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Report on
Salinity Investigation and Salinity Management Plan

Stage 1 Birling Property
Proposed Residential Subdivision
975 The Northern Road, Bringelly, NSW

Prepared for
Cameron Brae Pty Ltd

Project 204684.01
June 2022

Douglas Partners
Geotechnics / Environment / Groundwater

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature		Date
Author			6 June 2022
Reviewer		p.p.	6 June 2022

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Report on Salinity Investigation and Salinity Management Plan Stage 1 Birling Property, Proposed Residential Subdivision 975 The Northern Road, Bringelly, NSW

1. Introduction

Douglas Partners Pty Ltd (DP) has been engaged by Cameron Brae Pty Ltd (Cameron Brae) to carry out a Salinity Investigation and prepare a Salinity Management Plan (SMP) to inform the proposed residential subdivision of Stage 1 Birling Property at 975 The Northern Road, Bringelly (hereinafter known as 'the site'). The site is shown on Drawing 1, Appendix A and covers an approximate area of 51 ha, being a subsection of Lot 20 Deposited Plan 1227094. The investigation was undertaken in accordance with DP's proposal reference 204684.00.P.001, dated 24 June 2021.

Saline soils affect much of the Western Sydney Region. Buildings and infrastructure located on shales of the Wianamatta Group are particularly at risk. Salinity can affect urban structures in a number of ways, including corrosion of concrete, break-down of bricks and mortar, corrosion of steel (including reinforcement), break-up of roads, attach on buried infrastructure, reduced ability to grow vegetation and increased erosion potential.

It is understood that a residential subdivision is proposed and that an assessment of soil salinity is required for submission to Camden Council with the subdivision application and to assist in conceptual planning of the development.

The investigation comprised a review of available results from previous investigations, excavation of test pits (TP), followed by laboratory testing of selected samples, engineering analysis and reporting. Details of the work undertaken and the results obtained are given within this report, together with comments relating to design and construction practice for bulk earthworks and service installations. Detailed investigation for the purpose of providing recommendations for housing (individual lots) will be required prior to subdivision certification, after bulk earthworks has been undertaken.

The field work for the salinity investigation was undertaken to inform both this SMP and a contamination investigation, the findings of which are reported under separate cover (reference 204684.00).

2. Proposed Development

The proposed development comprises a mixture of residential, commercial facilities and drainage basins. The development will require bulk earthworks including up to 6 m of cut in the northern portion, and up to 4 m of fill in the southern portion and will require an additional 204,000 m^3 of soil is placed at the site.

3. Scope of Work

The following scope of work was undertaken for this SMP:

- Using an excavator, 55 test pits (ie. one test pit per hectare) were undertaken at the site to a range of depths up to 3 m bgl or prior refusal;
- Soil samples for salinity and related testing were collected generally at depths of 0.5 m and thence 0.5 m intervals to the maximum of the above pits;
- Classification of selected soil samples for soil texture, electrical conductivity (EC 1:5), pH, chloride, and sulphate, sodicity and Emerson crumb dispersibility tests at a NATA accredited analytical laboratory; and
- Preparation of a Salinity Assessment and Salinity Management Plan Report (SMP) discussing the methodology and findings of the assessment, and recommended management strategies.

4. Site Information

Site Address	975 The Northern Road, Bringelly, NSW
Legal Description	Part Lot 20 Deposited Plan 1227094
Area	506,372 m^2
Zoning (see Figure 1, following page)	Zone B5 Business Development
	Zone C2 Environmental Conservation
	Zone RE1 Public Recreation
	Zone RE1 Private Recreation
	Zone R2 Low Density Residential
	Zone R3 Medium Density Residential
	Zone SP2 Infrastructure
Local Council Area	Camden Council
Current Use	Vacant Rural
Surrounding Uses	North – Residential, Rural East – Open space South – Open space, Residential West – Commercial

The site boundary is shown in Figure 1

Figure 1: Site Location

5. Environmental Setting

5.1 Topography

Regional topographic data indicates that the site is sloping from the north west to the south east of the site with an overall difference in level of approximately 24 m from the highest part of the site (92 m relative to AHD) in the north western corner, to the lowest part of the site (68 m relative to AHD) in the south eastern corner of the site.

The surrounding regional topography also generally slopes from the north west to the south east.

5.2 Site Geology and Soil Landscapes

Reference to the Geological Survey of NSW, Sydney (1991) *Penrith,* 1:100,000 Geological Sheet 9030 1st Edition indicates that majority of the site (approximately two thirds of the site, in the northern portion of the site) is underlain by Bringelly Shale (geological code 'Rwb') of the Wianamatta Group of Middle

Triassic age. Bringelly shale comprises of shale, carbonaceous claystone, laminite, lithic sandstone and rare coal. The remainder of the site on the southern portion next to and below Lowes Creek is underlain by Alluvial floodplain deposits of the Quaternary (base) (Qal) to Now (top) age. Alluvial floodplain deposits typically comprise of silt, very fine-to medium-grained lithic to quartz-rich sand and clay. The site geology based on regional mapping is presented in Figure 2 below.

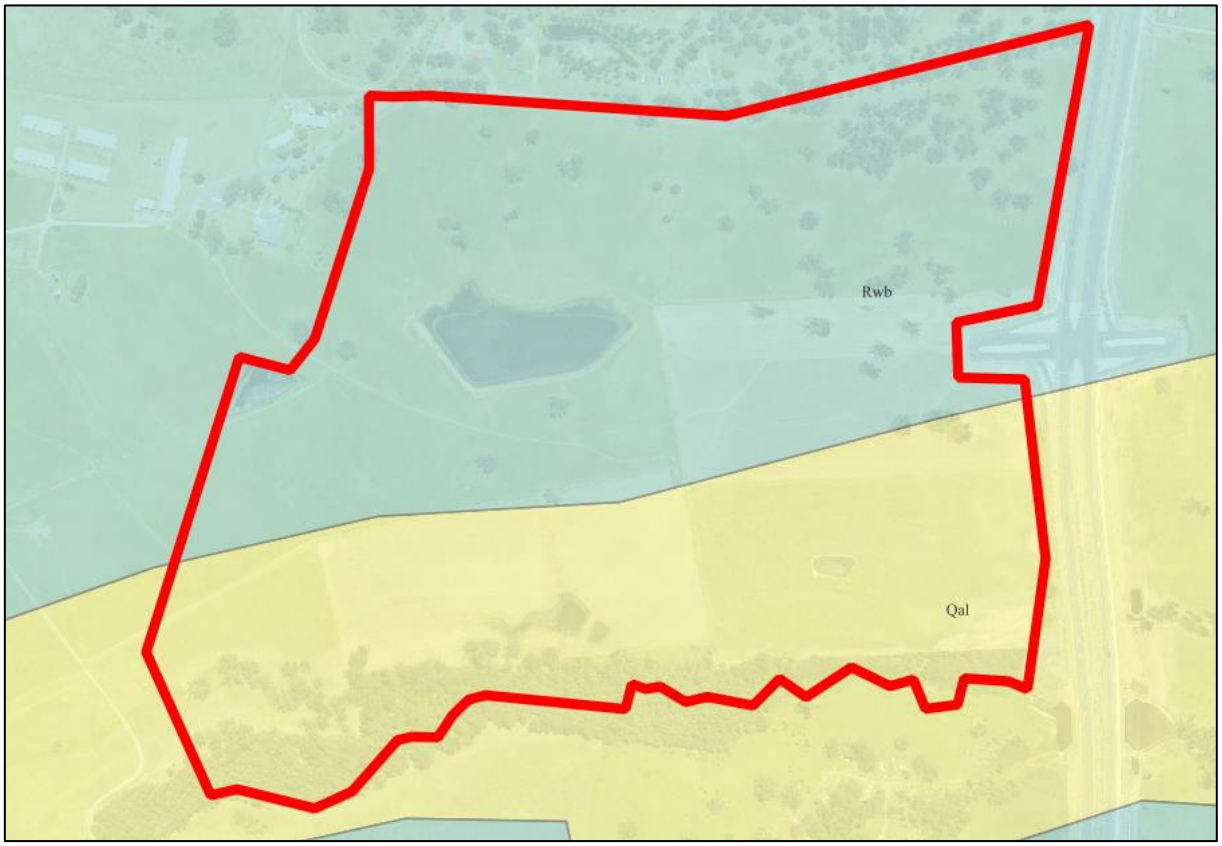


Figure 2: Site geology based on regional mapping

Reference to the *Penrith 1: 100, 000 Soils Landscape Sheet 9030*, 1989, indicates that approximately two-thirds of the northern portion of the site is underlain by Blacktown soils (mapping unit bt), which is a residual soils group associated with gently undulating rises, broad rounded crests, and ridges with gently inclined slopes. The unit comprises of shallow to moderately deep (<100 cm) red and brown podzolic soils on crests, upper slopes and in well-drained areas. In areas of greater depth (150-300 cm), there are yellow podzolic soils and soloths on lower slopes and in areas of poor drainage (Sydney). Local relief is to 30 m, slopes are usually <5%. These soils are typically of low fertility, are moderately reactive, with high plasticity in the subsoil, and generally have poor soil drainage.

The remaining one-third of the site on the southern portion is underlain by South Creek soils (mapping unit sc), which is an alluvial soils group associated with floodplains, valley flats and drainage depressions of the channels on the Cumberland Plain, usually flat with incised channels. The unit comprises of red and yellow podzolic soils on terraces with small areas of structured grey clays, leached clay and yellow solodic soils. It also comprises of often very deep layered sediments over bedrock or relict soils. Where pedogenesis has occurred, there are structured plastic clays or structured loams in and adjacent to drainage lines. These soils typically present an erosion hazard with frequent flooding. Regional mapping of soil landscapes for the site are presented in Figure 3 on the following page.

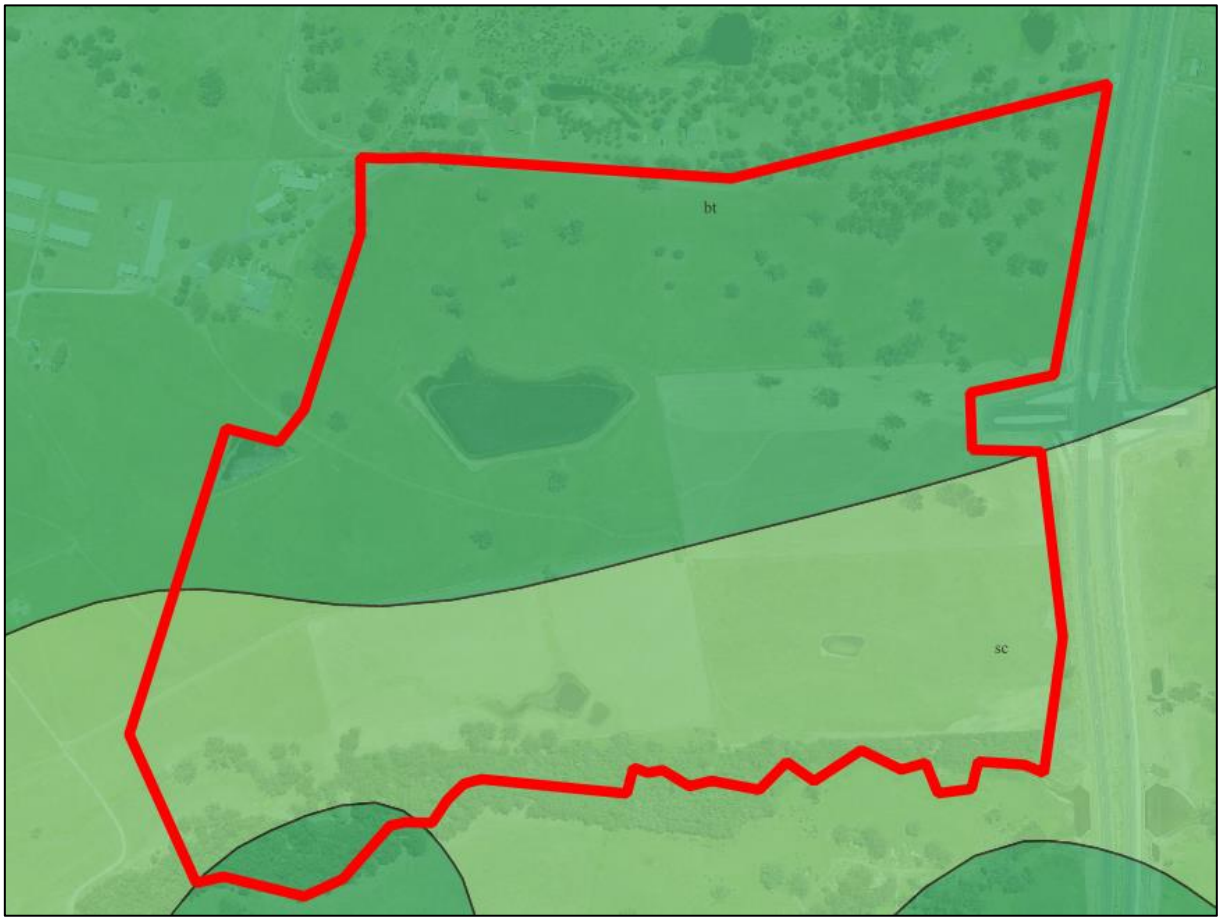


Figure 3: Soils based on regional mapping

5.3 Salinity

Reference to NSW Salinity Potential in Western Sydney mapping (2002) indicates that the site is primarily mapped as moderate salinity potential (pale yellow) except for adjacent to and below Lowes Creek, which is mapped as high salinity potential (pale orange). Refer to Figure 4 on the following page.

Figure 4: Salinity potential based on regional mapping

5.4 Acid Sulphate Soils

Published acid sulphate soils risk mapping indicates that the site is classified as Cq (p4), extremely low probability occurrence.

5.5 Surface Water and Groundwater

A large dam is present in the central portion of the site, where its overflow appears to drain into a smaller dam, situated directly south. Both dams are adjoined by an unnamed creek, acting as tributaries of Lowes Creek, which flows in a west to east direction and is situated along the southern boundary of the site.

Two unnamed dams are also present on site, one located on the western portion of the site, and one located on the eastern edge of the site boundary.

A tributary of South Creek, with subsequent dams is located directly north from the site, flowing in a west to east direction. Another tributary of South Creek is located north west from the site, flowing in a south west to north east direction. A large unnamed dam is present south from the site boundary, with

adjoining smaller dams and tributaries of Lowes Creek which are flowing in a south to north east direction.

A search of the publicly available registered groundwater bore database indicated that there is one registered groundwater bores within 500 m of the site. The groundwater bore from within 500 m the site is summarised in Table 1. No salinity data or standing water level data was available for the bore.

Table 1: Summary of Available Information from Nearby Registered Groundwater Bores

Bore ID Authorised Purpose Completion Year Status	Location Relative to Site	Final Depth (m)
GW111629 Monitoring bore	70 m east within the central road reserve for The Northern Road	10 Screened between 6 and 9 m

Based on the regional topography and the inferred flow direction of nearby water courses, the anticipated flow direction of groundwater beneath the site is north west to south east, towards South Creek, the likely receiving surface water body for the groundwater flow path. Given the local geology (i.e. Bringelly Shale), the groundwater in the fractured rock beneath the site is anticipated to be saline and very low yield. Accordingly, there would be no significant potential beneficial uses of the groundwater.

6. Previous Investigation Findings – DP, 2018

A previous investigation within the subject site and its immediate surrounds was undertaken by Douglas Partners Pty Ltd in 2018 as part of the land capability assessment of the wider Lowes Creek Maryland site. The results of the investigation were formalised in a report entitled *Report on Salinity Assessment and Salinity Management Plan, Land Capability Study, Lowes Creek Maryland Precinct, Bringelly*, reference 76742.00.R.001.Rev1 dated September 2018 (DP, 2018).

The scope of the investigation comprised a site inspection, non-intrusive and limited intrusive site investigation, laboratory testing of selected samples, engineering analysis and reporting. An electromagnetic (EM) survey was undertaken, and results were refined using salinity analyses on 61 samples from 20 test pits throughout wider Lowes Creek Maryland site. The Stage 1 site is located within the north eastern portion of the wider Lowes Creek Maryland site. Soils within the Stage 1 site were generally mapped as ranging from non-saline to very saline, mildly aggressive to concrete and mildly to moderately aggressive to steel.

Extracts of maps from the Land Capability Assessment (DP, 2018) showing previous sampling locations and findings (including for the current site) are included in Appendix B.

7. Field Work Methods

The field work for this salinity investigation was undertaken between 21 March and 5 April 2022 during La Niña record high rainfall conditions. Approximately 561 mm of total rainfall was recorded in March 2022 compared to an average of 112 mm for the same station[1]. The scope of the intrusive investigation comprised the excavation of 55 test pits (TP 25 to 79) to varying depths of between 1.5 and 3 m or prior refusal. The deeper (target 3 m) test pits were primarily undertaken in the northern portion of the site where more cut is proposed and the shallower (target 1.5 m) test pits were primarily undertaken where fill is proposed. The target depths are summarised below:

- 3 m target depth: 25, 27, 28, 30, 31, 32, 33, 40, 42, 43, 49 – 51, 57, 58, 61, 67, 71 and 74.
- 1.5 m target depth: 26, 29, 34 – 39, 41, 44 – 48, 52, 53 – 56, 59, 60, 62 – 66, 68 – 70, 72, 73 and 75 – 79.

The test pits were excavated with a Hyundai Robex 60CR-9 excavator with a 450 mm bucket. The test pits were logged on site by a DP environmental engineer and representative disturbed samples were collected to assist in strata identification and for laboratory testing.

The locations of the test pits are shown on Drawing 1, Appendix A. All field measurements and mapping for this project have been carried out using the Geodetic Datum of Australia 1994 (GDA94) and the Map Grid of Australia 1994 (MGA94), Zone 56. All reduced levels are given in relation to AHD.

8. Results

8.1 Field Work Results

The test pit logs for this assessment are included in Appendix C. All test pits terminated in natural material and the general sub-surface profile was as follows:

- Fill/Topsoil: Silty clay with rootlets encountered in the top 0.2 m of the soil profile in all test pits.
- Silty clay: Brown/orange/grey silty clay with rootlets and roots was observed below topsoil in all test pits to the base of the test pits, except for in test pits 33, 44, 46, 50 and 51 where shale was observed below silty clay. Ironstone and shale gravel was observed in silty clay in most test pits.
- Shale: Grey/brown variably weathered shale was observed below silty clay in test pits 33, 44, 46, 50 and 51.

No anthropogenic material was observed in any of the test pits undertaken at the site. There were no apparent records of visual or olfactory evidence (e.g. staining, odours, free phase product) to suggest the presence of contamination within the soils or groundwater observed in the investigation.

Free groundwater was observed in silty clay strata in test pits 25, 53, 56, 58 and 77. Noting that representative groundwater levels cannot be provided from the test pits because of the nature of the excavation methodology which disturbs soil strata and the short duration that each test pit is kept open.

[1] Badgerys Creek AWS station (nearest to site). See summary at http://www.bom.gov.au/climate/current/month/nsw/sydney.shtml last accessed 21 April 2022.

No signs of efflorescence or salt scalding were noted during the fieldwork. However, it is noted that after such high rainfall it was not expected that efflorescence would currently be present on site.

9. Laboratory Testing

The laboratory test results and assessments of aggressivity, salinity, sodicity and dispersibility are summarised in Table C1 in Appendix D. Aggressivity to concrete was determined using pH values and sulphate ion concentrations, and aggressivity to steel was determined using pH values, chloride ion concentrations and calculated resistivities. The salinity class was inferred from ECe values using the method of Richards (1954) and dispersion potentials were derived from Emerson Class Number Tests.

The detailed laboratory test reports and chain of custody documents are provided in Appendix E.

Table 2 below summarises the total test sample numbers and the range of test results obtained.

Table 2: Summary of Parameters Tested and Results Obtained

Parameter		Units	Samples	Minimum	Maximum
pH		pH units	213	4.2	9.3
Chlorides		(mg/kg)	46	10	2100
Sulphates		(mg/kg)	46	10	310
Aggressivity	to Concrete	[AS2159]	31	Non-Aggressive	Moderately Aggressive
	to Steel	[AS2159]	31	Non-Aggressive	Moderately Aggressive
Resistivity		Ω.cm	215	588	32,258
ECe [M x EC1:5] where M is textural factor		(dS/m)	215	0.3	14.4
Salinity Class		[after Richards 1954]	17	Non-Saline	Very Saline

9.1 Aggressivity

Figure 5 below, presents variations of aggressivity with depth at each test pit location, based on pH profiles, and the corresponding aggressivity class ranges as per the Australian Standard AS 2159 (2009). Due to the clay/silt composition of the soils, all samples were classed as Condition B as defined by AS 2159.

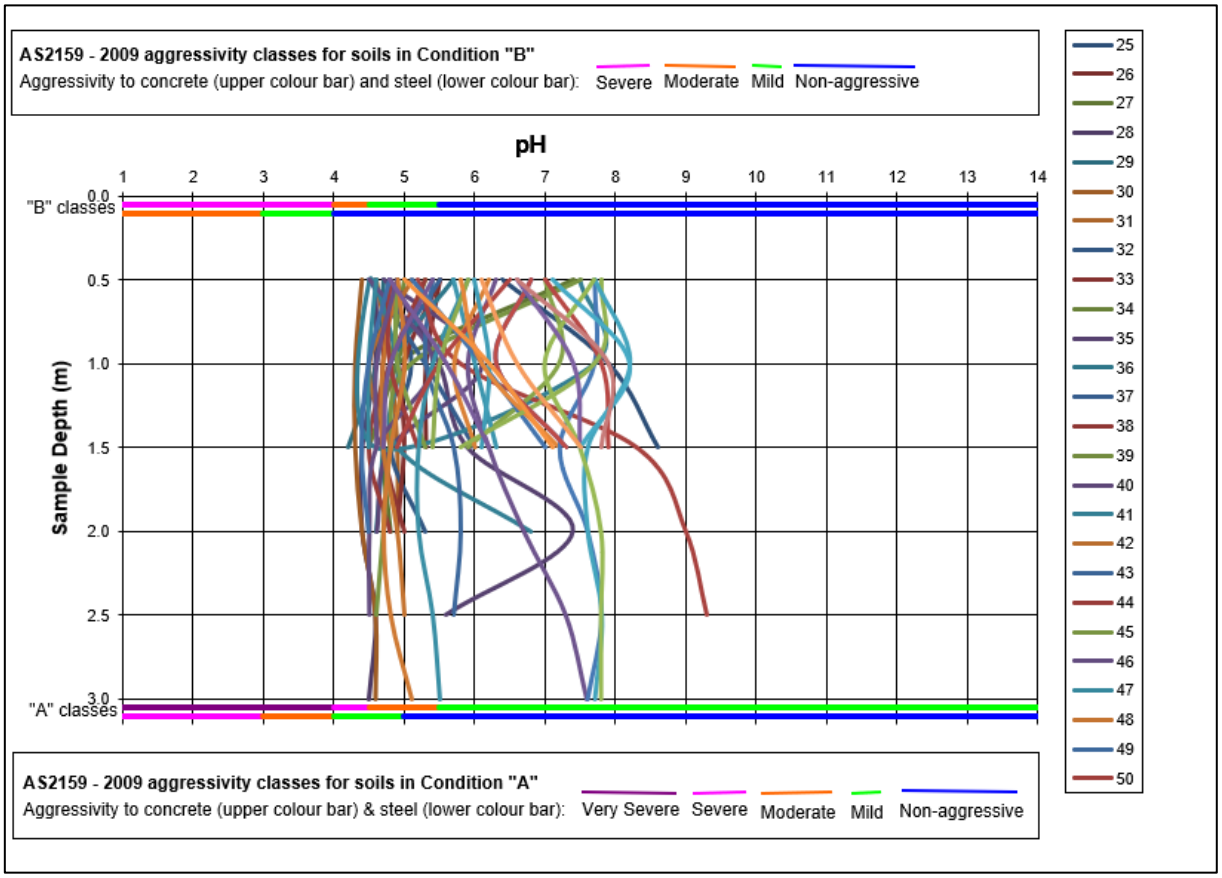


Figure 5. Vertical Soil pH Profiles and Aggressivity Classes

Figure 5 shows that the site was underlain by soils which are non-aggressive to moderately aggressive to concrete foundations and concrete piles based on pH values. The summary table (Appendix D) indicates that 44% of soil samples were non-aggressive to concrete, 53% were mildly aggressive and 4% were moderately aggressive. It is noted that 11 samples had a pH of 4.5 which is at the crossover for the classification of moderately aggressive and mildly aggressive soils.
The worst-case pH results for each test pit were used to define approximate areas of mild and moderate aggressivity to concrete foundations and piles within the site, as represented by colour zones on Drawing 2 (Appendix A). Based on a review of the results, test pits which reported samples with a pH of 4.5 and did not have any addition samples which had a pH result of <4.5 were considered mildly aggressive to concrete.

