Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on
Salinity Investigation and Management Plan

Proposed Residential Subdivision
Stages 1 and 2, Wilton Junction, NSW

Prepared for
Walker Corporation Pty Ltd

Project 92269.01
March 2018

Douglas Partners
Geotechnics / Environment / Groundwater

Document History

Document details

Project No.	92269.01	Document No.	R.001.Rev0
Document title	Report on Salinity Investigation and Management Plan Proposed Residential Subdivision		
Site address	Stages 1 and 2, Wilton Junction, NSW		
Report prepared for	Walker Corporation Pty Ltd		
File name	92269.01.R.001.Rev0		

Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Kurtis Wathen	Christopher C. Kline	19 April 2018

Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1	0	Walker Corporation Pty Ltd - Mr Gerry Beasley

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		19 April 2018
Reviewer	 pp for CCK	19 April 2018

bsi. ISO 9001 Quality Management

Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
18 Waler Crescent
Smeaton Grange NSW 2567
Phone (02) 4647 0075
Fax (02) 4646 1886

Douglas Partners
Geotechnics | Environment | Groundwater

Table of Contents

Report on Salinity Investigation and Management Plan
Proposed Residential Subdivision
Stages 1 and 2, Wilton Junction, NSW

1. Introduction

This report presents the findings of a Salinity Investigation and Management Plan (SMP) undertaken for the proposed residential development of approximately 101 hectares (ha) of land located on Picton Road, Wilton, NSW ('the site') refer Drawing 1, Appendix A. The site comprises Stages 1 and 2 of the wider Wilton Junction residential subdivision proposed to be developed by Walker. The works were carried out in accordance with DP's proposal MAC180005 dated 23 January 2018.

It is understood that Walker Corporation Pty Ltd ('Walker') propose to redevelop the site for residential purposes and that Wollondilly Shire Council (Council) requires a salinity investigation for rezoning purposes.

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.

The fieldwork for the salinity investigation was undertaken concurrently with a contamination investigation, reported separately under DP Project 92269.00 (DP, 2018).

2. Scope of Works

The scope of works for the current investigation comprised the following:

- Review of the following documents detailing Council requirements:
  - 'Map of Salinity Potential in Western Sydney', DNR (2002);
  - 'Guidelines to Accompany Map of Salinity Potential in Western Sydney', DNR (2002);
  - 'Western Sydney Salinity Code of Practice' (amended January 2004), Rebecca Nicholson for WSROC, DNR and Natural Heritage Trust;
  - 'Guide to Residential Slabs and Footings in a Saline Environment', Cement, Concrete and Aggregates, Australia (2005);
  - 'Introduction to Urban Salinity', DNR (2003);
  - 'Building in a Saline Environment' DNR (2003);
  - 'Roads and Salinity', DNR (2003);
  - 'Indicators of Urban Salinity', DNR (2002);
  - 'Site Investigations for Urban Salinity', DNR (2002);

  - o 'Urban Salinity Processes', DNR (2004);
  - o 'Waterwise Parks and Gardens', DNR (2004); and
  - o 'Broad Scale Resources for Urban Salinity Assessment' DNR (2002).
- Salinity assessment of the site:
  - o Inspection of the site for signs of salinity;
  - o Excavation of a total of 28 test pits within the site to a maximum depth of 3 m below ground level (bgl) or prior refusal[1]. Of the 28 test pits completed, eight (TP77, 78, 80, 81, 101 and 124 - 126) were completed in the northern portion of the site mapped by DNR as having a high salinity potential (refer to Section 4.3). The remaining 20 test pits (TP 7, 9, 20, 23, 27, 42, 43, 48, 61, 71, 86, 90, 95, 97, 104, 112, 115, 120 and 123) were completed on a grid basis across the remaining balance of the site;
- Collection of soil samples from the test pits at regular 0.5 m depth intervals;
- Laboratory analysis of selected soil samples (125 samples) for electrical conductivity (EC1:5), pH and textural classification by a NATA accredited laboratory for classification of salinity and aggressivity;
- Laboratory analysis of selected soil samples for chloride and sulphate concentrations (40 samples) for further assessment of aggressivity; and analysis for sodicity (16 samples) and dispersibilty (8 samples) as indicators of erodibility;
- Assessment of the results with respect to potential for salinity impacts on the development; and
- Preparation of this report detailing the methodology and results of the assessment and discussing the suitability of the site for the proposed development.

3. Site Description

The site is roughly rectangular in shape with an approximate area of 101 hectares (ha) and lies within the Local Government Area (LGA) of Wollondilly Shire. The site is currently registered as eight separate lots, listed below:

- Lot 75 on Deposited Plan (D.P.) 837310;
- Lot 3 on D.P. 702025;
- Lot 51 on D.P. 626650;
- Lot 2 on D.P. 88145;
- Lot 1 on D.P. 445344;
- Lot 51 on D.P. 626650;
- Lot 16 on D.P. 253158; and
- Part lot 1 on D.P. 744927.

