absorption trenches.
SUBSURFACE	Provide drain behind retaining walls.	
Sebsenniel	Use flexible pipelines with access for maintenance.	
	Usually requires pump-out or mains sewer systems: absorption trenches may	Discharge sullage directly onto and into slopes
SEPTIC &	be possible in some areas if risk is acceptable.	Use absorption trenches without consideration
SULLAGE	Storage tanks should be water-tight and adequately founded.	of landslide risk.
EROSION	Control erosion as this may lead to instability.	Failure to observe earthworks and drainage
LANDSCAPING	אליינצטומור כולמולט מולמ.	recommendations when failuscaping.
DRAWINGS AND SI	TE VISITS DURING CONSTRUCTION	
DRAWINGS	Building Application drawings should be viewed by geotechnical consultant	
SITE VISITS	Site Visits by consultant may be appropriate during construction/	
INSPECTION AND	MAINTENANCE BY OWNER	
OWNER'S	Clean drainage systems; repair broken joints in drains and leaks in supply	
RESPONSIBILITY	Where structural distress is evident see advice.	
	If seepage observed, determine causes or seek advice on consequences.	



EXAMPLES OF **POOR** HILLSIDE PRACTICE