The pH profiles of Figure 5 indicate that the materials throughout the site, at all investigated depths, are non-aggressive to steel. The chloride concentration guidelines of AS2159 support this non-aggressive classification. However, based on resistivity criteria (Appendix D), approximately 61% of soil samples were non-aggressive to steel, 31% mildly aggressive and 8% were moderately aggressive. Based on the results, the worst-case resistivity results for each test pit were used to define approximate areas of mild and moderate aggressivity to steel within the site, as represented by colour zones on Drawing 3 (Appendix A).

9.2 Salinity

Figure 6 below presents variations of salinity with depth at each test pit location, based on ECe profiles, and the corresponding salinity classifications of Richards (1954).

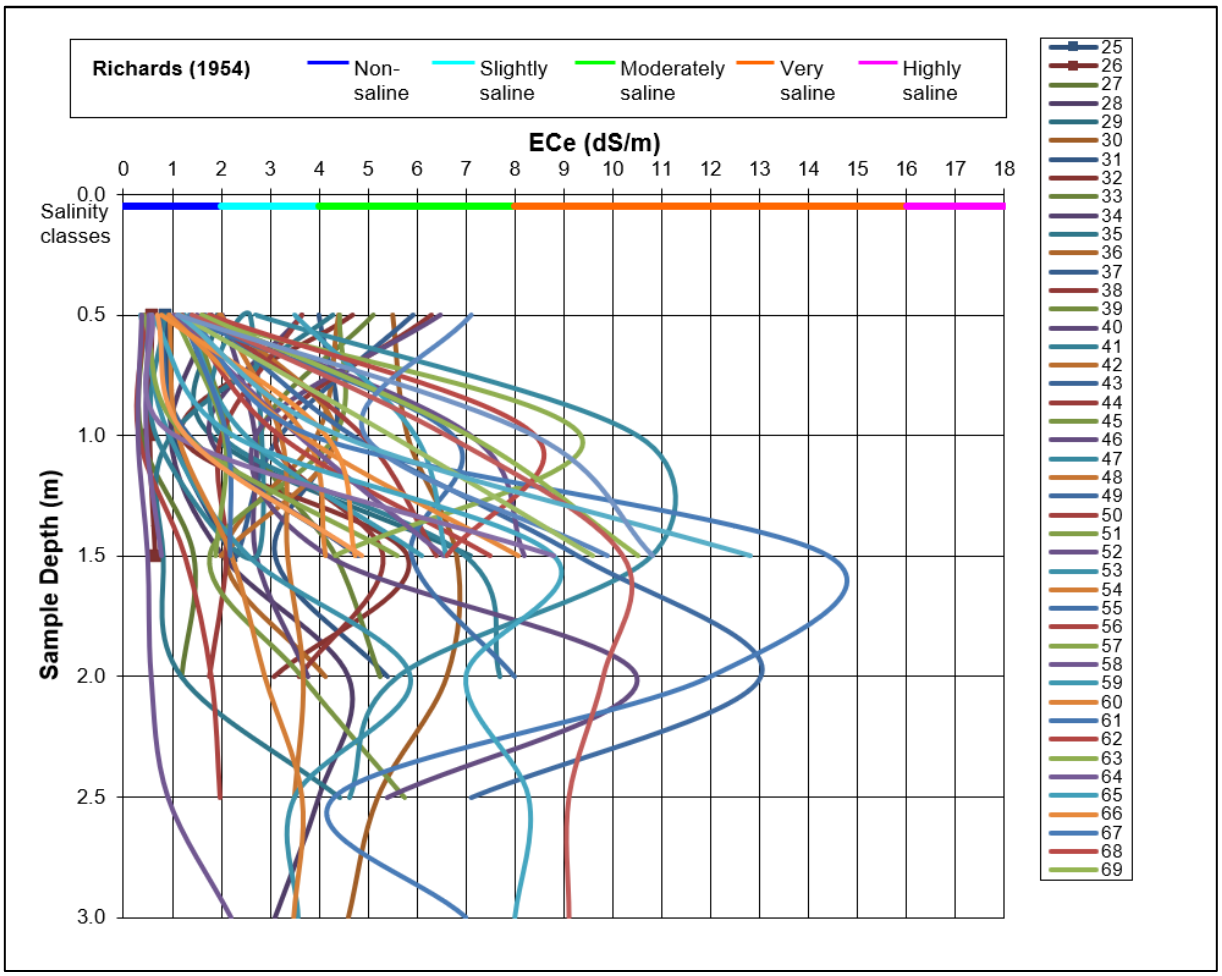


Figure 6: Vertical Soil Salinity Profiles and Salinity Classes

Table D1 (Appendix D) indicates that 33% of all samples were non-saline, 25% were slightly saline, 31% were moderately saline and 11% were very saline.

Similarly, to soil aggressivity, maximum ECe values from each test pit were interpolated and contoured to define areas of slightly saline (ECe 2 – 4 dS/m), moderately saline (ECe 4 – 8 dS/m) and very saline (ECe 8 – 16 ds/m) soil (see Drawing 4, Appendix A). The spatial distribution of soil salinity is generally consistent with the EM survey undertaken previously (see Section 6 and Appendix B), that is, salinities are higher towards the creek and lowest in the north west of the site.

10. Impacts on the Proposed Development

The mild and moderate aggressivity to concrete and steel, the presence of moderately saline and very saline soils and the highly sodic soils are naturally occurring features of the local landscape and are not considered significant impediments to the proposed development, provided appropriate remediation or management techniques are employed. We note some of the samples were at the upper limit of mildly aggressive to concrete and that after bulk earthworks some of the lots may be classified as moderately aggressive.

Salinity and aggressivity affects the durability of concrete and steel by causing premature breakdown of concrete and corrosion of steel. This has impacts on the longevity of structures in contact with these materials. As a result, management will be required (refer Section 11).

In addition, sodic soils are present in the region and have low permeability due to infilling of interstices with fine clay particles during the weathering process, restricting infiltration of surface water and potentially creating perched water tables, seepage in cut faces or ponding of water in flat open areas. In addition, sodic soils tend to erode when exposed. Management of sodic soils is therefore required to prevent these adverse effects.

11. Salinity Management Plan

11.1 Bulk Earthworks

The following management strategies are confined to the management of those factors with a potential to impact on the bulk earthworks aspects of the development.

A. Management should focus on capping of the upper surface of the sodic soils, both exposed by excavation and placed as filling, with a more permeable material to prevent ponding, to reduce capillary rise, to act as a drainage layer and to reduce the potential for erosion.

B. When possible, placement of excavated soils in fill areas with similar salinity characteristics (ie: to place material on to in-situ soils with a similar or higher aggressivity or salinity classification). Alternatively, materials of higher salinity and/or aggressivity classification can be placed on to in-situ soils with a lower aggressivity or salinity classification, provided the placement location is tracked at the time of bulk earthworks and the management protocols are upgraded for this area of the site to reflect the higher classification. Where this is not possible or not tracked, all fill areas will require to be treated as moderately aggressive to concrete and steel and very saline.

C. With respect to any imported fill material required, testing should be undertaken prior to importation, to determine the salinity characteristics of the material, which should be non-aggressive and non-saline to slightly saline where possible, but in any case, not more aggressive or more saline than the adopted site classifications.

D. Sodic soils can also be managed by maintaining vegetation where possible and planting new salt tolerant species. The addition of organic matter, gypsum and lime can also be considered where appropriate. After gypsum addition, reduction of sodicity levels may require some time for sufficient infiltration and leaching of sodium into the subsoils, however capping of exposed sodic material should remain the primary management method. Topsoil added at the completion of bulk

earthworks is, in effect, also adding organic matter which may help infiltration and leaching of sodium.

E. Avoiding water collecting in low lying areas, in depressions, or behind fill. This can lead to water logging of the soils, evaporative concentration of salts, and eventual breakdown in soil structure resulting in accelerated erosion.

F. Any pavements should be designed to be well drained of surface water. There should not be excessive concentrations of runoff or ponding that would lead to waterlogging of the pavement or additional recharge to the groundwater through any more permeable zones in the underlying filling material.

G. Surface drains should generally be provided along the top of batter slopes to reduce the potential for concentrated flows of water down slopes possibly causing scour.

H. Salt tolerant grasses and trees should be considered for landscaping, to reduce soil erosion as in Strategy A above and to maintain the existing evapo – transpiration and groundwater levels. Reference should be made to an experienced landscape planner or agronomist.

11.2 Civil Construction, Service Installation and Residential Construction

The following additional strategies are recommended for completion of service installation including but not limited to; roads, drainage and services. The following strategies are also anticipated to be required for construction of residential dwellings. A detailed salinity investigation will require to be completed after completion of bulk earthworks in order to confirm the below strategies and provide more detailed recommendations for individual lots.

The below strategies should be complementary to standard good building practices, including cover to reinforcement within concrete and correct installation of a brick damp course (where used), so that it cannot be bridged to allow moisture to move into brick work and up the wall.

I. Based on the results of the intrusive investigation, soils that are non-aggressive to moderately aggressive to concrete and steel and non-saline to moderately saline have been observed at the site. As such durability requirements provided in Tables 3 and 4 should be taken into account by the designer.

Table 3: Recommended Durability Requirements for Concrete Foundations and Piles

Site Salinity Classification (refer Drawing 4)	Site Soil Aggressivity to Concrete Classification (refer Drawing 2)	Recommended Durability Requirement (as per AS3600)		
		Minimum Concrete Strength (MPa)	Minimum Cover to Reinforcement (mm)	Minimum Cure Time (days)
Non-saline to Slightly Saline	Non-aggressive Soils	20	ND	3
	Mildly Aggressive Soils	25		
	Moderately Aggressive Soils	32		7
Moderately Saline	Non-aggressive Soils	25	45	3
	Mildly Aggressive Soils			
	Moderately Aggressive Soils	32		7
Very Saline	Non-aggressive Soils	32	50	7
	Mildly Aggressive Soils			
	Moderately Aggressive Soils			

Table 4: Recommended Durability Requirements for Concrete Piles

Concrete Aggressivity (refer Drawing 2)	Recommended Durability Requirement (as per AS2159)	
	Minimum Concrete Strength (MPa)	Minimum Cover to Reinforcement (mm)
Non Aggressive	32	45
Mildly aggressive	32	60
Moderately Aggressive	40	65

J. Wet cast concrete pipes and currently manufactured spun concrete pipes are understood to have estimated compressive strengths of 50 MPa and 60 – 70 MPa, respectively, in excess of the requirements for mass concrete in I above. Reference to the test results of Table 1 (Section 8 of this report) and to Tables E1 and 3.1 of AS 4058 – 2007 “Precast concrete pipes” indicates that:

- The majority of the site falls within the AS 4058 Clay/Stagnant (low sulphate) soil type (chlorides ≤20 000 ppm, pH≥4.5 and sulphates ≤1000 ppm) and (in the absence of tidal water flow) falls within the AS 4058 Normal durability environment. Under these conditions, AS 4058 – compliant reinforced concrete pipes of general purpose Portland cement, with a minimum cover to reinforcement of 10 mm, are expected to have a

design life in excess of 100 years. Any concrete pipes installed within the site should employ AS 4058 – compliant steel reinforced pipes of general purpose Portland cement, with minimum cover to reinforcement of 10 mm, or should be fibre reinforced.

- For areas mapped as moderately aggressive to concrete (refer Drawing 2, Appendix A), these areas fall marginally outside the AS 4058 Clay/Stagnant (low sulphate) soil type (chlorides <=20,000 ppm and sulphates <=1,000 ppm) and (in the absence of tidal water flow) falls within the AS 4058 "Other" durability environment. A review of the pH results within these areas of the site indicate a slightly more acidic environment than that within the Clay/Stagnant soil type definition (minimum pH 4.5) and reference to the Concrete Pipe Association of Australasia Engineering Guideline ("Designing Durable Concrete Pipelines") indicates an increase of cover to reinforcement (to 20 mm) or a protective (e.g. epoxy) coating or sleeve, or blended concrete, should be employed to maintain a design life in excess of 100 years. It is recommended that any concrete pipes installed within areas classified as moderately aggressive to concrete within the site should employ AS 4058-compliant steel reinforced pipes of general purpose Portland cement, with minimum cover to reinforcement of 20 mm, or with an alternative durability provision as indicated above, or should be fibre reinforced.

K. Resistivity results indicate soils within the site that are mildly and moderately aggressive to steel (refer Drawing 3, Appendix A). The following corrosion allowances (as per AS 2159 – 2009) should be taken into account by the designer:

- Mild: uniform corrosion allowance 0.01 – 0.02 mm/year;
- Moderate: uniform corrosion allowance 0.02 – 0.04 mm/year.

In instances where a coating is applied to the pile, if the design life of the pile is greater than the design life for the coating, consideration must be given to corrosion of the pile in accordance with the above list.

12. Additional Recommendations and Conclusion

This salinity investigation has been undertaken for the purpose of providing advice with regards to salinity relating to bulk earthworks and service installations only and indicative advice for residential construction. A detailed salinity investigation will be required prior to subdivision certification (after completion of bulk earthworks) in order to provide more detailed recommendations for individual lots. Such an investigation could be carried out as part of future lot classification investigations.

Additional investigation in development areas which are to be excavated deeper than 3 m below current ground level, are not considered necessary on the basis that there is already a broad range of salinity and aggressivity classifications at the site and that a final salinity investigation will appropriately classify the site after bulk earthworks.

It is considered that the management strategies described herein when incorporated into the design and construction works are appropriate to mitigate the levels of salinity, aggressivity and sodicity identified at the site.

13. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report (or services) for this project at 975 The Northern Road, Bringelly in accordance with DP's proposal 204684.00.P.001 and acceptance received from James Dunbar on behalf of Cameron Brae. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Cameron Brae Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.
The results provided in the report are indicative of the subsurface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Subsurface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the salinity components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

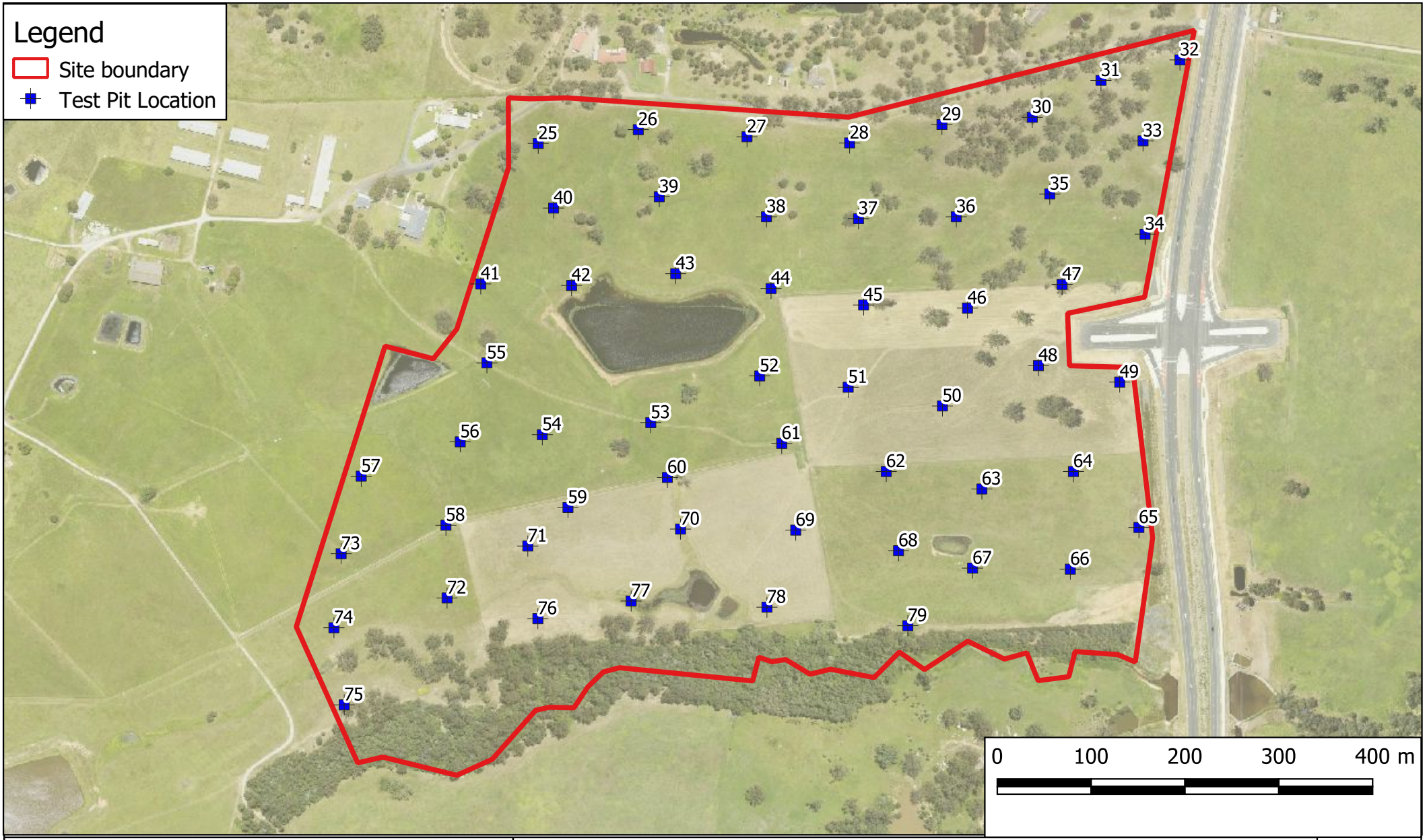
This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

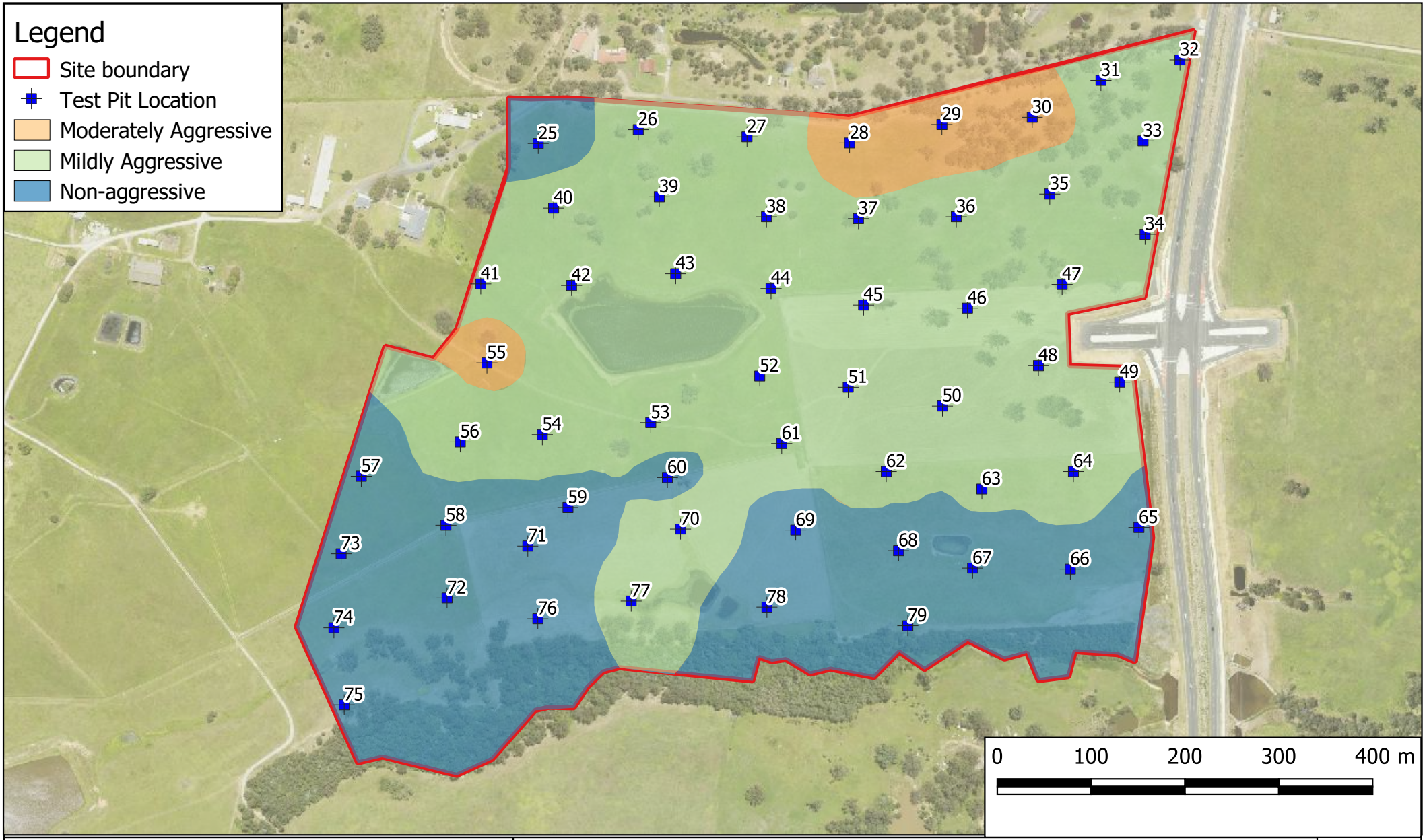
Douglas Partners Pty Ltd

Appendix A

Drawings
About this Report



Douglas Partners Geotechnics / Environment / Groundwater	TITLE: Site Layout and Test Pit Locations Proposed Stage 1, Birling, Residential Subdivision 975 The Northern Road, Bringelly, NSW		N MGA
CLIENT: Cameron Brae Pty Ltd	PROJECT No.: 204684.01	SCALE: As shown	DRAWING No: 1
OFFICE: Macarthur	DRAWN BY: BAH	DATE: 3 June 2022	REVISION: A