[1] A further 96 test pits were completed to inform the contamination assessment (TP1 – TP6, TP8, TP10 – TP19, TP21, TP22, TP24 – TP26, TP28 – TP34, TP36 – TP41, TP44 – TP47, TP49 – TP60, TP62 – TP70, TP72 – TP76, TP79, TP82 – TP85, TP87 – TP89, TP91 – TP94, TP96, TP98, TP99, TP100, TP102, TP103, TP105 – TP11, TP113, TP114, TP116 – TP119, TP121 and TP122, ; DP, 2018), however no salinity specific tests were conducted, therefore data from these test pits are not included in the scope of this report.

The site is bound to the north by Picton Road, to the north-west by Janderra Road, to the west by Emma Lane, to the south by a bushland associated with the designated 'Special Area[2]' surrounding the Nepean River.

At the time of the investigation, the site consisted of primarily grass covered pasture fields separated by trees and mixed timber and wire fencing. Farm dams were located throughout the site, particularly along drainage lines running along creeks / surface drainage lines running towards the north / north east (in the northern portion of the site), towards the north west (in the north west portion of the site) and towards the south (in the southern portion of the site). A rural residential property and sheds located in the north eastern corner of the site was tenanted at the time of the investigation.

The site traverses undulating terrain with an overall relief variation of approximately 50 m from the highest part (260 m AHD[3] in the east) of the site to the lowest (190 m AHD in the west). The site currently appears to be used for a mixture of rural / residential, agricultural and commercial purposes.

The site layout is shown on Drawing 1, Appendix A.

4. Regional Geology, Soil Landscapes and Hydrogeology

4.1 Geology and Soil Landscapes

Reference to the Geological Survey of New South Wales (1985) map entitled *Wollongong to Port Hacking 1:100,000 Geological Sheet 9029 - 9129* indicates that the site is located on the southernmost extent of the Permo-Triassic Sydney Basin and key shallow lithologies below the site include laminite and dark-grey siltstone (Ashfield Shale - mapping unit Rwa) of the Wianamatta group in the northern portion and older coarse-grained quartz sandstone, very minor shale and laminite lenses (Hawkesbury sandstone - mapping unit 'Rh') in the southern portion.

Reference to the Soil Conservation Service of NSW (1990) map entitled *Soil Landscapes of the Wollongong-Port Hacking 1:100,000* indicates that the site is predominantly underlain by the Blacktown soil landscape (mapping unit bt), characterised by gently undulating rises on Wianamatta Group shales and Hawkesbury shale, with local relief to 30 m and slopes usually less than 5%. The landscape is generally represented by broad rounded crests and ridges with gently inclined slopes. Yellow, red and brown podzolic soils are characteristic of the area. Characteristics of this soil include moderately reactive, highly plastic subsoil, low fertility and poor drainage soil. Localised deposits of Luddenham soils (mapping unit lu) may occur in the eastern portion of the site which commonly have a high soil erosion hazard, localised impermeability, high plasticity and moderately reactive soils.

Reference to the above Landscape Sheet also indicates that the south-east portion of the site is underlain by the South Creek soil landscape, characterised by alluvial soils located in floodplains, valley flats and drainage depressions of the channels on the Cumberland Plain. The landscape is generally represented by flat land with incised channels, mainly cleared. Red and yellow podzolic soils are most common on terraces with small areas of structured grey clays.

[2] Declared under the WaterNSW Act 2014 and regulated by WaterNSW.
[3] Australian Height Datum

4.2 Hydrogeology

The site is located at the geological boundary of the Wianamatta shales (mapping unit 'Rwa') and the Hawkesbury sandstone (mapping unit 'Rh'). As such the hydrogeology will vary depending on the location within the site.

McNally, G. 2005, *Investigation of Urban Salinity – Case Studies from Western Sydney*, 2005 describes some general features of the hydrogeology of Western Sydney which are relevant to the Walker site. The shale terrain of much of Western Sydney is known for saline groundwater, resulting either from the release of connate salt in shales of marine origin or from the accumulation of windblown sea salt. Seasonal groundwater level changes of 1 m - 2 m can occur in a shallow regolith aquifer or a deeper shale aquifer due to natural influences.

Groundwater investigations undertaken by DP in the South West of Sydney and previous studies of areas underlain by the Wianamatta Group indicate that:

- The shales have a very low intrinsic permeability, hence groundwater flow is likely to be dominated by fracture flow with resultant low yields (typically < 1 L/s) in bores; and
- The groundwater in the Wianamatta Group is typically brackish to saline with total dissolved solids (TDS) in the range 4000 - 5000 mg/L (but with cases of TDS up to 31 750 mg/L being reported). The dominant ions are typically sodium and chloride and the water is generally unsuitable for livestock or irrigation.