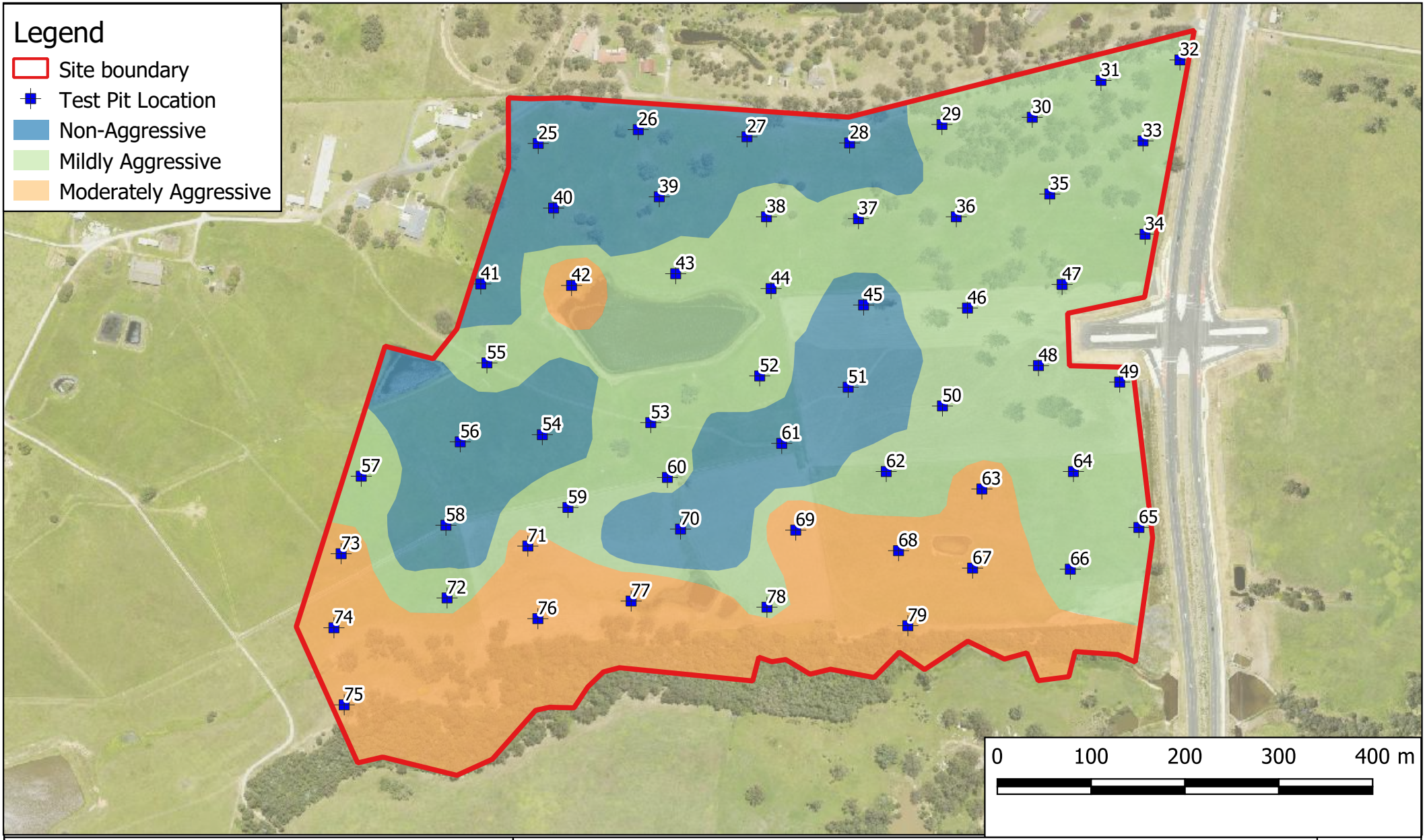


Douglas Partners
Geotechnics | Environment | Groundwater

TITLE: Aggressivity to Concrete within Investigated Depth Zone
Proposed Stage 1, Birling, Residential Subdivision
975 The Northern Road, Bringelly, NSW

N
MGA

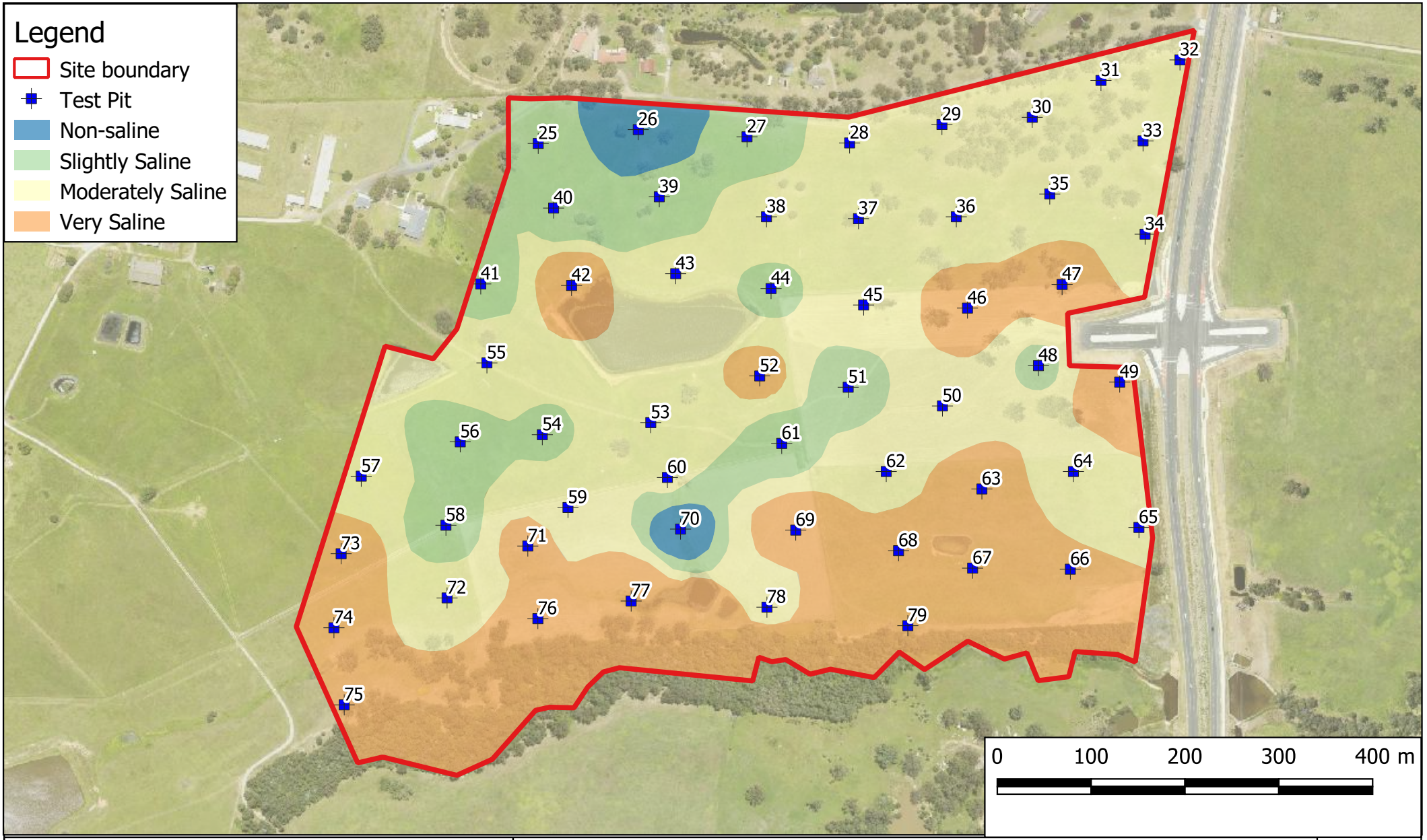
CLIENT: Cameron Brae Pty Ltd	PROJECT No.: 204684.01	SCALE: As shown	DRAWING No: 2
OFFICE: Macarthur	DRAWN BY: BAH	DATE: 3 June 2022	REVISION: A



Douglas Partners
Geotechnics | Environment | Groundwater

TITLE: Aggressivity to Steel within Investigated Depth Zone
Proposed Stage 1 Birling - Residential Subdivision
975 The Northern Road, Bringelly, NSW

CLIENT: Cameron Brae Pty Ltd	PROJECT No.: 204684.01	SCALE: As shown	DRAWING No: 3
OFFICE: Macarthur	DRAWN BY: BAH	DATE: 3 June 2022	REVISION: 1



Douglas Partners
Geotechnics | Environment | Groundwater

TITLE: Salinities within Investigated Depth Zone
Proposed Stage 1 Birling - Residential Subdivision
975 The Northern Road, Bringelly, NSW

CLIENT: Cameron Brae Pty Ltd	PROJECT No.: 204684.01	SCALE: As shown	DRAWING No: 4
OFFICE: Macarthur	DRAWN BY: BAH	DATE: 3 June 2022	REVISION: 1

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Appendix B

Extracts from the Land Capability Study

4
DP1218798

20
DP1227094

Part of 101
DP1203966

9
DP1216926

10
DP1216926

23
DP836540

13
DP1218155

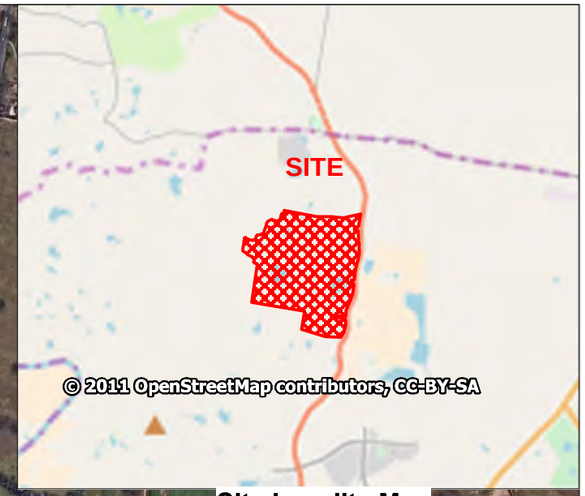
1
DP218779

Part of 280
DP1043744

11
DP1218155

10
DP1218155

1
DP1216380



Site Locality Map

Legend

- Apprximate Site Boundary
- Approximate Seperate Ownership Boundaries
- Approximate Lot Boundaries

0 1,000
metres

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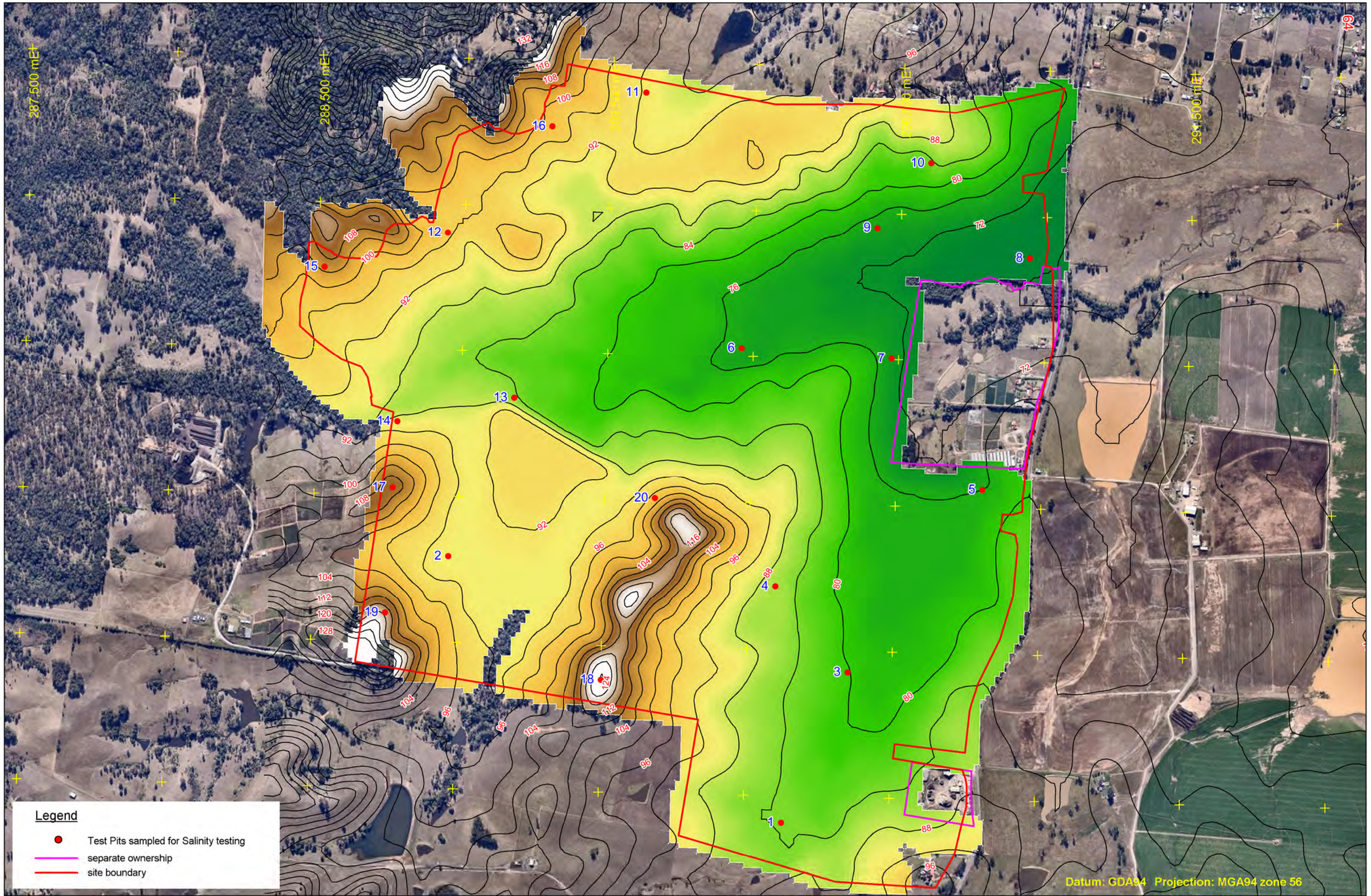
Geotechnics / Environment / Groundwater

CLIENT: Macarthur Developments Pty Ltd		TITLE: **Site Layout** **Land Capability Study** **Lowes Creek Maryland Precinct, Bringelly**
OFFICE: Macarthur	DRAWN BY: IKA	
SCALE: As shown	DATE: 17.08.2018	

N
MGA

PROJECT No:	76742.00
DRAWING No:	B1
REVISION:	C



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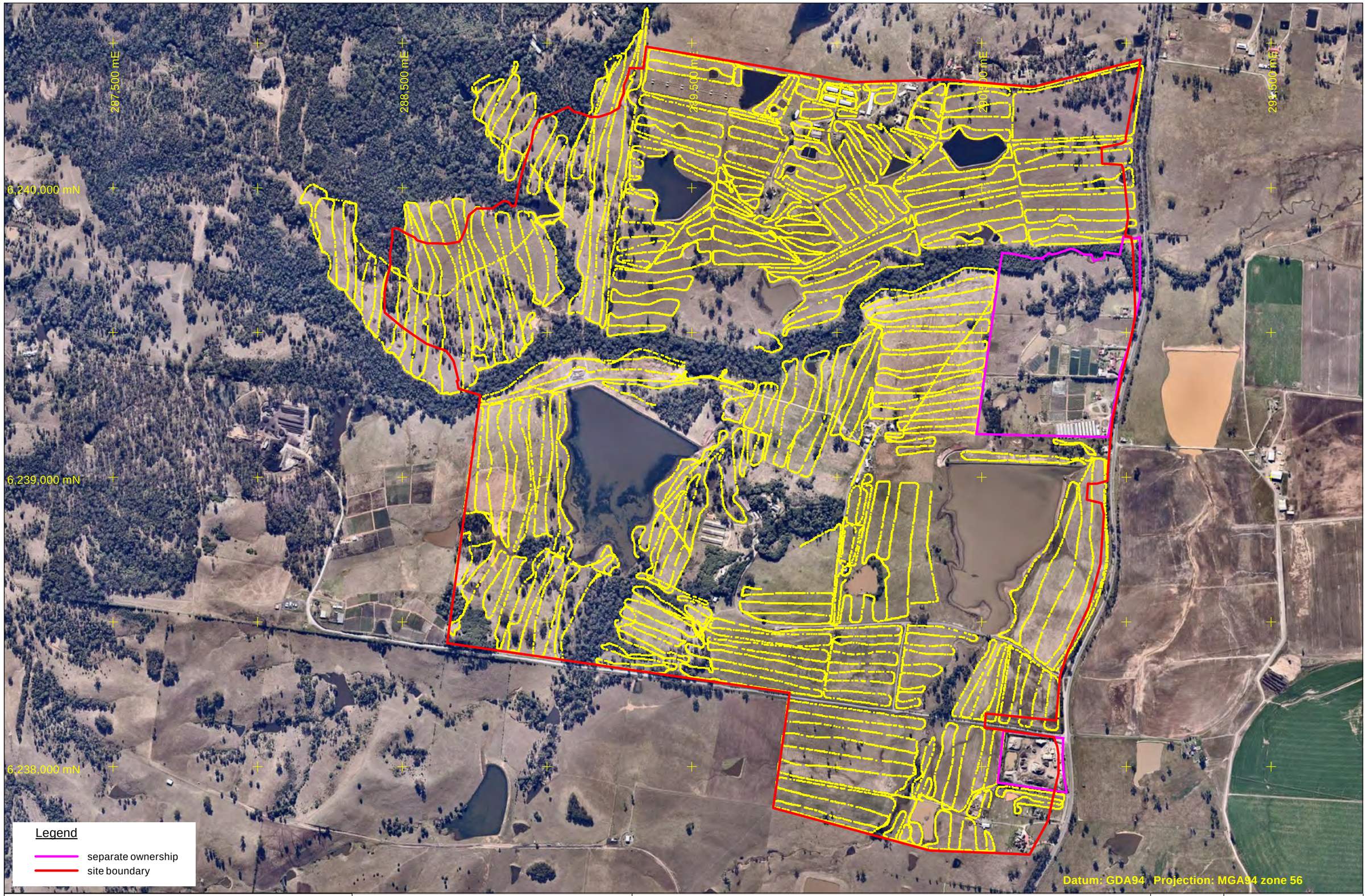
Geotechnics | Environment | Groundwater

CLIENT:	Macarthur Developments Pty Ltd		
OFFICE:	Macarthur	DRAWN BY:	AJK
SCALE:	as shown	DATE:	10 Sep 2018

TITLE: **Topography and Test Pit Locations**
Land Capability Study
Lowes Creek Maryland Precinct

PROJECT No:	76742.00
DRAWING No:	B2
REVISION:	D



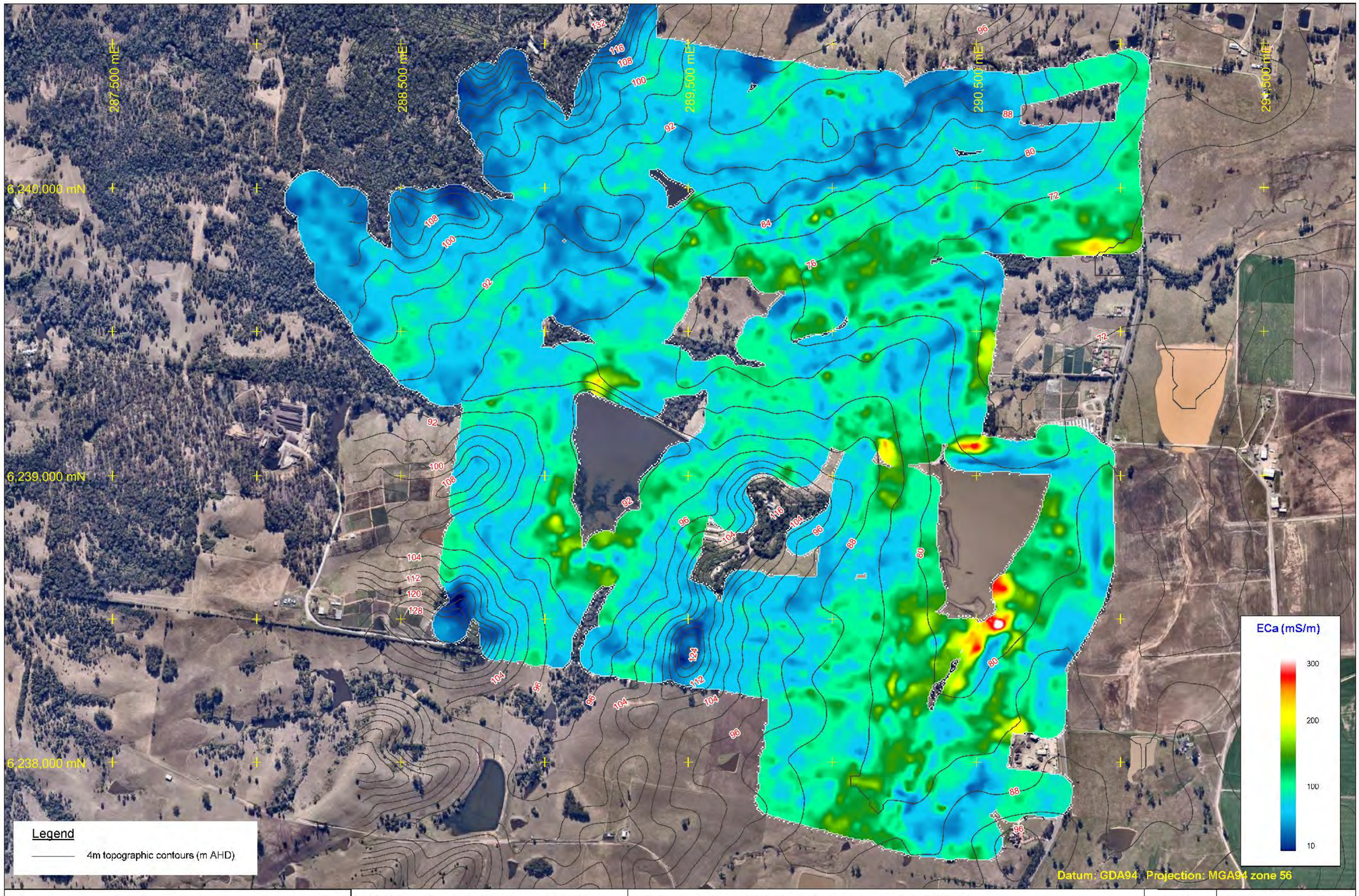
Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT:	Macarthur Developments Pty Ltd		
OFFICE:	Macarthur	DRAWN BY:	AJK
SCALE:	as shown	DATE:	10 Sep 2018

TITLE: Locations of Electromagnetic Survey Lines
Land Capability Study
Lowes Creek Maryland Precinct

N

PROJECT No:	76742.00
DRAWING No:	B3
REVISION:	B



Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Macarthur Developments Pty Ltd	TITLE: **Apparent Conductivity measured at 15 kHz** **Land Capability Study** **Lowes Creek Maryland Precinct, Bringelly**	PROJECT No: 76742.00
	OFFICE: Macarthur DRAWN BY: AJK		DRAWING No: B4
	SCALE: as shown DATE: 27 Nov 2016		REVISION: C

287,500 mE
288,500 mE
289,500 mE
290,500 mE
291,500 mE
6,240,000 mN
6,239,000 mN
6,238,000 mN

Legend

4m topographic contours (m AHD)

ECa (mS/m)

300
200
100
10

Datum: GDA94 Projection: MGA94 zone 56

Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT:	Macarthur Developments Pty Ltd		
OFFICE:	Macarthur	DRAWN BY:	AJK
SCALE:	as shown	DATE:	27 Nov 2016

TITLE: **Apparent Conductivity measured at 3 kHz**
Land Capability Study
Lowes Creek Maryland Precinct, Bringelly

N

PROJECT No:	76742.00
DRAWING No:	B5
REVISION:	C

287,500 mE
288,500 mE
289,500 mE
290,500 mE
291,500 mE
6,240,000 mN
6,239,000 mN
6,238,000 mN

Legend

4m topographic contours (m AHD)

ECa (mS/m)
300
200
100
10

Datum: GDA94 Projection: MGA94 zone 56

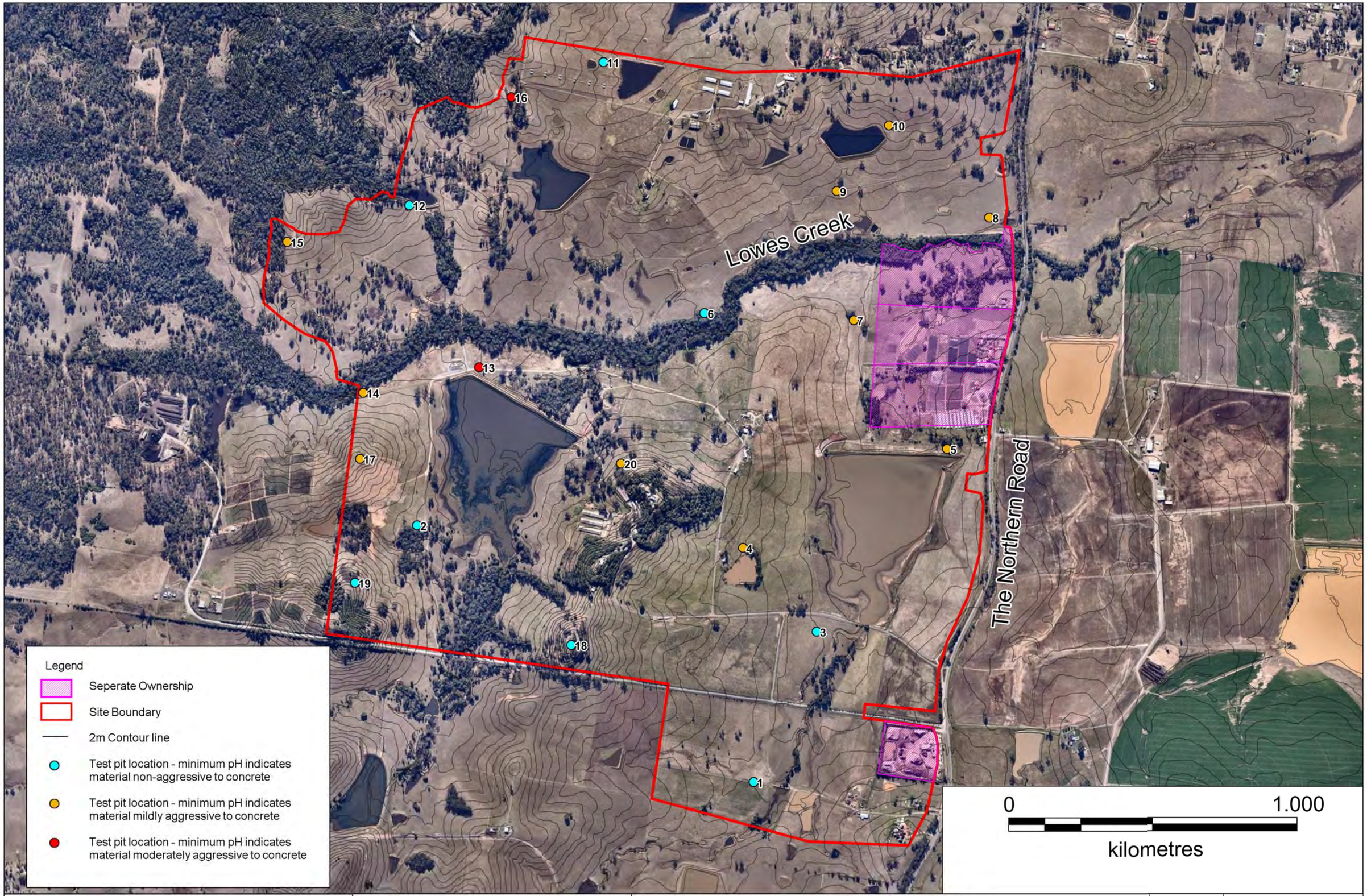
Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT:	Macarthur Developments Pty Ltd		
OFFICE:	Macarthur	DRAWN BY:	AJK
SCALE:	as shown	DATE:	27 Nov 2016

TITLE: **Apparent Conductivity measured at 1 kHz**
Land Capability Study
Lowes Creek Maryland Precinct, Bringelly

N

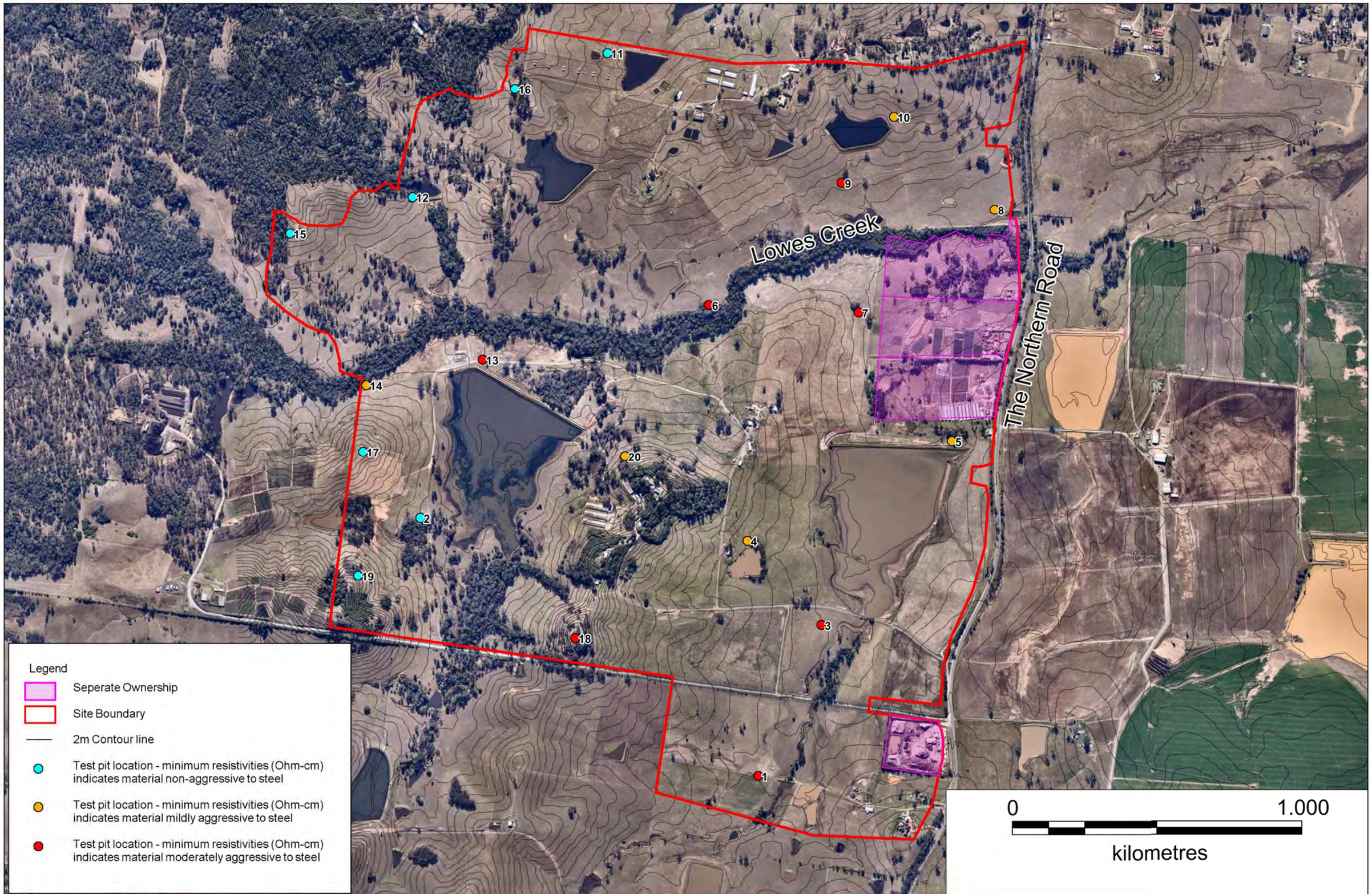
PROJECT No:	76742.00
DRAWING No:	B6
REVISION:	C



Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Maryland Development Partnership		TITLE: **Aggressivity to Concrete within Depths of 3m**	PROJECT No: 76742.00
OFFICE: Macarthur	DRAWN BY: IKA	**Land Capability Study**	DRAWING No: B7
SCALE: As shown	DATE: 17.08.2018	**Lowes Creek Maryland Precinct, Bringelly**	REVISION: B

N
MGA



Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Maryland Development Partnership		TITLE: **Aggressivity to Steel within Depths of 3m**	PROJECT No: 76742.00
OFFICE: Macarthur	DRAWN BY: IKA	**Land Capability Study**	DRAWING No: B8
SCALE: As shown	DATE: 17.08.2018	**Lowes Creek Maryland Precinct, Bringelly**	REVISION: B

N
MGA

287,500 mE
288,500 mE
289,500 mE
290,500 mE
291,500 mE
6,240,000 mN
6,239,000 mN
6,238,000 mN

Legend

Test Pits sampled for Salinity testing

ECe contours at 2 dS/m intervals

ECe (dS/m)

14 Very Saline
8 Moderately
4 Slightly
2 Non-Saline
0

Datum: GDA94 Projection: MGA94 zone 56

Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT:	Macarthur Developments Pty Ltd		
OFFICE:	Macarthur	DRAWN BY:	AJK
SCALE:	as shown	DATE:	27 Nov 2016

TITLE: **Apparent Salinity ECe from EM and Bulk ECe Data**
Land Capability Study
Lowes Creek Maryland Precinct, Bringelly

N

PROJECT No:	76742.00
DRAWING No:	B9
REVISION:	C

Appendix C

Logs

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290983
NORTHING: 6240027

PIT No: 1
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E*	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange, trace ironstone gravel, reworked natural		E	0.2				
					0.5				
1	1.0	Pit discontinued at 1.0m - limit of investigation							1
2									2
3									3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD7/280322 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290979
NORTHING: 6240020

PIT No: 2
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown, with decomposed wood, reworked natural		E	0.2				
					0.5				
	0.8	Pit discontinued at 0.8m - limit of investigation							
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Surface water intrusion

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290971
NORTHING: 6239834

PIT No: 3
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown mottled orange, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey		E	0.2				
					0.5				
1	1.0	Pit discontinued at 1.0m - limit of investigation							1
									2
									3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290189
NORTHING: 6240045

PIT No: 4
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, grey mottled brown and orange		E	0.0				
	0.4	Silty CLAY CL: low plasticity, orange-brown, trace ironstone gravel		E	0.4				
	1.0	Pit discontinued at 1.0m - limit of investigation			0.7				

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290233
NORTHING: 6240063

PIT No: 5
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown mottled orange, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange		E	0.2				
					0.5				
	0.8	Pit discontinued at 0.8m - limit of investigation							

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290393
NORTHING: 6240102

PIT No: 6
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown and orange mottled grey, with rootlets and gravel pebbles		E	0.0				
	0.3	Silty CLAY CL: low plasticity, brown and orange mottled grey, trace rootlets, reworked natural		E	0.3				
					0.6				
	0.8	Pit discontinued at 0.8m - limit of investigation							
	1								1
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290488
NORTHING: 6240079

PIT No: 7
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown and red, with rootlets		E	0.0				
	0.3	Silty CLAY CL: low plasticity, brown and red mottled grey, with ironstone gravel, reworked natural		E	0.3				
	1.0	Pit discontinued at 1.0m - limit of investigation			0.6				

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290559
NORTHING: 6240106

PIT No: 8
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.3	Silty CLAY CL: low plasticity, brown and orange mottled grey, reworked natural		E	0.3				
	1.0	Pit discontinued at 1.0m - limit of investigation			0.6				

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290162
NORTHING: 6239740

PIT No: 9
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown mottled orange		E	0.2				
	0.5				0.5				
	0.7	Pit discontinued at 0.7m - limit of investigation							
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290194
NORTHING: 6239741

PIT No: 10
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown mottled grey, with rootlets		E	0.2				
					0.5				
	1.0	Pit discontinued at 1.0m - limit of investigation							

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290176
NORTHING: 6239723

PIT No: 11
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0 0.1				
	0.2	Silty CLAY CL: low plasticity, brown and orange, with rootlets		E	0.2 0.5				
1	1.0	Pit discontinued at 1.0m - limit of investigation							1
									2
									3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290189
NORTHING: 6239752

PIT No: 12
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown mottled grey, with rootlets		E	0.2				
					0.5				
1	1.0	Pit discontinued at 1.0m - limit of investigation							1
									2
									3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290212
NORTHING: 6239739

PIT No: 13
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange, trace ironstone gravel		E	0.2				
					0.5				
1	1.0	Pit discontinued at 1.0m - limit of investigation							1
									2
									3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290211
NORTHING: 6239763

PIT No: 14
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown		E	0.2				
					0.5				
	1.0	Pit discontinued at 1.0m - limit of investigation							

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290218
NORTHING: 6239753

PIT No: 15
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, orange-brown, with rootlets		E	0.0 0.1				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with rootlets		E	0.2 0.5				
	1.0	Pit discontinued at 1.0m - limit of investigation							

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290246
NORTHING: 6239753

PIT No: 16
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey		E	0.2				
	1.0	Pit discontinued at 1.0m - limit of investigation			0.5				

5 10 15 20

1 2 3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290243
NORTHING: 6239775

PIT No: 17
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E					
	0.4	Silty CLAY CL: low plasticity, brown mottled grey, with decomposing wood		E					
	1.0	Pit discontinued at 1.0m - limit of investigation							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290270
NORTHING: 6239768

PIT No: 18
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange		E	0.2				
	0.5				0.5				
	0.7	Pit discontinued at 0.7m - limit of investigation							
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290268
NORTHING: 6239788

PIT No: 19
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown		E	0.2				
					0.5				
	0.6	Pit discontinued at 0.6m - limit of investigation							
	1								1
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290290
NORTHING: 6239772

PIT No: 20
PROJECT No: 204684.00
DATE: 6/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown		E	0.2				
	0.5	Pit discontinued at 0.5m - limit of investigation			0.5				
	1								1
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290385
NORTHING: 6240364

PIT No: 21
PROJECT No: 204684.00
DATE: 24/2/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		A	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange			0.2				
	0.5	Pit discontinued at 0.5m - limit of investigation							
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hand tools

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290491
NORTHING: 6240341

PIT No: 22
PROJECT No: 204684.00
DATE: 24/2/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		A	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange, with rootlets			0.2				
	0.5	Pit discontinued at 0.5m - limit of investigation							
	1								1
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hand auger

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290774
NORTHING: 6240286

PIT No: 23
PROJECT No: 204684.00
DATE: 24/2/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets							
	0.2	Silty CLAY CL: low plasticity, brown and orange, with rootlets		A					
	0.5	Pit discontinued at 0.5m - limit of investigation			0.5				
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hand auger

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290918
NORTHING: 6240252

PIT No: 24
PROJECT No: 204684.00
DATE: 24/2/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets							
	0.2	Silty CLAY CL: low plasticity, brown and orange, with rootlets		A					
	0.5	Pit discontinued at 0.5m - limit of investigation			0.5				
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hand auger

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290349
NORTHING: 6240321

PIT No: 25
PROJECT No: 204684.00
DATE: 21/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CI: medium plasticity, red-brown mottled orange, trace rootlets and decomposing wood			0.2				
					0.3				
				E					
				D	0.5				
	0.6	Silty CLAY CI: medium plasticity, orange-brown mottled red and grey, with shale gravel and cobbles			0.6				
					0.7				
				E					
1				D	1.0				1
	1.2	Silty CLAY CL: low plasticity, brown, orange and grey, with shale gravel			1.3				
				E					
				D	1.5				
					1.6			▼ 21-03-22	
2	2.0	Pit discontinued at 2.0m - practical refusal							2
3									3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Free groundwater observed at 1.8m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290456
NORTHING: 6240336

PIT No: 26
PROJECT No: 204684.00
DATE: 21/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY: low plasticity, brown and red mottled orange, trace rootlets and decomposing wood		E	0.2				
				D	0.5				
	0.9	Silty CLAY CL: low plasticity, brown and grey mottled orange, with highly weathered shale		D	1.0				
				D	1.5				
	2.1	Pit discontinued at 2.1m - limit of investigation							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290572
NORTHING: 6240328

PIT No: 27
PROJECT No: 204684.00
DATE: 21/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown mottled grey and red, trace rootlets		E	0.2				
				D	0.5				
	0.8	Silty CLAY CL: low plasticity, grey mottled brown, red and orange, with highly weathered shale		D	1.0				
	1			D	1.5				1
	2 2.0	Pit discontinued at 2.0m - practical refusal		D	2.0				2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290681
NORTHING: 6240322

PIT No: 28
PROJECT No: 204684.00
DATE: 21/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and red, trace rootlets and decomposed wood		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	2	2.0 Silty CLAY CL: low plasticity, brown, red and grey, with highly weathered shale gravel		D	2.0				2
				D	2.5				
		2.7 Silty CLAY CL: low plasticity, grey mottled orange, with shale cobbles							
	3	3.0 Pit discontinued at 3.0m - limit of investigation		D	3.0				3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290780
NORTHING: 6240341

PIT No: 29
PROJECT No: 204684.00
DATE: 21/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown and red, with rootlets		E*	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and red, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.8	Silty CLAY CL: low plasticity, grey mottled brown, with highly weathered shale gravel							
	2 2.0	Pit discontinued at 2.0m - limit of investigation							2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD1/210322 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290876
NORTHING: 6240349

PIT No: 30
PROJECT No: 204684.00
DATE: 21/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown mottled grey, with roots, trace ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	2			D	2.0				2
	2.2	Silty CLAY CL: low plasticity, grey mottled brown		D	2.5				
	3			D	3.0				3
	3.0	Pit discontinued at 3.0m - limit of investigation							

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290949
NORTHING: 6240388

PIT No: 31
PROJECT No: 204684.00
DATE: 21/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with roots and weathered shale gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.8	Silty CLAY CL: low plasticity, grey mottled brown, with shale gravel		D	2.0				
	2								2
	2.2	Pit discontinued at 2.2m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 291034
NORTHING: 6240410

PIT No: 32
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brow and orange mottled grey, trace rootlets		E	0.2				
				D	0.5				
1	1.0	Silty CLAY CL: low plasticity, grey mottled brown and orange, with highly weathered shale gravel		D	1.0				1
				D	1.5				
	1.8	SHALE: grey mottled brown, weathered							
2				D	2.0				2
	2.4	Pit discontinued at 2.4m - practical refusal							
3									3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290994
NORTHING: 6240324

PIT No: 33
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.6	SHALE: brown and grey, weathered							
	2			D	2.0				2
	2.3	Pit discontinued at 2.3m - practical refusal							
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290996
NORTHING: 6240224

PIT No: 34
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
					0.0				5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E					
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.6	Silty CLAY CL: low plasticity, grey mottled brown, with highly weathered shale gravel							
	2 2.0	Pit discontinued at 2.0m - limit of investigation							2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290896
NORTHING: 6240234

PIT No: 35
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown, trace ironstone gravel and rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.8	Silty CLAY CL: low plasticity, grey mottled brown, with highly weathered shale gravel		D	2.0				2
				D	2.5				
	2.6	Pit discontinued at 2.6m - practical refusal							3
	3								

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD2/220322 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290795
NORTHING: 6240243

PIT No: 36
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey and red, trace ironstone gravel and rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.8	Silty CLAY CL: low plasticity, grey and brown mottled red, with highly weathered shale gravel		D	2.0				
	2								2
	2.3	Pit discontinued at 2.3m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290696
NORTHING: 6240218

PIT No: 37
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with ironstone and shale gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.8	Pit discontinued at 1.8m - practical refusal							
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290593
NORTHING: 6240243

PIT No: 38
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, grey-brown mottled red, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.4	Silty CLAY CL: low plasticity, grey mottled brown, with weathered shale gravel		D	1.5				
	2			D	2.0				2
	2.2	Pit discontinued at 2.2m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290478
NORTHING: 6240264

PIT No: 39
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey and red, trace rootlets		E	0.2				
				D	0.5				
	0.6	Silty CLAY CL: low plasticity, grey brown, with slightly weathered shale gravel		D	1.0				
	1								1
	1.3	Pit discontinued at 1.3m - practical refusal							
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290366
NORTHING: 6240252

PIT No: 40
PROJECT No: 204684.00
DATE: 22/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey and red, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.4	Silty CLAY CL: low plasticity, grey mottled brown and orange, with slightly weathered shale gravel		D	1.5				
	2			D	2.0				2
	2.1	Pit discontinued at 2.1m - practical refusal							
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290288
NORTHING: 6240171

PIT No: 41
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown and orange, with rootlets and decomposed wood		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.2	Silty CLAY CL: low plasticity, grey mottled brown, with highly weathered shale gravel		D	1.5				
	2			D	2.0				2
	2.2	Pit discontinued at 2.2m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290385
NORTHING: 6240170

PIT No: 42
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown, trace rootlets		E	0.2				
				D	0.5				
1	1.0	Silty CLAY CL: low plasticity, grey-brown, with highly weathered shale gravel		D	1.0				1
				D	1.5				
2	2.0	Pit discontinued at 2.0m - limit of investigation							2
3									3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290496
NORTHING: 6240182

PIT No: 43
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown and orange, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, trace rootlets		E	0.2				
				D	0.5				
	0.8	Silty CLAY CL: low plasticity, grey, brown and orange, with highly weathered shale gravel		D	1.0				
				D	1.5				
	1.6	Pit discontinued at 1.6m - limit of investigation							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290612
NORTHING: 6240151

PIT No: 44
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, grey-brown mottled orange, with slightly weathered shale gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.2	SHALE: brown, slightly weathered		D	1.5				
	2 2.0	Pit discontinued at 2.0m - practical refusal		D	2.0				2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290693
NORTHING: 6240101

PIT No: 45
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
					0.0				5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E					
	0.2				0.2				
		Silty CLAY CL: low plasticity, brown, orange and grey, with shale gravel		E					
				D	0.5				
	1			D	1.0				1
	1.5			D	1.5				
		Silty CLAY CL: low plasticity, grey mottled brown, with slightly weathered shale gravel							
	2			D	2.0				2
				D	2.5				
	2.6	Pit discontinued at 2.6m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290786
NORTHING: 6240146

PIT No: 46
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown mottled grey, trace ironstone gravel		E	0.2				
				D	0.5				
	0.8	Silty CLAY CL: low plasticity, grey mottled orange and red		D	1.0				
	1			D	1.5				1
	1.6	SHALE: brown, highly weathered		D	2.0				
	2								2
	2.5	Pit discontinued at 2.5m - practical refusal		D	2.5				
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290890
NORTHING: 6240126

PIT No: 47
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, trace ironstone gravel and rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Silty CLAY CL: low plasticity, grey mottled orange, with slightly weathered shale gravel		D	1.5				
	2			D	2.0				2
				D	2.5				
	2.8	Pit discontinued at 2.8m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290972
NORTHING: 6240063

PIT No: 48
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey and red, trace ironstone gravel and decomposed wood		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.4	Silty CLAY CL: low plasticity, grey-brown mottled red, with slightly weathered shale gravel		D	1.5				
	2			D	2.0				2
				D	2.5				
	2.6	Pit discontinued at 2.6m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290886
NORTHING: 6240025

PIT No: 49
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
					0.0				5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E					
	0.2	Silty CLAY CL: low plasticity, brown and red mottled grey, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.9	Silty CLAY CL: low plasticity, yellow brown mottled grey							
	2			D	2.0				2
	2.5	Pit discontinued at 2.5m - limit of investigation		D	2.5				
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290780
NORTHING: 6240041

PIT No: 50
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown mottled red and orange		E	0.0				
	0.2	Silty CLAY CL: low plasticity, red-brown mottled grey, with ironstone gravel		E	0.2				
				D	0.5				
	0.8	Silty CLAY CL: low plasticity, grey mottled brown and orange, with ironstone gravel		D	1.0				
	1.2	SHALE: grey-brown, slightly weathered							
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290701
NORTHING: 6239997

PIT No: 51
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E*	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.3	SHALE: grey-brown, slightly weathered							
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD3/230322 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290585
NORTHING: 6240049

PIT No: 52
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	0.8	Silty CLAY CL: low plasticity, grey mottled brown and orange, with grey slightly weathered shale gravel		D	1.0				
				D	1.5				
	1.7	Pit discontinued at 1.7m - limit of investigation							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290473
NORTHING: 6240014

PIT No: 53
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.2	Silty CLAY CL: low plasticity, brown mottled grey and orange, with ironstone gravel		D	1.5				
	2			D	2.0				2
	2.3	Silty CLAY CL: low plasticity, brown and red mottled grey, with ironstone gravel		D	2.5				
	3			D	3.0			▼ 23-03-22	3
	3.1	Pit discontinued at 3.1m - limit of investigation							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Free groundwater observed at 3.0m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290354
NORTHING: 6240011

PIT No: 54
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets and decomposed wood		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.7	Silty CLAY CI: medium plasticity, grey mottled red-brown, with ironstone gravel							
	2 2.0	Pit discontinued at 2.0m - practical refusal		D	2.0				2
				D	2.5				
	3			D	3.0				3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290295
NORTHING: 6240087

PIT No: 55
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
					0.0				5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E					
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled red, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.6	Silty CLAY CL: low plasticity, grey-brown mottled red							
	2			D	2.0				2
	2.3	Pit discontinued at 2.3m - practical refusal							
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD4/250322 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290266
NORTHING: 6240003

PIT No: 56
PROJECT No: 204684.00
DATE: 23/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and red, trace rootlets		E	0.2				
				D	0.5				
	0.8	Silty CLAY CL: low plasticity, brown and orange mottled red and grey, with ironstone gravel and large sandstone boulders		D	1.0				
				D	1.5				
	1.6	Silty CLAY CL: low plasticity, grey mottled brown and orange, with slightly weathered shale gravel		D	2.0				
	2.5	Pit discontinued at 2.5m - practical refusal		D	2.5			▼ 23-03-22	

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Free groundwater observed at 2.5m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290161
NORTHING: 6239966

PIT No: 57
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290255
NORTHING: 6239924

PIT No: 58
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/Silty CLAY: low plasticity, brown and grey, with sand and gravel		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey		E	0.2				
				D	0.5				
	1			D	1.0			28-03-22	1
				D	1.5				
	2			D	2.0				2
				D	2.5				
		- becoming red-brown below 2.8m							
	3 3.0	Pit discontinued at 3.0m - limit of investigation		D	3.0				3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Free groundwater observed at 1.0m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290381
NORTHING: 6239933

PIT No: 59
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2				0.2				
	0.3	Silty CLAY CL: low plasticity, brown and orange mottled grey		E					
	0.5			D	0.5				
	1			D	1.0				1
	1.5			D	1.5				
	1.6	Pit discontinued at 1.6m - limit of investigation							
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Surface water intrusion

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290503
NORTHING: 6239897

PIT No: 60
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, medium plasticity, brown and grey, with decomposed wood		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290598
NORTHING: 6239949

PIT No: 61
PROJECT No: 204684.00
DATE: 25/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E*	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.3	Silty CLAY CL: low plasticity, brown, with slightly weathered shale gravel		D	1.5				
	1.6	Pit discontinued at 1.6m - limit of investigation							
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD5/250322 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290730
NORTHING: 6239913

PIT No: 62
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E*	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD8/280322 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290825
NORTHING: 6239935

PIT No: 63
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290910
NORTHING: 6239915

PIT No: 64
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with decomposing wood		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290990
NORTHING: 6239912

PIT No: 65
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange, with fine grained sand		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290913
NORTHING: 6239817

PIT No: 66
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown and orange, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange		E	0.2				
				D	0.5				
	1			D	1.0				
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290797
NORTHING: 6239842

PIT No: 67
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E*	0.0				
	0.2	Silty CLAY CL: low plasticity, yellow-brown mottled grey, trace ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	2			D	2.0				2
				D	2.5				
	3 3.0	Pit discontinued at 3.0m - limit of investigation		D	3.0				3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD8/050422 collected

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290681
NORTHING: 6239799

PIT No: 68
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown mottled orange, with ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290618
NORTHING: 6239851

PIT No: 69
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, with decomposed wood, trace ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290517
NORTHING: 6239801

PIT No: 70
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.3	Silty CLAY CL: low plasticity, brown and orange, trace rootlets		E	0.3				
				D	0.5				
					0.6				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290387
NORTHING: 6239841

PIT No: 71
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown, trace ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	2			D	2.0				2
				D	2.5				
	3			D	3.0				3
	3.0	Pit discontinued at 3.0m - limit of investigation							

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290288
NORTHING: 6239842

PIT No: 72
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange, with ironstone gravel		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290150
NORTHING: 6239851

PIT No: 73
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E*	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and red mottled grey, with ironstone gravel, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	1.7	Pit discontinued at 1.7m - limit of investigation							
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD6/280322 collected; Surface water intrusion

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290134
NORTHING: 6239742

PIT No: 74
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
									5 10 15 20
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey		E	0.2				
				D	0.5				
	1			D	1.0				1
				D	1.5				
	2			D	2.0				2
	2.5	Silty CLAY CL: low plasticity, grey-brown		D	2.5				
	3 3.0	Pit discontinued at 3.0m - limit of investigation		D	3.0				3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290299
NORTHING: 6239738

PIT No: 75
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, orange-brown, trace rootlets		E	0.2				
				D	0.5				
	1	- becoming dark brown below 1.0m		D	1.0				
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290349
NORTHING: 6239814

PIT No: 76
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290449
NORTHING: 6239833

PIT No: 77
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown mottled grey, with rootlets		E	0.2				
				D	0.5				
1	1.0	Silty CLAY CL: low plasticity, grey mottled brown		D	1.0				1
				D	1.5			▼ 05-04-22	
2	2.0	Pit discontinued at 2.0m - limit of investigation							2
3									3

Dynamic Penetrometer Test (blows per mm) scale: 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Free groundwater observed at 1.5m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290593
NORTHING: 6239827

PIT No: 78
PROJECT No: 204684.00
DATE: 5/4/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange mottled grey, trace rootlets		E	0.2				
				D	0.5				
	1			D	1.0				1
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Free groundwater observed at 1.5m

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290743
NORTHING: 6239807

PIT No: 79
PROJECT No: 204684.00
DATE: 28/3/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILL/TOPSOIL: Silty CLAY, low plasticity, brown, with rootlets		E	0.0				
	0.2	Silty CLAY CL: low plasticity, brown and orange		E	0.2				
				D	0.5				
	0.9	Silty CLAY CL: low plasticity, brown		D	1.0				
	1.5	Pit discontinued at 1.5m - limit of investigation		D	1.5				

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290311
NORTHING: 6239746

PIT No: ST1
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.4	Silty CLAY CL: low plasticity, brown and orange, w<PL							
	0.7	Pit discontinued at 0.7m - limit of investigation							
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 10m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290287
NORTHING: 6239730

PIT No: ST2
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.3	TOPSOIL/Silty CLAY: low plasticity, brown, trace roots, w<PL							
	0.6	Silty CLAY CL: low plasticity, brown and orange, trace roots							
	1	Pit discontinued at 0.6m - limit of investigation							
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 8m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290241
NORTHING: 6239727

PIT No: ST3
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.4	TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.7	Silty CLAY CL: low plasticity, yellow-brown, with roots							
	1	Pit discontinued at 0.7m - limit of investigation							
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 9m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290247
NORTHING: 6239701

PIT No: ST4
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets							
	0.4	Silty CLAY CL: low plasticity, yellow-brown, with rootlets							
	0.7	Pit discontinued at 0.7m - limit of investigation							
	1								
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 12m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290201
NORTHING: 6239780

PIT No: ST5
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.3	Silty CLAY CL: low plasticity, brown and yellow, trace rootlets							
	0.6	Pit discontinued at 0.6m - limit of investigation							
	1								1
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 10m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290501
NORTHING: 6239931

PIT No: ST6
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.4	Silty CLAY CL: low plasticity, brown and yellow, w<PL							
	0.9	Pit discontinued at 0.9m - limit of investigation							
	1								1
	2								2
	3								3

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Surface water observed; Strip trench 15m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290951
NORTHING: 6239830

PIT No: ST7
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.6	Silty CLAY CL: low plasticity, yellow-brown, trace rootlets, w<PL							
	1	Pit discontinued at 0.6m - limit of investigation							
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 6m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290311
NORTHING: 6240145

PIT No: ST8
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.3	Silty CLAY CL: low plasticity, red-brown, trace ironstone gravel							
	0.6	Pit discontinued at 0.6m - limit of investigation							
	1								1
	2								2
	3								3

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 10m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290424
NORTHING: 6240196

PIT No: ST9
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.3	TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.7	Silty CLAY CL: low plasticity, brown and orange, trace rootlets							
	1	Pit discontinued at 0.7m - limit of investigation							
	2								
	3								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 12m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290339
NORTHING: 6240284

PIT No: ST10
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.3	TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets							
	0.5	Silty CLAY CL: low plasticity, orange-brown, with grey shale gravel							
		Pit discontinued at 0.5m - limit of investigation							

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 12m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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TEST PIT LOG

CLIENT: Cameron Brae Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: 975 The Northern Road, Bringelly

SURFACE LEVEL: --
EASTING: 290981
NORTHING: 6240028

PIT No: ST11
PROJECT No: 204684.00
DATE: 3/5/2022
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	TOPSOIL/Silty CLAY: low plasticity, brown, with rootlets, w<PL							
	0.7	Silty CLAY CL: low plasticity, brown and orange mottled grey, w<PL							
	1	Pit discontinued at 0.7m - limit of investigation							
	2								
	3								

5 10 15 20

RIG: Hyundai Robex 60CR-9 excavator

LOGGED: JH

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Strip trench 9m

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

Appendix D

Summary Table

Test Bore or Pit	Sample Depth	pH	Chloride Concentration	Sulphate Concentration	Resistivity	Soil Condition	Sample Aggressivity Class					Exchangeable Sodium (Na) Concentration	Cation Exchange Capacity	Sodicity	Sodicity Class	Emerson Crumb Class Number	Dispersion	Soil Texture Group	Textural Factor (M)	$EC_{1:5}$	EC_e	Sample Salinity Class
					By inversion of EC1:5		Aggr. to Concrete - from sample pH	Aggr. to Concrete - from Sulphate conc.	Aggr. to Steel - from sample pH	Aggr. to Steel - from Chloride conc.	Aggr. to Steel - from sample Resistivity			[Na/CEC]			(from Emerson Class)	(for detailed soil logs see Report Appendix)		[Lab.]	[M x $EC_{1:5}$]	(Based on sample ECe)
	(m bgl)	(pH units	(mg/kg)	(mg/kg)	Ω.cm	[AS2159-2009]	[AS2159-2009]					(meq/100g)	(meq/100g)	(%)	[after DLWC]		[AS1289.3.8.1]	[after DLWC]	after DLWC	(microS/cm)	(deciS/m)	[Richards 1954]
25	0.5	6.4	<10	28	11494	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	29	4	Non-Sodic			Loam	10	87	0.9	Non-Saline
	1.0	7.9	<10	10	16667	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Sand	17	60	1.0	Non-Saline
.	1.5	8.6	<10	10	7692	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0	35	1	Non-Sodic			Sand	17	130	2.2	Slightly Saline
26	0.5	5.5			11765	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	85	0.6	Non-Saline
	1.0	5.3			16129	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	62	0.5	Non-Saline
	1.5	5.3			15152	B	Mild		Non-Aggressive		Non-Aggressive							Loam	10	66	0.7	Non-Saline
.	2.0	7.4			20408	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7	49	0.3	Non-Saline
27	0.5	4.9			18868	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	53	0.5	Non-Saline
	1.0	4.7			4167	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	240	1.7	Non-Saline
	1.5	4.8			5882	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6	170	1.0	Non-Saline
.	2.0	4.6			3333	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	300	2.1	Slightly Saline
28	0.5	4.6	27	80	6250	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6	160	1.0	Non-Saline
	1.0	4.4			3448	B	Moderate		Non-Aggressive		Non-Aggressive							Heavy clay	6	290	1.7	Non-Saline
	1.5	4.4	10	29	2174	B	Moderate	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	460	3.2	Slightly Saline
	2.0	4.6			2500	B	Mild		Non-Aggressive		Non-Aggressive							Loam	10	400	4.0	Slightly Saline
	2.5	4.5	210	120	3226	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Loam	10	310	3.1	Slightly Saline
.	3.0	4.7			3125	B	Mild		Non-Aggressive		Non-Aggressive							Loam	10	320	3.2	Slightly Saline
29	0.5	4.6			3333	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6	300	1.8	Non-Saline
	1.0	4.2			1408	B	Moderate		Non-Aggressive		Mild							Heavy clay	6	710	4.3	Moderately Saline
.	1.5	4.4			1818	B	Moderate		Non-Aggressive		Mild							Loam	10	550	5.5	Moderately Saline
30	0.5	4.3			1724	B	Moderate		Non-Aggressive		Mild							Loam	10	580	5.8	Moderately Saline
	1.0	4.3			1471	B	Moderate		Non-Aggressive		Mild							Loam	10	680	6.8	Moderately Saline
	1.5	4.4			1515	B	Moderate		Non-Aggressive	Non-Aggressive	Mild							Loam	10	660	6.6	Moderately Saline
	2.0	4.6			1923	B	Mild		Non-Aggressive		Mild							Loam	10	520	5.2	Moderately Saline
	2.5	4.6			2174	B	Mild		Non-Aggressive		Non-Aggressive							Loam	10	460	4.6	Moderately Saline
.	3.0	4.6			2128	B	Mild		Non-Aggressive		Non-Aggressive							Loam	10	470	4.7	Moderately Saline
31	0.5	4.8	750	260	1613	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Light clay	9	620	5.3	Moderately Saline
	1.0	4.9	260	150	3226	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	4	16	Highly Sodic			Medium clay	7	310	2.2	Slightly Saline
	1.5	4.9			1667	B	Mild		Non-Aggressive		Mild							Loam	10	600	6.0	Moderately Saline
.	2.0	4.8	850	200	1493	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild	1	3	26	Highly Sodic			Clay loam	9	670	6.0	Moderately Saline
32	0.5	5.1			7143	B	Mild		Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	140	1.0	Non-Saline
	1.0	4.8			1205	B	Mild		Non-Aggressive	Non-Aggressive	Mild							Light clay	9	830	7.1	Moderately Saline
	1.5	5.3			2273	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	440	3.1	Slightly Saline
.	2.0	5.5			1370	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Medium clay	7	730	5.1	Moderately Saline
33	0.5	5			2500	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	400	2.8	Slightly Saline
	1.0	5			1613	B	Mild		Non-Aggressive		Mild							Medium clay	7	620	4.3	Moderately Saline
	1.5	4.9			1333	B	Mild		Non-Aggressive	Non-Aggressive	Mild							Medium clay	7	750	5.3	Moderately Saline
.	2.0	5.3			1923	B	Mild		Non-Aggressive		Mild							Medium clay	7	520	3.6	Slightly Saline
34	0.5	4.9			4000	B	Mild	Non-Aggressive	Non-Aggressive		Non-Aggressive							Medium clay	7	250	1.8	Non-Saline
	1.0	4.5			1887	B	Mild	Non-Aggressive	Non-Aggressive		Mild							Medium clay	7	530	3.7	Slightly Saline
.	1.5	4.8			1639	B	Mild		Non-Aggressive		Mild							Clay loam	9	610	5.5	Moderately Saline
35	0.5	5.5	24	170	7143	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	140	1.0	Non-Saline
	1.0	5.9			10417	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7	96	0.7	Non-Saline
	1.5	7.4	36	39	5882	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light clay	9	170	1.4	Non-Saline
	2.0	5.6			1587	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7	630	4.4	Moderately Saline
.	2.5	5.7	670	180	1818	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Medium clay	7	550	3.9	Slightly Saline
36	0.5	4.8			2273	B	Mild		Non-Aggressive		Non-Aggressive							Light medium clay	8	440	3.5	Slightly Saline
	1.0	4.7			3846	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	260	2.3	Slightly Saline
	1.5	4.6			1695	B	Mild		Non-Aggressive		Mild							Light medium clay	8	590	4.7	Moderately Saline
.	2.0	4.5			1351	B	Mild		Non-Aggressive		Mild							Medium clay	7	740	5.2	Moderately Saline
37	0.5	5.3	390	190	2500	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light medium clay	8	400	3.2	Slightly Saline
	1.0	6.0	320	130	3030	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light medium clay	8	330	2.6	Slightly Saline
.	1.5	4.8	1200	120	1111	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Medium clay	7	900	6.3	Moderately Saline

Test Bore or Pit	Sample Depth	pH	Chloride Concentration	Sulphate Concentration	Resistivity	Soil Condition	Sample Aggressivity Class					Exchangeable Sodium (Na) Concentration	Cation Exchange Capacity	Sodicity	Sodicity Class	Emerson Crumb Class Number	Dispersion	Soil Texture Group	Textural Factor (M)	$EC_{1:5}$	EC_e	Sample Salinity Class
					By inversion of EC1:5		Aggr. to Concrete - from sample pH	Aggr. to Concrete - from Sulphate conc.	Aggr. to Steel - from sample pH	Aggr. to Steel - from Chloride conc.	Aggr. to Steel - from sample Resistivity			[Na/CEC]			(from Emerson Class)	(for detailed soil logs see Report Appendix)		[Lab.]	[M x $EC_{1:5}$]	(Based on sample ECe)
	(m bgl)	(pH units	(mg/kg)	(mg/kg)	Ω.cm	[AS2159-2009]	[AS2159-2009]					(meq/100g)	(meq/100g)	(%)	[after DLWC]		[AS1289.3.8.1]	[after DLWC]	after DLWC	(microS/cm)	(deciS/m)	[Richards 1954]
38	0.5	4.7			2564	B	Mild		Non-Aggressive		Non-Aggressive					2	Some	Medium clay	7	390	2.7	Slightly Saline
	1.5	4.7			1695	B	Mild		Non-Aggressive		Mild							Clay loam	9	590	5.3	Moderately Saline
.	2.0	5.0			2500	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	400	3.6	Slightly Saline
39	0.5	5.0	65	83	7143	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Loam	10	140	1.4	Non-Saline
.	1.0	4.8	190	92	4545	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Loam	10	220	2.2	Slightly Saline
40	0.5	4.7			3448	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	290	2.0	Slightly Saline
	1.0	6.1			3704	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Loam	10	270	2.7	Slightly Saline
	1.5	4.8			2941	B	Mild		Non-Aggressive		Non-Aggressive							Light medium clay	8	340	2.7	Slightly Saline
.	2.0	4.6			2381	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	420	3.8	Slightly Saline
41	0.5	7.5	64	37	8333	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	120	0.8	Non-Saline
	1.0	7.7	48	40	10526	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Loam	10	95	1.0	Non-Saline
	1.5	4.6			2564	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	390	2.7	Slightly Saline
.	2.0	4.5	440	98	2703	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	370	2.6	Slightly Saline
42	0.5	4.9			5000	B	Mild		Non-Aggressive		Non-Aggressive					2	Some	Medium clay	7	200	1.4	Non-Saline
	1.0	4.9			1000	B	Mild		Non-Aggressive		Mild							Medium clay	7	1000	7.0	Moderately Saline
.	1.5	6.8			909	B	Non-Aggressive		Non-Aggressive		Moderate							Light medium clay	8	1100	8.8	Very Saline
43	0.5	5.1			3571	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	280	2.0	Non-Saline
	1.0	4.5			1613	B	Mild		Non-Aggressive		Mild							Medium clay	7	620	4.3	Moderately Saline
.	1.5	4.8			4000	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	250	1.8	Non-Saline
44	0.5	5.5	<10	32	10000	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	<0.1	7	1	Non-Sodic			Sandy loam	14	100	1.4	Non-Saline
	1.0	4.8	160	100	5263	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	3	18	Highly Sodic			Loam	10	190	1.9	Non-Saline
	1.5	4.7			1449	B	Mild		Non-Aggressive		Mild							Medium clay	7	690	4.8	Moderately Saline
.	2.0	5.3	310	82	3846	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	260	1.8	Non-Saline
45	0.5	4.8			5000	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	200	1.8	Non-Saline
	1.0	4.5			3333	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	300	2.7	Slightly Saline
	1.5	4.8			4000	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	250	1.8	Non-Saline
	2.0	7.5			2041	B	Non-Aggressive		Non-Aggressive		Non-Aggressive					2	Some	Sandy loam	14	490	6.9	Moderately Saline
.	2.5	5.1			2083	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	480	3.4	Slightly Saline
46	0.5	4.8	240	140	4000	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Clay loam	9	250	2.3	Slightly Saline
	1.0	4.7	230	140	3846	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Clay loam	9	260	2.3	Slightly Saline
	1.5	4.6	1000	310	1220	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Sandy loam	14	820	11.5	Very Saline
	2.0	4.5			1389	B	Mild		Non-Aggressive		Mild							Sandy loam	14	720	10.1	Very Saline
.	2.5	5.4	340	88	3333	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	300	2.1	Slightly Saline
47	0.5	4.6			3333	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	300	2.7	Slightly Saline
	1.0	4.5			1333	B	Mild		Non-Aggressive		Mild							Sandy loam	14	750	10.5	Very Saline
.	1.5	4.5			1299	B	Mild		Non-Aggressive		Mild							Sandy loam	14	770	10.8	Very Saline
48	0.5	4.9	170	210	4000	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	4	14	Sodic			Light medium clay	8	250	2.0	Slightly Saline
	1.0	4.7			2174	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	460	3.2	Slightly Saline
	1.5	4.7	410	130	2083	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	2	8	27	Highly Sodic			Medium clay	7	480	3.4	Slightly Saline
	2.0	4.9			2174	B	Mild		Non-Aggressive		Non-Aggressive							Light medium clay	8	460	3.7	Slightly Saline
.	2.5	5.0	480	120	2000	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	500	3.5	Slightly Saline
49	0.5	5.4			4762	B	Mild		Non-Aggressive		Non-Aggressive							Light medium clay	8	210	1.7	Non-Saline
	1.0	5.3			1923	B	Mild		Non-Aggressive		Mild							Clay loam	9	520	4.7	Moderately Saline
	1.5	5.7			1075	B	Non-Aggressive		Non-Aggressive		Mild							Loam	10	930	9.3	Very Saline
	2.0	5.8			1075	B	Non-Aggressive		Non-Aggressive		Mild							Sandy loam	14	930	13.0	Very Saline
.	2.5	5.7			1266	B	Non-Aggressive		Non-Aggressive		Mild							Clay loam	9	790	7.1	Moderately Saline
50	0.5	4.8			5263	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	190	1.6	Non-Saline
	1.0	4.8			1639	B	Mild		Non-Aggressive		Mild							Light medium clay	8	610	4.9	Moderately Saline
.	1.5	5.2			1563	B	Mild		Non-Aggressive		Mild							Loam	10	640	6.4	Moderately Saline
51	0.5	4.9			6667	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	150	1.1	Non-Saline
	1.0	4.9			4348	B	Mild		Non-Aggressive		Non-Aggressive							Clay loam	9	230	2.1	Slightly Saline
.	1.5	5.3			3704	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	270	1.9	Non-Saline
52	0.5	4.9			6667	B	Mild		Non-Aggressive		Non-Aggressive							Loam	10	150	1.5	Non-Saline
	1.0	4.6			1408	B	Mild		Non-Aggressive		Mild							Loam	10	710	7.1	Moderately Saline
.	1.5	4.6			1220	B	Mild		Non-Aggressive		Mild							Loam	10	820	8.2	Very Saline

Test Bore or Pit	Sample Depth	pH	Chloride Concentration	Sulphate Concentration	Resistivity	Soil Condition	Sample Aggressivity Class					Exchangeable Sodium (Na) Concentration	Cation Exchange Capacity	Sodicity	Sodicity Class	Emerson Crumb Class Number	Dispersion	Soil Texture Group	Textural Factor (M)	$EC_{1:5}$	EC_e	Sample Salinity Class
					By inversion of EC1:5		Aggr. to Concrete - from sample pH	Aggr. to Concrete - from Sulphate conc.	Aggr. to Steel - from sample pH	Aggr. to Steel - from Chloride conc.	Aggr. to Steel - from sample Resistivity			[Na/CEC]			(from Emerson Class)	(for detailed soil logs see Report Appendix)		[Lab.]	[M x $EC_{1:5}$]	(Based on sample ECe)
	(m bgl)	(pH units	(mg/kg)	(mg/kg)	Ω.cm	[AS2159-2009]	[AS2159-2009]					(meq/100g)	(meq/100g)	(%)	[after DLWC]		[AS1289.3.8.1]	[after DLWC]	after DLWC	(microS/cm)	(deciS/m)	[Richards 1954]
53	0.5	5.9	<10	37	24390	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light clay	9	41	0.3	Non-Saline
	1.0	5.4			9091	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	110	0.9	Non-Saline
	1.5	5.2	370	88	3333	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light clay	9	300	2.6	Slightly Saline
	2.0	5.2			1449	B	Mild		Non-Aggressive		Mild							Light clay	9	690	5.9	Moderately Saline
	2.5	5.4	540	270	2000	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	500	3.5	Slightly Saline
.	3.0	5.5			1961	B	Mild		Non-Aggressive		Mild							Medium clay	7	510	3.6	Slightly Saline
54	0.5	4.9	27	110	9091	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	2	9	17	Highly Sodic			Light clay	9	110	0.9	Non-Saline
	1.0	5.0			7692	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	130	1.1	Non-Saline
	1.5	4.8	290	97	3846	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	3	9	29	Highly Sodic			Light clay	9	260	2.2	Slightly Saline
	2.0	4.7			2941	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	340	2.9	Slightly Saline
	2.5	4.8	510	130	2326	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light clay	9	430	3.7	Slightly Saline
.	3.0	5.1			2439	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	410	3.5	Slightly Saline
55	0.5	4.8			6250	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	160	1.1	Non-Saline
	1.0	4.5			2083	B	Mild		Non-Aggressive		Non-Aggressive							Sandy loam	14	480	6.7	Moderately Saline
	1.5	4.4			2381	B	Moderate		Non-Aggressive		Non-Aggressive							Sandy loam	14	420	5.9	Moderately Saline
.	2.0	4.5			1754	B	Mild		Non-Aggressive		Mild							Sandy loam	14	570	8.0	Moderately Saline
56	0.5	5.2			19231	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	52	0.4	Non-Saline
	1.0	5.8			32258	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Loam	10	31	0.3	Non-Saline
	1.5	8.3			7143	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Clay loam	9	140	1.3	Non-Saline
	2.0	9.0			5000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Clay loam	9	200	1.8	Non-Saline
.	2.5	9.3			4545	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Clay loam	9	220	2.0	Non-Saline
57	0.5	7.0			17241	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7	58	0.4	Non-Saline
	1.0	7.2			4762	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6	210	1.3	Non-Saline
.	1.5	5.9			1250	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7	800	5.6	Moderately Saline
58	0.5	6.3	<10	20	26316	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Loam	10	38	0.4	Non-Saline
	1.0	5.9			23256	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7	43	0.3	Non-Saline
	1.5	6.2	10	39	20000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Loam	10	50	0.5	Non-Saline
	2.0	6.7			17544	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Loam	10	57	0.6	Non-Saline
	2.5	7.3	66	30	10989	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Loam	10	91	0.9	Non-Saline
.	3.0	7.6			4545	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Loam	10	220	2.2	Slightly Saline
59	0.5	5.7			7143	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Clay loam	9	140	1.3	Non-Saline
	1.0	6.0			4000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Loam	10	250	2.5	Slightly Saline
.	1.5	6.3			1639	B	Non-Aggressive		Non-Aggressive		Mild							Loam	10	610	6.1	Moderately Saline
60	0.5	6.2			6667	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7	150	1.1	Non-Saline
	1.0	5.7			1887	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7	530	3.7	Slightly Saline
.	1.5	6.0			1695	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7	590	4.1	Moderately Saline
61	0.5	5.1	110	130	5882	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	170	1.2	Non-Saline
	1.0	6.1	330	140	3333	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	300	2.1	Slightly Saline
.	1.5	7.0	390	45	3226	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	310	2.2	Slightly Saline
62	0.5	6.5	98	61	7143	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light clay	9	140	1.2	Non-Saline
	1.0	5.5	560	290	1887	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Heavy clay	6	530	3.2	Slightly Saline
.	1.5	4.9	940	230	1333	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Loam	10	750	7.5	Moderately Saline
63	0.5	5.9			6250	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	9	160	1.4	Non-Saline
	1.0	5.5			909	B	Mild		Non-Aggressive		Moderate							Light clay	9	1100	9.4	Very Saline
.	1.5	5.4			1961	B	Mild		Non-Aggressive		Mild							Light clay	9	510	4.3	Moderately Saline
64	0.5	5.4			8333	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	120	1.0	Non-Saline
	1.0	4.8			2381	B	Mild		Non-Aggressive		Non-Aggressive							Light clay	9	420	3.6	Slightly Saline
.	1.5	4.7			1299	B	Mild		Non-Aggressive		Mild							Light clay	9	770	6.5	Moderately Saline
65	0.5	6.0	700	30	2000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7	500	3.5	Slightly Saline
	1.0	6.2	1300	40	1176	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Medium clay	7	850	6.0	Moderately Saline
.	1.5	6.1	1400	41	1064	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Medium clay	7	940	6.6	Moderately Saline
66	0.5	5.8			9091	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	9	110	0.9	Non-Saline
	1.0	6.1			2326	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	9	430	3.7	Slightly Saline
.	1.5	7.2			1053	B	Non-Aggressive		Non-Aggressive		Mild							Light clay	9	950	8.1	Very Saline

Test Bore or Pit	Sample Depth	pH	Chloride Concentration	Sulphate Concentration	Resistivity	Soil Condition	Sample Aggressivity Class					Exchangeable Sodium (Na) Concentration	Cation Exchange Capacity	Sodicity	Sodicity Class	Emerson Crumb Class Number	Dispersion	Soil Texture Group	Textural Factor (M)	$EC_{1:5}$	EC_e	Sample Salinity Class
					By inversion of EC1:5		Aggr. to Concrete - from sample pH	Aggr. to Concrete - from Sulphate conc.	Aggr. to Steel - from sample pH	Aggr. to Steel - from Chloride conc.	Aggr. to Steel - from sample Resistivity			[Na/CEC]			(from Emerson Class)	(for detailed soil logs see Report Appendix)		[Lab.]	[M x $EC_{1:5}$]	(Based on sample ECe)
	(m bgl)	(pH units	(mg/kg)	(mg/kg)	Ω.cm	[AS2159-2009]	[AS2159-2009]					(meq/100g)	(meq/100g)	(%)	[after DLWC]		[AS1289.3.8.1]	[after DLWC]	after DLWC	(microS/cm)	(deciS/m)	[Richards 1954]
67	0.5	7.7	170	31	5882	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light medium clay	8	170	1.4	Non-Saline
	1.0	7.7			2083	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light medium clay	8	480	3.8	Slightly Saline
	1.5	7.2	2000	250	625	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Moderate							Clay loam	9	1600	14.4	Very Saline
	2.0	7.6			667	B	Non-Aggressive		Non-Aggressive		Moderate							Light medium clay	8	1500	12.0	Very Saline
	2.5	7.8	630	69	1852	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Medium clay	7	540	3.8	Slightly Saline
.	3.0	7.6			1000	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7	1000	7.0	Moderately Saline
68	0.5	7.0			3448	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6	290	1.7	Non-Saline
	1.0	7.8			833	B	Non-Aggressive		Non-Aggressive		Moderate							Medium clay	7	1200	8.4	Very Saline
.	1.5	7.9			909	B	Non-Aggressive		Non-Aggressive		Moderate							Heavy clay	6	1100	6.6	Moderately Saline
69	0.5	7.8			5000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light medium clay	8	200	1.6	Non-Saline
	1.0	7.7			1136	B	Non-Aggressive		Non-Aggressive		Mild							Light medium clay	8	880	7.0	Moderately Saline
.	1.5	5.8			667	B	Non-Aggressive		Non-Aggressive		Moderate							Medium clay	7	1500	10.5	Very Saline
70	0.5	4.8			13333	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7	75	0.5	Non-Saline
	1.0	5.6			12658	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6	79	0.5	Non-Saline
.	1.5	6.2			9091	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7	110	0.8	Non-Saline
71	0.5	7.7			10417	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6	96	0.6	Non-Saline
	1.0	8.2			3125	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7	320	2.2	Slightly Saline
	1.5	7.6			909	B	Non-Aggressive		Non-Aggressive		Moderate							Light medium clay	8	1100	8.8	Very Saline
	2.0	7.6			1000	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7	1000	7.0	Moderately Saline
	2.5	7.8			1087	B	Non-Aggressive		Non-Aggressive		Mild							Clay loam	9	920	8.3	Very Saline
.	3.0	7.7			1000	B	Non-Aggressive		Non-Aggressive		Mild							Light medium clay	8	1000	8.0	Moderately Saline
72	0.5	6.8			10309	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light medium clay	8	97	0.8	Non-Saline
	1.0	6.3			2174	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Clay loam	9	460	4.1	Moderately Saline
.	1.5	7.3			1266	B	Non-Aggressive		Non-Aggressive		Mild							Heavy clay	6	790	4.7	Moderately Saline
73	0.5	7.3			7143	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Clay loam	9	140	1.3	Non-Saline
	1.0	6.2			1724	B	Non-Aggressive		Non-Aggressive		Mild							Light clay	9	580	4.9	Moderately Saline
.	1.5	6.8			909	B	Non-Aggressive		Non-Aggressive		Moderate							Clay loam	9	1100	9.9	Very Saline
74	0.5	7.7	170	34	5000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	3	18	17	Highly Sodic			Medium clay	7	200	1.4	Non-Saline
	1.0	7.0			909	B	Non-Aggressive		Non-Aggressive		Moderate							Heavy clay	6	1100	6.6	Moderately Saline
	1.5	7.5	2100	290	588	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Moderate	4	17	25	Highly Sodic			Heavy clay	6	1700	10.2	Very Saline
	2.0	7.8			714	B	Non-Aggressive		Non-Aggressive		Moderate							Medium clay	7	1400	9.8	Very Saline
	2.5	7.8	1600	230	769	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Moderate							Medium clay	7	1300	9.1	Very Saline
.	3.0	7.8			769	B	Non-Aggressive		Non-Aggressive		Moderate							Medium clay	7	1300	9.1	Very Saline
75	0.5	6.6			5263	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6	190	1.1	Non-Saline
	1.0	7.4			1282	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7	780	5.5	Moderately Saline
.	1.5	7.5			833	B	Non-Aggressive		Non-Aggressive		Moderate							Light medium clay	8	1200	9.6	Very Saline
76	0.5	7.1			14925	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	9	67	0.6	Non-Saline
	1.0	8.2			7692	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light medium clay	8	130	1.0	Non-Saline
.	1.5	7.5			909	B	Non-Aggressive		Non-Aggressive		Moderate							Light medium clay	8	1100	8.8	Very Saline
77	0.5	5.0			7143	B	Mild		Non-Aggressive		Non-Aggressive							Light medium clay	8	140	1.1	Non-Saline
	1.0	6.2			1818	B	Non-Aggressive		Non-Aggressive		Mild							Light medium clay	8	550	4.4	Moderately Saline
.	1.5	7.1			625	B	Non-Aggressive		Non-Aggressive		Moderate							Light medium clay	8	1600	12.8	Very Saline
78	0.5	6.1	34	49	11765	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	12	12	Sodic			Light medium clay	8	85	0.7	Non-Saline
	1.0	6.6			7143	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Clay loam	9	140	1.3	Non-Saline
.	1.5	7.5	640	120	1852	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Mild							Clay loam	9	540	4.9	Moderately Saline
79	0.5	6.6			7692	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	9	130	1.1	Non-Saline
	1.0	7.9			1075	B	Non-Aggressive		Non-Aggressive		Mild							Clay loam	9	930	8.4	Very Saline
.	1.5	7.8			833	B	Non-Aggressive		Non-Aggressive		Moderate							Clay loam	9	1200	10.8	Very Saline

Appendix E

Laboratory Analytical Reports

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CERTIFICATE OF ANALYSIS 292223

Client Details

Client	Douglas Partners Pty Ltd Smeaton Grange
Attention	Emily Eden
Address	18 Waler Crescent, Smeaton Grange, NSW, 2567

Sample Details

Your Reference	**204684.00, Bringelly, Birling Property, Contam**
Number of Samples	173 Soil
Date samples received	01/04/2022
Date completed instructions received	01/04/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	08/04/2022
Date of Issue	08/04/2022

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Results Approved By
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil						
Our Reference		292223-1	292223-2	292223-3	292223-4	292223-5
Your Reference	UNITS	25/0.5	25/1.0	25/1.5	26/0.5	26/1.0
Date Sampled		21/03/22	21/03/22	21/03/22	21/03/22	21/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	6.4	7.9	8.6	5.5	5.3
Electrical Conductivity 1:5 soil:water	µS/cm	87	60	130	85	62
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	<10	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	28	10	10	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-6	292223-7	292223-8	292223-9	292223-10
Your Reference	UNITS	26/1.5	26/2.0	27/0.5	27/1.0	27/1.5
Date Sampled		21/03/22	21/03/22	21/03/22	21/03/22	21/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.3	7.4	4.9	4.7	4.8
Electrical Conductivity 1:5 soil:water	µS/cm	66	49	53	240	170

Misc Inorg - Soil						
Our Reference		292223-11	292223-12	292223-13	292223-14	292223-15
Your Reference	UNITS	27/2.0	28/0.5	28/1.0	28/1.5	28/2.0
Date Sampled		21/03/22	21/03/22	21/03/22	21/03/22	21/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.6	4.6	4.4	4.4	4.6
Electrical Conductivity 1:5 soil:water	µS/cm	300	160	290	460	400
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	27	[NA]	10	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	80	[NA]	29	[NA]

Misc Inorg - Soil						
Our Reference		292223-16	292223-17	292223-18	292223-19	292223-20
Your Reference	UNITS	28/2.5	28/3.0	29/0.5	29/1.0	29/1.5
Date Sampled		21/03/22	21/03/22	21/03/22	21/03/22	21/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.5	4.7	4.6	4.2	4.4
Electrical Conductivity 1:5 soil:water	µS/cm	310	320	300	710	550
Chloride, Cl 1:5 soil:water	mg/kg	210	[NA]	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	120	[NA]	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-21	292223-22	292223-23	292223-24	292223-25
Your Reference	UNITS	30/0.5	30/1.0	30/1.5	30/2.0	30/2.5
Date Sampled		21/03/22	21/03/22	21/03/22	21/03/22	21/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.3	4.3	4.4	4.6	4.6
Electrical Conductivity 1:5 soil:water	µS/cm	580	680	660	520	460

Misc Inorg - Soil						
Our Reference		292223-26	292223-27	292223-28	292223-29	292223-30
Your Reference	UNITS	30/3.0	31/0.5	31/1.0	31/1.5	31/2.0
Date Sampled		21/03/22	21/03/22	21/03/22	21/03/22	21/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.6	4.8	4.9	4.9	4.8
Electrical Conductivity 1:5 soil:water	µS/cm	470	620	310	600	670
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	750	260	[NA]	850
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	260	150	[NA]	200

Misc Inorg - Soil						
Our Reference		292223-31	292223-32	292223-33	292223-34	292223-35
Your Reference	UNITS	32/0.5	32/1.0	32/1.5	32/2.0	33/0.5
Date Sampled		22/03/22	22/03/22	22/03/22	22/03/22	22/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.1	4.8	5.3	5.5	5.0
Electrical Conductivity 1:5 soil:water	µS/cm	140	830	440	730	400

Misc Inorg - Soil						
Our Reference		292223-36	292223-37	292223-38	292223-39	292223-40
Your Reference	UNITS	33/1.0	33/1.5	33/2.0	34/0.5	34/1.0
Date Sampled		22/03/22	22/03/22	22/03/22	22/03/22	22/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.0	4.9	5.3	4.9	4.5
Electrical Conductivity 1:5 soil:water	µS/cm	620	750	520	250	530

Misc Inorg - Soil						
Our Reference		292223-41	292223-42	292223-43	292223-44	292223-45
Your Reference	UNITS	34/1.5	35/0.5	35/1.0	35/1.5	35/2.0
Date Sampled		22/03/22	22/03/22	22/03/22	22/03/22	22/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.8	5.5	5.9	7.4	5.6
Electrical Conductivity 1:5 soil:water	µS/cm	610	140	96	170	630
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	24	[NA]	36	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	170	[NA]	39	[NA]

Misc Inorg - Soil						
Our Reference		292223-46	292223-47	292223-48	292223-49	292223-50
Your Reference	UNITS	35/2.5	36/0.5	36/1.0	36/1.5	36/2.0
Date Sampled		22/03/22	22/03/22	22/03/22	22/03/22	22/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.7	4.8	4.7	4.6	4.5
Electrical Conductivity 1:5 soil:water	µS/cm	550	440	260	590	740
Chloride, Cl 1:5 soil:water	mg/kg	670	[NA]	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	180	[NA]	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-51	292223-52	292223-53	292223-54	292223-55
Your Reference	UNITS	37/0.5	37/1.0	37/1.5	38/0.5	38/1.5
Date Sampled		22/03/22	22/03/22	22/03/22	22/03/22	22/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.3	6.0	4.8	4.7	4.7
Electrical Conductivity 1:5 soil:water	µS/cm	400	330	900	390	590
Chloride, Cl 1:5 soil:water	mg/kg	390	320	1,200	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	190	130	120	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-56	292223-57	292223-58	292223-59	292223-60
Your Reference	UNITS	38/2.0	39/0.5	39/1.0	40/0.5	40/1.0
Date Sampled		22/03/22	22/03/22	22/03/22	22/03/22	22/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.0	5.0	4.8	4.7	6.1
Electrical Conductivity 1:5 soil:water	µS/cm	400	140	220	290	270
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	65	190	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	83	92	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-61	292223-62	292223-63	292223-64	292223-65
Your Reference	UNITS	40/1.5	40/2.0	48/0.5	48/1.0	48/1.5
Date Sampled		22/03/22	22/03/22	23/03/22	23/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.8	4.6	4.9	4.7	4.7
Electrical Conductivity 1:5 soil:water	µS/cm	340	420	250	460	480
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	170	[NA]	410
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	210	[NA]	130

Misc Inorg - Soil						
Our Reference		292223-66	292223-67	292223-68	292223-69	292223-70
Your Reference	UNITS	48/2.0	48/2.5	49/0.5	49/1.0	49/1.5
Date Sampled		23/03/22	23/03/22	23/03/22	23/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.9	5.0	5.4	5.3	5.7
Electrical Conductivity 1:5 soil:water	µS/cm	460	500	210	520	930
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	480	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	120	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-71	292223-72	292223-73	292223-74	292223-75
Your Reference	UNITS	49/2.0	49/2.5	50/0.5	50/1.0	50/1.5
Date Sampled		23/03/22	23/03/22	23/03/22	23/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.8	5.7	4.8	4.8	5.2
Electrical Conductivity 1:5 soil:water	µS/cm	930	790	190	610	640

Misc Inorg - Soil						
Our Reference		292223-76	292223-77	292223-78	292223-79	292223-80
Your Reference	UNITS	51/0.5	51/1.0	51/1.5	52/0.5	52/1.0
Date Sampled		23/03/22	23/03/22	23/03/22	23/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.9	4.9	5.3	4.9	4.6
Electrical Conductivity 1:5 soil:water	µS/cm	150	230	270	150	710

Misc Inorg - Soil						
Our Reference		292223-81	292223-82	292223-83	292223-84	292223-85
Your Reference	UNITS	52/1.5	53/0.5	53/1.0	53/1.5	53/2.0
Date Sampled		23/03/22	23/03/22	23/03/22	23/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.6	5.9	5.4	5.2	5.2
Electrical Conductivity 1:5 soil:water	µS/cm	820	41	110	300	690
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	<10	[NA]	370	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	37	[NA]	88	[NA]

Misc Inorg - Soil						
Our Reference		292223-86	292223-87	292223-88	292223-89	292223-90
Your Reference	UNITS	53/2.5	53/3.0	54/0.5	54/1.0	54/1.5
Date Sampled		23/03/22	23/03/22	23/03/22	23/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.4	5.5	4.9	5.0	4.8
Electrical Conductivity 1:5 soil:water	µS/cm	500	510	110	130	260
Chloride, Cl 1:5 soil:water	mg/kg	540	[NA]	27	[NA]	290
Sulphate, SO4 1:5 soil:water	mg/kg	270	[NA]	110	[NA]	97

Misc Inorg - Soil						
Our Reference		292223-91	292223-92	292223-93	292223-94	292223-95
Your Reference	UNITS	54/2.0	54/2.5	54/3.0	56/0.5	56/1.0
Date Sampled		23/03/22	23/03/22	23/03/22	23/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.7	4.8	5.1	5.2	5.8
Electrical Conductivity 1:5 soil:water	µS/cm	340	430	410	52	31
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	510	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	130	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-96	292223-97	292223-98	292223-99	292223-100
Your Reference	UNITS	56/1.5	56/2.0	56/2.5	60/0.5	60/1.0
Date Sampled		23/03/22	23/03/22	23/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	8.3	9.0	9.3	6.2	5.7
Electrical Conductivity 1:5 soil:water	µS/cm	140	200	220	150	530

Misc Inorg - Soil						
Our Reference		292223-101	292223-102	292223-103	292223-104	292223-105
Your Reference	UNITS	60/1.5	61/0.5	61/1.0	61/1.5	55/0.5
Date Sampled		25/03/22	25/03/22	25/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	6.0	5.1	6.1	7.0	4.8
Electrical Conductivity 1:5 soil:water	µS/cm	590	170	300	310	160
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	110	330	390	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	130	140	45	[NA]

Misc Inorg - Soil						
Our Reference		292223-106	292223-107	292223-108	292223-109	292223-110
Your Reference	UNITS	55/1.0	55/1.5	55/2.0	41/0.5	41/1.0
Date Sampled		25/03/22	25/03/22	25/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.5	4.4	4.5	7.5	7.7
Electrical Conductivity 1:5 soil:water	µS/cm	480	420	570	120	95
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	64	48
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	37	40

Misc Inorg - Soil						
Our Reference		292223-111	292223-112	292223-113	292223-114	292223-115
Your Reference	UNITS	41/1.5	41/2.0	42/0.5	42/1.0	42/1.5
Date Sampled		25/03/22	25/03/22	25/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.6	4.5	4.9	4.9	6.8
Electrical Conductivity 1:5 soil:water	µS/cm	390	370	200	1,000	1,100
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	440	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	98	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-116	292223-117	292223-118	292223-119	292223-120
Your Reference	UNITS	43/0.5	43/1.0	43/1.5	44/0.5	44/1.0
Date Sampled		25/03/22	25/03/22	25/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.1	4.5	4.8	5.5	4.8
Electrical Conductivity 1:5 soil:water	µS/cm	280	620	250	100	190
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	<10	160
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	32	100

Misc Inorg - Soil						
Our Reference		292223-121	292223-122	292223-123	292223-124	292223-125
Your Reference	UNITS	44/1.5	44/2.0	45/0.5	45/1.0	45/1.5
Date Sampled		25/03/22	25/03/22	25/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.7	5.3	4.8	4.5	4.8
Electrical Conductivity 1:5 soil:water	µS/cm	690	260	200	300	250
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	310	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	82	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-126	292223-127	292223-128	292223-129	292223-130
Your Reference	UNITS	45/2.0	45/2.5	46/0.5	46/1.0	46/1.5
Date Sampled		25/03/22	25/03/22	25/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	7.5	5.1	4.8	4.7	4.6
Electrical Conductivity 1:5 soil:water	µS/cm	490	480	250	260	820
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	240	230	1,000
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	140	140	310

Misc Inorg - Soil						
Our Reference		292223-131	292223-132	292223-133	292223-134	292223-135
Your Reference	UNITS	46/2.0	46/2.5	47/0.5	47/1.0	47/1.5
Date Sampled		25/03/22	25/03/22	25/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.5	5.4	4.6	4.5	4.5
Electrical Conductivity 1:5 soil:water	µS/cm	720	300	300	750	770
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	340	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	88	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-136	292223-137	292223-138	292223-139	292223-140
Your Reference	UNITS	57/0.5	57/1.0	57/1.5	58/0.5	58/1.0
Date Sampled		28/03/22	28/03/22	28/03/22	28/03/22	28/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	7.0	7.2	5.9	6.3	5.9
Electrical Conductivity 1:5 soil:water	µS/cm	58	210	800	38	43
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	<10	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	20	[NA]

Misc Inorg - Soil						
Our Reference		292223-141	292223-142	292223-143	292223-144	292223-145
Your Reference	UNITS	58/1.5	58/2.0	58/2.5	58/3.0	59/0.5
Date Sampled		28/03/22	28/03/22	28/03/22	28/03/22	28/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	6.2	6.7	7.3	7.6	5.7
Electrical Conductivity 1:5 soil:water	µS/cm	50	57	91	220	140
Chloride, Cl 1:5 soil:water	mg/kg	10	[NA]	66	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	39	[NA]	30	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		292223-146	292223-147	292223-148	292223-149	292223-150
Your Reference	UNITS	59/1.0	59/1.5	62/0.5	62/1.0	62/1.5
Date Sampled		28/03/22	28/03/22	28/03/22	28/03/22	28/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	6.0	6.3	6.5	5.5	4.9
Electrical Conductivity 1:5 soil:water	µS/cm	250	610	140	530	750
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	98	560	940
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	61	290	230

Misc Inorg - Soil						
Our Reference		292223-151	292223-152	292223-153	292223-154	292223-155
Your Reference	UNITS	63/0.5	63/1.0	63/1.5	64/0.5	64/1.0
Date Sampled		28/03/22	28/03/22	28/03/22	28/03/22	28/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	5.9	5.5	5.4	5.4	4.8
Electrical Conductivity 1:5 soil:water	µS/cm	160	1,100	510	120	420

Misc Inorg - Soil						
Our Reference		292223-156	292223-157	292223-158	292223-159	292223-160
Your Reference	UNITS	64/1.5	65/0.5	65/1.0	65/1.5	66/0.5
Date Sampled		28/03/22	28/03/22	28/03/22	28/03/22	28/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	4.7	6.0	6.2	6.1	5.8
Electrical Conductivity 1:5 soil:water	µS/cm	770	500	850	940	110
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	700	1,300	1,400	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	30	40	41	[NA]

Misc Inorg - Soil						
Our Reference		292223-161	292223-162	292223-163	292223-164	292223-165
Your Reference	UNITS	66/1.0	66/1.5	73/0.5	73/1.0	73/1.5
Date Sampled		28/03/22	28/03/22	28/03/22	28/03/22	28/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	6.1	7.2	7.3	6.2	6.8
Electrical Conductivity 1:5 soil:water	µS/cm	430	950	140	580	1,100

Misc Inorg - Soil				
Our Reference		292223-166	292223-167	292223-168
Your Reference	UNITS	79/0.5	79/1.0	79/1.5
Date Sampled		28/03/22	28/03/22	28/03/22
Type of sample		Soil	Soil	Soil
Date prepared	-	04/04/2022	04/04/2022	04/04/2022
Date analysed	-	04/04/2022	04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units	6.6	7.9	7.8
Electrical Conductivity 1:5 soil:water	µS/cm	130	930	1,200

ESP/CEC						
Our Reference		292223-1	292223-3	292223-28	292223-30	292223-63
Your Reference	UNITS	25/0.5	25/1.5	31/1.0	31/2.0	48/0.5
Date Sampled		21/03/22	21/03/22	21/03/22	21/03/22	23/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022
Date analysed	-	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022
Exchangeable Ca	meq/100g	21	32	0.3	<0.1	0.2
Exchangeable K	meq/100g	0.1	<0.1	<0.1	0.1	<0.1
Exchangeable Mg	meq/100g	6.4	2.1	3.2	1.9	3.2
Exchangeable Na	meq/100g	1.3	0.4	0.7	0.7	0.6
Cation Exchange Capacity	meq/100g	29	35	4.3	2.7	4.2
ESP	%	5	1	15	27	15

ESP/CEC						
Our Reference		292223-65	292223-88	292223-90	292223-119	292223-120
Your Reference	UNITS	48/1.5	54/0.5	54/1.5	44/0.5	44/1.0
Date Sampled		23/03/22	23/03/22	23/03/22	25/03/22	25/03/22
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022
Date analysed	-	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022
Exchangeable Ca	meq/100g	<0.1	0.4	<0.1	3.0	0.1
Exchangeable K	meq/100g	0.2	0.2	0.2	0.5	0.1
Exchangeable Mg	meq/100g	5.9	6.8	6.3	3.8	2.5
Exchangeable Na	meq/100g	2.3	1.5	2.7	<0.1	0.6
Cation Exchange Capacity	meq/100g	8.4	8.9	9.3	7.4	3.3
ESP	%	27	17	29	[NT]	18

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	292223-2
Date prepared	-			04/04/2022	1	04/04/2022	04/04/2022		04/04/2022	04/04/2022
Date analysed	-			04/04/2022	1	04/04/2022	04/04/2022		04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	6.4	6.4	0	101	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	87	83	5	101	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	<10	<10	0	103	100
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	28	28	0	106	100

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	292223-82
Date prepared	-			[NT]	11	04/04/2022	04/04/2022		04/04/2022	04/04/2022
Date analysed	-			[NT]	11	04/04/2022	04/04/2022		04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	11	4.6	4.6	0	101	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	11	300	320	6	102	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	44	36	36	0	106	92
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	44	39	38	3	108	86

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	292223-122
Date prepared	-			[NT]	21	04/04/2022	04/04/2022		04/04/2022	04/04/2022
Date analysed	-			[NT]	21	04/04/2022	04/04/2022		04/04/2022	04/04/2022
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	21	4.3	4.2	2	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	21	580	590	2	102	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	51	390	[NT]		106	#
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	51	190	[NT]		108	#

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			[NT]	31	04/04/2022	04/04/2022		04/04/2022	[NT]
Date analysed	-			[NT]	31	04/04/2022	04/04/2022		04/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	31	5.1	5.1	0	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	31	140	140	0	102	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	84	370	360	3	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	84	88	88	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			[NT]	41	04/04/2022	04/04/2022		04/04/2022	[NT]
Date analysed	-			[NT]	41	04/04/2022	04/04/2022		04/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	41	4.8	4.7	2	99	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	41	610	650	6	101	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	109	64	65	2	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	109	37	37	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date prepared	-			[NT]	44	04/04/2022	04/04/2022		04/04/2022	[NT]
Date analysed	-			[NT]	44	04/04/2022	04/04/2022		04/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	44	7.4	[NT]		99	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	44	170	[NT]		100	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	112	440	440	0	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	112	98	100	2	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date prepared	-			[NT]	51	04/04/2022	04/04/2022		04/04/2022	[NT]
Date analysed	-			[NT]	51	04/04/2022	04/04/2022		04/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	51	5.3	5.3	0	99	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	51	400	360	11	99	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	141	10	10	0	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	141	39	41	5	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date prepared	-			[NT]	61	04/04/2022	04/04/2022		04/04/2022	[NT]
Date analysed	-			[NT]	61	04/04/2022	04/04/2022		04/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	61	4.8	4.8	0	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	61	340	340	0	100	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date prepared	-			[NT]	71	04/04/2022	04/04/2022		04/04/2022	[NT]
Date analysed	-			[NT]	71	04/04/2022	04/04/2022		04/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	71	5.8	5.8	0	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	71	930	880	6	100	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	81	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	81	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	81	4.6	4.5	2	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	81	820	850	4	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	84	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	84	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	84	5.2	[NT]		[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	84	300	[NT]		[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	91	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	91	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	91	4.7	4.7	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	91	340	340	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	101	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	101	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	101	6.0	6.0	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	101	590	590	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	109	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	109	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	109	7.5	[NT]		[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	109	120	[NT]		[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	112	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	112	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	112	4.5	4.5	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	112	370	370	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	121	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	121	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	121	4.7	4.7	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	121	690	670	3	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	131	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	131	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	131	4.5	4.6	2	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	131	720	760	5	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	141	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	141	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	141	6.2	6.4	3	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	141	50	51	2	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	151	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	151	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	151	5.9	5.9	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	151	160	160	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	161	04/04/2022	04/04/2022		[NT]	[NT]
Date analysed	-			[NT]	161	04/04/2022	04/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	161	6.1	6.2	2	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	161	430	420	2	[NT]	[NT]

QUALITY CONTROL: ESP/CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			08/04/2022	[NT]	[NT]	[NT]	[NT]	08/04/2022	[NT]
Date analysed	-			08/04/2022	[NT]	[NT]	[NT]	[NT]	08/04/2022	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	130	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

MISC_INORG_DRY:# Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Samples were out of the recommended holding time for this analysis pH/EC in soil.

ESP: Where the exchangeable Sodium is less than the PQL and CEC is less than 10meq/100g, the ESP cannot be calculated.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
25/0.5	1	21/03/22	S	G			x	x	x	x				~~ATD~~
25/1.0	2	21/03/22	S	G			x	x	x					~~ATD~~
25/1.5	3	21/03/22	S	G			x	x	x	x				
26/0.5	4	21/03/22	S	G			x	x						
26/1.0	5	21/03/22	S	G			x	x						
26/1.5	6	21/03/22	S	G			x	x						
26/2.0	7	21/03/22	S	G			x	x						
27/0.5	8	21/03/22	S	G			x	x						
27/1.0	9	21/03/22	S	G			x	x						
27/1.5	10	21/03/22	S	G			x	x						
27/2.0	11	21/03/22	S	G			x	x						
28/0.5	12	21/03/22	S	G			x	x	x					
28/1.0	13	21/03/22	S	G			x	x						

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 292223
Date Received: 30/3/22
Time Received: 1345
Received by: R
Temp: Cool/Ambient 13°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Waler Crescent Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:	Jimmy Huynh	**Transported to laboratory by:**	
Signed:		**Date & Time:** 30/3/22, 10:00am	**Received by:**

Form COC

Rag 30/3/22

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam		**To:** Envirolab Services
Project No:	204684.00	**Sampler:** JH	12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:** N/A	**Attn:**
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au		**Phone:** (02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD		**Email:**

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
28/1.5	14	21/03/22	S	G			x	x	x					
28/2.0	15	21/03/22	S	G			x	x						
28/2.5	16	21/03/22	S	G			x	x	x					
28/3.0	17	21/03/22	S	G			x	x						
29/0.5	18	21/03/22	S	G			x	x						
29/1.0	19	21/03/22	S	G			x	x						
29/1.5	20	21/03/22	S	G			x	x						
30/0.5	21	21/03/22	S	G			x	x						
30/1.0	22	21/03/22	S	G			x	x						
30/1.5	23	21/03/22	S	G			x	x						
30/2.0	24	21/03/22	S	G			x	x						
30/2.5	25	21/03/22	S	G			x	x						
30/3.0	26	21/03/22	S	G			x	x						

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:**	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

May 30/3/2022 292223

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
31/0.5	27	21/03/22	S	G			x	x	x					
31/1.0	28	21/03/22	S	G			x	x	x	x				
31/1.5	29	21/03/22	S	G			x	x						
31/2.0	30	21/03/22	S	G			x	x	x	x				
32/0.5	31	22/03/22	S	G			x	x						
32/1.0	32	22/03/22	S	G			x	x						
32/1.5	33	22/03/22	S	G			x	x						
32/2.0	34	22/03/22	S	G			x	x						
33/0.5	35	22/03/22	S	G			x	x						
33/1.0	36	22/03/22	S	G			x	x						
33/1.5	37	22/03/22	S	G			x	x						
33/2.0	38	22/03/22	S	G			x	x						
34/0.5	39	22/03/22	S	G			x	x						

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:**	18 Waler Crescent Smeaton Grange 2567	**Phone:**	(02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:				**Transported to laboratory by:**	
Signed:		**Date & Time:**	~~19/11/2021~~	**Received by:**	

Ray 292223
30/3/2022

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos(500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
34/1.0	40	22/03/22	S	G			x	x						
34/1.5	41	22/03/22	S	G			x	x						
35/0.5	42	22/03/22	S	G			x	x	x					
35/1.0	43	22/03/22	S	G			x	x						
35/1.5	44	22/03/22	S	G			x	x	x					
35/2.0	45	22/03/22	S	G			x	x						
35/2.5	46	22/03/22	S	G			x	x	x					
36/0.5	47	22/03/22	S	G			x	x						
36/1.0	48	22/03/22	S	G			x	x						
36/1.5	49	22/03/22	S	G			x	x						
36/2.0	50	22/03/22	S	G			x	x						
37/0.5	51	22/03/22	S	G			x	x	x					
37/1.0	52	22/03/22	S	G			x	x	x					

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Waler Crescent Smeaton Grange	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

May 30/3/2022
292223

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8	Asbestos(500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
37/1.5	53	22/03/22	S	G			x	x	x					
38/0.5	54	22/03/22	S	G			x	x						
38/1.5	55	22/03/22	S	G			x	x						
38/2.0	56	22/03/22	S	G			x	x						
39/0.5	57	22/03/22	S	G			x	x	x					
39/1.0	58	22/03/22	S	G			x	x	x					
40/0.5	59	22/03/22	S	G			x	x						
40/1.0	60	22/03/22	S	G			x	x						
40/1.5	61	22/03/22	S	G			x	x						
40/2.0	62	22/03/22	S	G			x	x						
48/0.5	63	23/03/22	S	G			x	x	x	x				
48/1.0	64	23/03/22	S	G			x	x						
48/1.5	65	23/03/22	S	G			x	x	x	x				

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:**	18 Waler Crescent Smeaton Grange 2567	**Phone:**	(02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:				**Transported to laboratory by:**	
Signed:		**Date & Time:**		**Received by:**	

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292223

Douglas Partners
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CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily.Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos(500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
48/2.0	66	23/03/22	S	G			x	x						
48/2.5	67	23/03/22	S	G			x	x	x					
49/0.5	68	23/03/22	S	G			x	x						
49/1.0	69	23/03/22	S	G			x	x						
49/1.5	70	23/03/22	S	G			x	x						
49/2.0	71	23/03/22	S	G			x	x						
49/2.5	72	23/03/22	S	G			x	x						
50/0.5	73	23/03/22	S	G			x	x						
50/1.0	74	23/03/22	S	G			x	x						
50/1.5	75	23/03/22	S	G			x	x						
51/0.5	76	23/03/22	S	G			x	x						
51/1.0	77	23/03/22	S	G			x	x						
51/1.5	78	23/03/22	S	G			x	x						

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Waler Crescent Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

Ray 30/3/2022
292223

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8	Asbestos(500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
52/0.5	79	23/03/22	S	G			x	x						
52/1.0	80	23/03/22	S	G			x	x						
52/1.5	81	23/03/22	S	G			x	x						
53/0.5	82	23/03/22	S	G			x	x	x					
53/1.0	83	23/03/22	S	G			x	x						
53/1.5	84	23/03/22	S	G			x	x	x					
53/2.0	85	23/03/22	S	G			x	x						
53/2.5	86	23/03/22	S	G			x	x	x					
53/3.0	87	23/03/22	S	G			x	x						
54/0.5	88	23/03/22	S	G			x	x	x	x				
54/1.0	89	23/03/22	S	G			x	x						
54/1.5	90	23/03/22	S	G			x	x	x	x				
54/2.0	91	23/03/22	S	G			x	x						

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Waler Crescent Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

May 30/3/22 292223

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam	**To:**	Envirolab Services
Project No:	204684.00 **Sampler:** JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden **Mob. Phone:** N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au	**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD	**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos(500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
54/2.5	92	23/03/22	S	G			x	x	x					
54/3.0	93	23/03/22	S	G			x	x						
56/0.5	94	23/03/22	S	G			x	x						
56/1.0	95	23/03/22	S	G			x	x						
56/1.5	96	23/03/22	S	G			x	x						
56/2.0	97	23/03/22	S	G			x	x						
56/2.5	98	23/03/22	S	G			x	x						
60/0.5	99	25/03/22	S	G			x	x						
60/1.0	100	25/03/22	S	G			x	x						
60/1.5	101	25/03/22	S	G			x	x						
61/0.5	102	25/03/22	S	G			x	x	x					
61/1.0	103	25/03/22	S	G			x	x	x					
61/1.5	104	25/03/22	S	G			x	x	x					

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** Unit 5, 50 Topham Road, Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

May 30/3/22

292223

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos(500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
55/0.5	105	25/03/22	S	G			x	x						
55/1.0	106	25/03/22	S	G			x	x						
55/1.5	107	25/03/22	S	G			x	x						
55/2.0	108	25/03/22	S	G			x	x						
41/0.5	109	25/03/22	S	G			x	x	x					
41/1.0	110	25/03/22	S	G			x	x	x					
41/1.5	111	25/03/22	S	G			x	x						
41/2.0	112	25/03/22	S	G			x	x	x					
42/0.5	113	25/03/22	S	G			x	x						
42/1.0	114	25/03/22	S	G			x	x						
42/1.5	115	25/03/22	S	G			x	x						
43/0.5	116	25/03/22	S	G			x	x						
43/1.0	117	25/03/22	S	G			x	x						

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Waler Crescent Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

May 30/3/2022
292223

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	N/A	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8	Asbestos(500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
43/1.5	118	25/03/22	S	G			x	x						
44/0.5	119	25/03/22	S	G			x	x	x	x				
44/1.0	120	25/03/22	S	G			x	x	x	x				
44/1.5	121	25/03/22	S	G			x	x						
44/2.0	122	25/03/22	S	G			x	x	x					
45/0.5	123	25/03/22	S	G			x	x						
45/1.0	124	25/03/22	S	G			x	x						
45/1.5	125	25/03/22	S	G			x	x						
45/2.0	126	25/03/22	S	G			x	x						
45/2.5	127	25/03/22	S	G			x	x						
46/0.5	128	25/03/22	S	G			x	x	x					
46/1.0	129	25/03/22	S	G			x	x	x					
46/1.5	130	25/03/22	S	G			x	x	x					

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Waler Crescent Smeaton Grange 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

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297223

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam	To:	Envirolab Services
Project No:	204684.00	Sampler: JH	12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	Mob. Phone: N/A	Attn:
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au	Phone: (02) 9910 6200 Fax: (02) 9910 6201	
Date Required:	STANDARD	Email:	

Sample ID	Lab ID	Date Sampled	Sample Type: S - soil, W - water	Container Type: G - glass, P - plastic	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
46/2.0	131	25/03/22	S	G			x	x						
46/2.5	132	25/03/22	S	G			x	x	x					
47/0.5	133	25/03/22	S	G			x	x						
47/1.0	134	25/03/22	S	G			x	x						
47/1.5	135	25/03/22	S	G			x	x						
57/0.5	136	28/03/22	S	G			x	x						
57/1.0	137	28/03/22	S	G			x	x						
57/1.5	138	28/03/22	S	G			x	x						
58/0.5	139	28/03/22	S	G			x	x	x					
58/1.0	140	28/03/22	S	G			x	x						
58/1.5	141	28/03/22	S	G			x	x	x					
58/2.0	142	28/03/22	S	G			x	x						
58/2.5	143	28/03/22	S	G			x	x	x					

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	Address: 18 Water Crescent Smeaton Grange 2567	Phone: (02) 4647 0075 Fax: (02) 4646 1886
Relinquished by:		Transported to laboratory by:	
Signed:	Date & Time:	Received by:	

May 292223
30/3/2022

Douglas Partners

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam	Sampler:	JH
Project No:	204684.00	Mob. Phone:	N/A
Project Mgr:	Emily Eden		
Email:	emily.eden@douglaspartners.com.au, jimmy.huynh@douglaspartners.com.au		
Date Required:	STANDARD		

To:	Envirolab Services
	12 Ashley Street, Chatswood NSW 2067
Attn:	
Phone:	(02) 9910 6200 Fax: (02) 9910 6201
Email:	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
58/3.0	144	28/03/22	S	G			x	x						
59/0.5	145	28/03/22	S	G			x	x						
59/1.0	146	28/03/22	S	G			x	x						
59/1.5	147	28/03/22	S	G			x	x						
62/0.5	148	28/03/22	S	G			x	x	x					
62/1.0	149	28/03/22	S	G			x	x	x					
62/1.5	150	28/03/22	S	G			x	x	x					
63/0.5	151	28/03/22	S	G			x	x						
63/1.0	152	28/03/22	S	G			x	x						
63/1.5	153	28/03/22	S	G			x	x						
64/0.5	154	28/03/22	S	G			x	x						
64/1.0	155	28/03/22	S	G			x	x						
64/1.5	156	28/03/22	S	G			x	x						

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	Address: 18 Waler Crescent Smeaton Grange 2567	Phone: (02) 4647 0075 Fax: (02) 4646 1886
Relinquished by:		Transported to laboratory by:	
Signed:	Date & Time:	Received by:	

Ref 292223
30/3/2022

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			To:	Envirolab Services
Project No:	204684.00	Sampler:	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	Mob. Phone:	N/A	Attn:	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			Phone:	(02) 9910 6200 Fax: (02) 9910 6201
Date Required:	STANDARD			Email:	

Sample ID	Lab. ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos (500ml WADEH)	pH	EC	Chloride Sulfates	Sodicity				Notes/preservation
65/0.5	157	28/03/22	S	G			x	x	x					
65/1.0	158	28/03/22	S	G			x	x	x					
65/1.5	159	28/03/22	S	G			x	x	x					
66/0.5	160	28/03/22	S	G			x	x						
66/1.0	161	28/03/22	S	G			x	x						
66/1.5	162	28/03/22	S	G			x	x						
73/0.5	163	28/03/22	S	G			x	x						
73/1.0	164	28/03/22	S	G			x	x						
73/1.5	165	28/03/22	S	G			x	x						
79/0.5	166	28/03/22	S	G			x	x						
79/1.0	167	28/03/22	S	G			x	x						
79/1.5	168	28/03/22	S	G			x	x						

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	Address: 18 Water Crescent Smeaton Grange 2567		Phone: (02) 4647 0075	Fax: (02) 4646 1886
Relinquished by:			Transported to laboratory by:		
Signed:		Date & Time: ~~4/04/2021~~	Received by:		

169 TP 30/1.0
170 TP 47/2.0
171 TP 47/2.5
172 TP 52/0-0.20
173 TP 52/0.2-0.5

Extra PL 30/3/2022

Phay 30/3/2022
292223.

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customerservice@envirolab.com.au
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SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd Smeaton Grange
Attention	Emily Eden

Sample Login Details

Your reference	204684.00, Bringelly, Birling Property, Contam
Envirolab Reference	292223
Date Sample Received	01/04/2022
Date Instructions Received	01/04/2022
Date Results Expected to be Reported	08/04/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	173 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	13
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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Sample ID	Misc Inorg - Soil	ESP/CEC	On Hold
25/0.5	✓	✓	
25/1.0	✓		
25/1.5	✓	✓	
26/0.5	✓		
26/1.0	✓		
26/1.5	✓		
26/2.0	✓		
27/0.5	✓		
27/1.0	✓		
27/1.5	✓		
27/2.0	✓		
28/0.5	✓		
28/1.0	✓		
28/1.5	✓		
28/2.0	✓		
28/2.5	✓		
28/3.0	✓		
29/0.5	✓		
29/1.0	✓		
29/1.5	✓		
30/0.5	✓		
30/1.0	✓		
30/1.5	✓		
30/2.0	✓		
30/2.5	✓		
30/3.0	✓		
31/0.5	✓		
31/1.0	✓	✓	
31/1.5	✓		
31/2.0	✓	✓	
32/0.5	✓		
32/1.0	✓		

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Sample ID	Misc Inorg - Soil	ESP/CEC	On Hold
32/1.5	✓		
32/2.0	✓		
33/0.5	✓		
33/1.0	✓		
33/1.5	✓		
33/2.0	✓		
34/0.5	✓		
34/1.0	✓		
34/1.5	✓		
35/0.5	✓		
35/1.0	✓		
35/1.5	✓		
35/2.0	✓		
35/2.5	✓		
36/0.5	✓		
36/1.0	✓		
36/1.5	✓		
36/2.0	✓		
37/0.5	✓		
37/1.0	✓		
37/1.5	✓		
38/0.5	✓		
38/1.5	✓		
38/2.0	✓		
39/0.5	✓		
39/1.0	✓		
40/0.5	✓		
40/1.0	✓		
40/1.5	✓		
40/2.0	✓		
48/0.5	✓	✓	
48/1.0	✓		

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Sample ID	Misc Inorg - Soil	ESP/CEC	On Hold
48/1.5	✓	✓	
48/2.0	✓		
48/2.5	✓		
49/0.5	✓		
49/1.0	✓		
49/1.5	✓		
49/2.0	✓		
49/2.5	✓		
50/0.5	✓		
50/1.0	✓		
50/1.5	✓		
51/0.5	✓		
51/1.0	✓		
51/1.5	✓		
52/0.5	✓		
52/1.0	✓		
52/1.5	✓		
53/0.5	✓		
53/1.0	✓		
53/1.5	✓		
53/2.0	✓		
53/2.5	✓		
53/3.0	✓		
54/0.5	✓	✓	
54/1.0	✓		
54/1.5	✓	✓	
54/2.0	✓		
54/2.5	✓		
54/3.0	✓		
56/0.5	✓		
56/1.0	✓		
56/1.5	✓		

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Sample ID	Misc Inorg - Soil	ESP/CEC	On Hold
56/2.0	✓		
56/2.5	✓		
60/0.5	✓		
60/1.0	✓		
60/1.5	✓		
61/0.5	✓		
61/1.0	✓		
61/1.5	✓		
55/0.5	✓		
55/1.0	✓		
55/1.5	✓		
55/2.0	✓		
41/0.5	✓		
41/1.0	✓		
41/1.5	✓		
41/2.0	✓		
42/0.5	✓		
42/1.0	✓		
42/1.5	✓		
43/0.5	✓		
43/1.0	✓		
43/1.5	✓		
44/0.5	✓	✓	
44/1.0	✓	✓	
44/1.5	✓		
44/2.0	✓		
45/0.5	✓		
45/1.0	✓		
45/1.5	✓		
45/2.0	✓		
45/2.5	✓		
46/0.5	✓		

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Sample ID	Misc Inorg - Soil	ESP/CEC	On Hold
46/1.0	✓		
46/1.5	✓		
46/2.0	✓		
46/2.5	✓		
47/0.5	✓		
47/1.0	✓		
47/1.5	✓		
57/0.5	✓		
57/1.0	✓		
57/1.5	✓		
58/0.5	✓		
58/1.0	✓		
58/1.5	✓		
58/2.0	✓		
58/2.5	✓		
58/3.0	✓		
59/0.5	✓		
59/1.0	✓		
59/1.5	✓		
62/0.5	✓		
62/1.0	✓		
62/1.5	✓		
63/0.5	✓		
63/1.0	✓		
63/1.5	✓		
64/0.5	✓		
64/1.0	✓		
64/1.5	✓		
65/0.5	✓		
65/1.0	✓		
65/1.5	✓		
66/0.5	✓		

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Sample ID	Misc Inorg - Soil	ESP/CEC	On Hold
66/1.0	✓		
66/1.5	✓		
73/0.5	✓		
73/1.0	✓		
73/1.5	✓		
79/0.5	✓		
79/1.0	✓		
79/1.5	✓		
TP38/1.0			✓
TP47/2.0			✓
TP47/2.5			✓
TP52/0-0.20			✓
TP52/0.2-0.5			✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 292963

Client Details

Client	Douglas Partners Pty Ltd Smeaton Grange
Attention	Emily Eden, Jimmy Huynh
Address	18 Waler Crescent, Smeaton Grange, NSW, 2567

Sample Details

Your Reference	**204684.00, Birling Property Contam, Bringelly**
Number of Samples	42 Soil
Date samples received	07/04/2022
Date completed instructions received	07/04/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	14/04/2022
Date of Issue	14/04/2022

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Results Approved By
Hannah Nguyen, Metals Supervisor
Jenny He, Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil						
Our Reference		292963-1	292963-2	292963-3	292963-4	292963-5
Your Reference	UNITS	67	67	67	67	67
Depth		0.5	1.0	1.5	2.0	2.5
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	7.7	7.7	7.2	7.6	7.8
Electrical Conductivity 1:5 soil:water	µS/cm	170	480	1,600	1,500	540
Chloride, Cl 1:5 soil:water	mg/kg	170	[NA]	2,000	[NA]	630
Sulphate, SO4 1:5 soil:water	mg/kg	31	[NA]	250	[NA]	69

Misc Inorg - Soil						
Our Reference		292963-6	292963-7	292963-8	292963-9	292963-10
Your Reference	UNITS	67	68	68	68	69
Depth		3.0	0.5	1.0	1.5	0.5
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	7.6	7.0	7.8	7.9	7.8
Electrical Conductivity 1:5 soil:water	µS/cm	1,000	290	1,200	1,100	200

Misc Inorg - Soil						
Our Reference		292963-11	292963-12	292963-13	292963-14	292963-15
Your Reference	UNITS	69	69	70	70	70
Depth		1.0	1.5	0.5	1.0	1.5
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	7.7	5.8	4.8	5.6	6.2
Electrical Conductivity 1:5 soil:water	µS/cm	880	1,500	75	79	110

Misc Inorg - Soil						
Our Reference		292963-16	292963-17	292963-18	292963-19	292963-20
Your Reference	UNITS	71	71	71	71	71
Depth		0.5	1.0	1.5	2.0	2.5
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	7.7	8.2	7.6	7.6	7.8
Electrical Conductivity 1:5 soil:water	µS/cm	96	320	1,100	1,000	920

Misc Inorg - Soil						
Our Reference		292963-21	292963-22	292963-23	292963-24	292963-25
Your Reference	UNITS	71	72	72	72	74
Depth		3.0	0.5	1.0	1.5	0.5
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	7.7	6.8	6.3	7.3	7.7
Electrical Conductivity 1:5 soil:water	µS/cm	1,000	97	460	790	200
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	[NA]	170
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	[NA]	34

Misc Inorg - Soil						
Our Reference		292963-26	292963-27	292963-28	292963-29	292963-30
Your Reference	UNITS	74	74	74	74	74
Depth		1.0	1.5	2.0	2.5	3.0
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	7.0	7.5	7.8	7.8	7.8
Electrical Conductivity 1:5 soil:water	µS/cm	1,100	1,700	1,400	1,300	1,300
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	2,100	[NA]	1,600	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	290	[NA]	230	[NA]

Misc Inorg - Soil						
Our Reference		292963-31	292963-32	292963-33	292963-34	292963-35
Your Reference	UNITS	75	75	75	76	76
Depth		0.5	1.0	1.5	0.5	1.0
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	6.6	7.4	7.5	7.1	8.2
Electrical Conductivity 1:5 soil:water	µS/cm	190	780	1,200	67	130

Misc Inorg - Soil						
Our Reference		292963-36	292963-37	292963-38	292963-39	292963-40
Your Reference	UNITS	76	77	77	77	78
Depth		1.5	0.5	1.0	1.5	0.5
Date Sampled		5/04/2022	5/04/2022	5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	7.5	5.0	6.2	7.1	6.1
Electrical Conductivity 1:5 soil:water	µS/cm	1,100	140	550	1,600	85
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	[NA]	34
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	[NA]	49

Misc Inorg - Soil			
Our Reference		292963-41	292963-42
Your Reference	UNITS	78	78
Depth		1.	1.5
Date Sampled		5/04/2022	5/04/2022
Type of sample		Soil	Soil
Date prepared	-	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units	6.6	7.5
Electrical Conductivity 1:5 soil:water	µS/cm	140	540
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	640
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	120

ESP/CEC				
Our Reference		292963-25	292963-27	292963-40
Your Reference	UNITS	74	74	78
Depth		0.5	1.5	0.5
Date Sampled		5/04/2022	5/04/2022	5/04/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	14/04/2022	14/04/2022	14/04/2022
Date analysed	-	14/04/2022	14/04/2022	14/04/2022
Exchangeable Ca	meq/100g	3.0	1.2	3.5
Exchangeable K	meq/100g	0.2	0.2	0.2
Exchangeable Mg	meq/100g	12	11	6.6
Exchangeable Na	meq/100g	3.1	4.2	1.4
Cation Exchange Capacity	meq/100g	18	17	12
ESP	%	17	25	12

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	292963-3
Date prepared	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	12/04/2022
Date analysed	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	12/04/2022
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	7.7	7.5	3	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	170	160	6	106	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	170	150	12	104	#
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	31	25	21	94	#

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			[NT]	11	12/04/2022	12/04/2022		12/04/2022	[NT]
Date analysed	-			[NT]	11	12/04/2022	12/04/2022		12/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	11	7.7	7.7	0	101	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	11	880	880	0	106	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	40	34	[NT]		[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	40	49	[NT]		[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			[NT]	21	12/04/2022	12/04/2022		12/04/2022	[NT]
Date analysed	-			[NT]	21	12/04/2022	12/04/2022		12/04/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	21	7.7	7.7	0	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	21	1000	930	7	106	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	31	12/04/2022	12/04/2022		[NT]	[NT]
Date analysed	-			[NT]	31	12/04/2022	12/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	31	6.6	6.5	2	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	31	190	190	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	40	12/04/2022	12/04/2022		[NT]	[NT]
Date analysed	-			[NT]	40	12/04/2022	12/04/2022		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	40	6.1	6.0	2	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	40	85	85	0	[NT]	[NT]

QUALITY CONTROL: ESP/CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			14/04/2022	[NT]	[NT]	[NT]	[NT]	14/04/2022	[NT]
Date analysed	-			14/04/2022	[NT]	[NT]	[NT]	[NT]	14/04/2022	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

MISC_INORG_DRY:# Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

292963

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CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	0418 651 227	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity	Cation Exchange capacity	TRH, metals	Hold	Notes/preservation
67/0.5	1	05/04/22	S	G			X	X	x					
67/1.0	2	05/04/22	S	G			X	X						
67/1.5	3	05/04/22	S	G			X	X	x					
67/2.0	4	05/04/22	S	G			X	X						
67/2.5	5	05/04/22	S	G			X	X	x					
67/3.0	6	05/04/22	S	G			X	X						
68/0.5	7	05/04/22	S	G			X	X						
68/1.0	8	05/04/22	S	G			X	X						
68/1.5	9	05/04/22	S	G			X	X						
69/0.5	10	05/04/22	S	G			X	X						
69/1.0	11	05/04/22	S	G			X	X						
69/1.5	12	05/04/22	S	G			X	X						
70/0.5	13	05/04/22	S	G			X	X						

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:**	18 Waler Crescent Smeaton Grange 2567	**Phone:**	(02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:	JH			**Transported to laboratory by:**	
Signed:		**Date & Time:**		**Received by:** Envirolab Services Wayne @ ELS	

ENVIROLAB GROUP
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 292963
Date Received: 7/4/22
Time Received: 1830
Received By: KW
Temp: Cool/Ambient 8°C
Cooling: Ice/Pack
Security: Intact/Broken/None

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	0418 651 227	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity	Cation Exchange capacity	TRH, metals	Hold	Notes/preservation
67/0.5	1	05/04/22	S	G			X	X	x					
67/1.0	2	05/04/22	S	G			X	X						
67/1.5	3	05/04/22	S	G			X	X	x					
67/2.0	4	05/04/22	S	G			X	X						
67/2.5	5	05/04/22	S	G			X	X	x					
67/3.0	6	05/04/22	S	G			X	X						
68/0.5	7	05/04/22	S	G			X	X						
68/1.0	8	05/04/22	S	G			X	X						
68/1.5	9	05/04/22	S	G			X	X						
69/0.5	10	05/04/22	S	G			X	X						
69/1.0	11	05/04/22	S	G			X	X						
69/1.5	12	05/04/22	S	G			X	X						
70/0.5	13	05/04/22	S	G			X	X						

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:**	18 Waler Crescent Smeaton Grange 2567	**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	JH			**Transported to laboratory by:**	
Signed:		**Date & Time:**		**Received by:**	

292963

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	0418 651 227	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity	Cation Exchange capacity	TRH, metals	Hold	Notes/preservation
70/1.0	14	05/04/22	S	G			X	X						
70/1.5	15	05/04/22	S	G			X	X						
71/0.5	16	05/04/22	S	G			X	X						
71/1.0	17	05/04/22	S	G			X	X						
71/1.5	18	05/04/22	S	G			X	X						
71/2.0	19	05/04/22	S	G			X	X						
71/2.5	20	05/04/22	S	G			X	X						
71/3.0	21	05/04/22	S	G			X	X						
72/0.5	22	05/04/22	S	G			X	X						
72/1.0	23	05/04/22	S	G			X	X						
72/1.5	24	05/04/22	S	G			X	X						
74/0.5	25	05/04/22	S	G			X	X	x	x				
74/1.0	26	05/04/22	S	G			X	X						

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:**	18 Waler Crescent Smeaton Grange	**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:			**Transported to laboratory by:**		
Signed:	**Date & Time:**		**Received by:**		

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Geotechnics / Environment / Groundwater

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Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
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Project Mgr:	Emily Eden	**Mob. Phone:**	0418 651 227	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil W - water)	Container Type (G - glass P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity	Cation Exchange capacity	TRH, metals	Hold	Notes/preservation
74/1.5	27	05/04/22	S	G			X	X	x	x				
74/2.0	28	05/04/22	S	G			X	X						
74/2.5	29	05/04/22	S	G			X	X	x					
74/3.0	30	05/04/22	S	G			X	X						
75/0.5	31	05/04/22	S	G			X	X						
75/1.0	32	05/04/22	S	G			X	X						
75/1.5	33	05/04/22	S	G			X	X						
76/0.5	34	05/04/22	S	G			X	X						
76/1.0	35	05/04/22	S	G			X	X						
76/1.5	36	05/04/22	S	G			X	X						
77/0.5	37	05/04/22	S	G			X	X						
77/1.0	38	05/04/22	S	G			X	X						
77/1.5	39	05/04/22	S	G			X	X						

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Waler Crescent Smeaton Grange	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:		**Transported to laboratory by:**	
Signed:	**Date & Time:**	**Received by:**	

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CHAIN OF CUSTODY

Project Name:	BRINGELLY, Birling Property, Contam			**To:**	Envirolab Services
Project No:	204684.00	**Sampler:**	JH		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily Eden	**Mob. Phone:**	0418 651 227	**Attn:**	
Email:	emily.eden@douglaspartners.com.au,jimmy.huynh@douglaspartners.com.au			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	STANDARD			**Email:**	

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8	Asbestos (500ml WADOH)	pH	EC	Chloride Sulfates	Sodicity	Cation Exchange cpacity	TRH, metals	Hold	Notes/preservation
78/0.5	40	05/04/22	S	G			X	X	x	x				
78/1.0	41	05/04/22	S	G			X	X						
78/1.5	42	05/04/22	S	G			X	X	x					

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address:** 18 Water Crescent Smeaton Grange		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:			**Transported to laboratory by:**		
Signed:		**Date & Time:**	**Received by:**		

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd Smeaton Grange
Attention	Emily Eden, Jimmy Huynh

Sample Login Details

Your reference	204684.00, Birling Property Contam, Bringelly
Envirolab Reference	292963
Date Sample Received	07/04/2022
Date Instructions Received	07/04/2022
Date Results Expected to be Reported	14/04/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	42 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
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Sample ID	Misc Inorg - Soil	ESP/CEC
67-0.5	✓	
67-1.0	✓	
67-1.5	✓	
67-2.0	✓	
67-2.5	✓	
67-3.0	✓	
68-0.5	✓	
68-1.0	✓	
68-1.5	✓	
69-0.5	✓	
69-1.0	✓	
69-1.5	✓	
70-0.5	✓	
70-1.0	✓	
70-1.5	✓	
71-0.5	✓	
71-1.0	✓	
71-1.5	✓	
71-2.0	✓	
71-2.5	✓	
71-3.0	✓	
72-0.5	✓	
72-1.0	✓	
72-1.5	✓	
74-0.5	✓	✓
74-1.0	✓	
74-1.5	✓	✓
74-2.0	✓	
74-2.5	✓	
74-3.0	✓	
75-0.5	✓	
75-1.0	✓	

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Sample ID	Misc Inorg - Soil	ESP/CEC
75-1.5	✓	
76-0.5	✓	
76-1.0	✓	
76-1.5	✓	
77-0.5	✓	
77-1.0	✓	
77-1.5	✓	
78-0.5	✓	✓
78-1.	✓	
78-1.5	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.