The areas underlain by Hawkesbury sandstone are typically associated with higher groundwater quality (i.e. low salinities) and higher yields. Based on available groundwater bore logs and available information on regional geology (refer to Section 4.1), shale and sandstone is present at shallow depths (< 10 m) below the Wilton area; the older Hawkesbury sandstone is typically exposed in low lying areas, e.g. built up areas and watercourses. Owing to the higher yield potential and general low salinities associated with the Hawkesbury Sandstone, groundwater from the Hawkesbury sandstone can be considered generally suitable for irrigation purposes.

4.3 Salinity Potential

Reference to the Map of Salinity Potential in Western Sydney, indicates the following:

- Approximately 8.4 ha of the site along the central area of the northern site boundary is located within an area of "high salinity potential" where "soil, geology, topography and groundwater conditions predispose a site to salinity. These conditions are similar to areas of known salinity. These areas are most common in lower slopes and drainage systems where water accumulation is high."
- The remainder of the site is located within an area of "moderate salinity potential" where "saline areas may occur, which have not yet been identified or may occur if risk factors change adversely.''

These classifications are based on the landform geology and it is noted that due to the resolution at the scale of the mapping, it is not possible to delineate the zone boundaries with precision.

4.4 Hydrology

The following surface water bodies are located at the site:

- Unnamed creek and farm dams in the north west portion of the site draining into the Nepean River 1.2 km west of the site;
- Unnamed creek and two farm dams in the south west portion of the site draining into the Nepean River 380 m south west of the site; and
- Two small creeks in the northern site draining towards the north into Stringybark Creek, a tributary of Allens Creek and ultimately into the Nepean River (located 5 km north of the site).

Surface water runoff is anticipated to flow towards the west and to a lesser extent towards the north, i.e. following the topography of the site.

5. Methods

5.1 Fieldwork Method

Field investigations were undertaken between 12 and 21 February 2018 by a DP environmental engineer. The fieldwork comprised the excavation of 28 test pits (refer Drawing 1, Appendix A) using a JCB 3CX backhoe fitted with a 300 mm toothed bucket. Test pits were excavated to a maximum depth of 3 m below ground level (bgl) or to prior refusal. Test pit locations are shown on Drawing 1, Appendix A. Representative samples were collected at 0.5 m depth intervals for laboratory testing and to assist in strata identification.

All filed measurements and mapping for this project have been carried out using the Geodetic Datum of Australia, 1993 (GDA94) and the Map Grid of Australia (MGA94), Zone 56. All reduced levels are given in relation to the AHD.

6. Results

6.1 Fieldwork Results

The test pit logs are included in Appendix B, together with notes defining classification methods and descriptive terms.

The general strata across the site are summarised as follows:

- FILLING – localised filling comprised grey, light brown, dark brown and grey-brown clayey silt with trace rootlets, basaltic gravel and shale gravel and red, red-brown, light brown, dark brown, brown and orange mottled grey silty clay with trace rootlets, basaltic gravel, shale gravel, sand and construction and demolition material (comprising bricks, terracotta tile fragments, timber, cinder blocks, plastic sheeting and plastic piping) was encountered at depths of up to 1.6 m bgl. Filling was observed in former building footprints and within one gully only;
- CLAYEY SILT – light and dark brown, grey-brown, red-brown clayey silt with trace rootlets and charcoal associated with recent grass fire encountered at depths of up to 0.9 m bgl but generally less than 0.5 m bgl;

- SILTY CLAY – light brown, dark brown, red, red-brown, red-brown mottled grey, orange mottled grey and grey silty clay with trace rootlets, shale gravel, sandstone gravel and sand encountered at depths of up to 3 m bgl; and
- BEDROCK – Low to high strength, low to moderately weathered grey and brown shale and sandstone with silty grey clay bands encountered at depths of up to 3 m bgl.

No free groundwater was observed in the pits during excavation for the short time that they were left open.

6.2 Spatial Mapping

Salinity and aggressivity within the site was classified by utilising maxima/minima analysis within the full investigated depth zone 0 - 3 m bgl. Maximum values were used for the mapping. The summary table (Table C1, Appendix C) presents aggressivities and salinities for each test pit location, based on minimum pH, minimum electrical resistivity and maximum ECe values within the investigated depth zone.

These values were used for spatial mapping of aggressivities and salinities throughout the investigation area (refer Drawings 2 to 4, Appendix A).

6.3 Laboratory Results

The laboratory test results and assessments of aggressivity, salinity, sodicity and dispersibility are summarised in Table C1 of Appendix C. Aggressivity to concrete was determined using pH values and sulphate concentrations and aggressivity to steel was determined using pH values, chloride concentration and resistivities. The salinity class was inferred from ECe values using the method of Richards (1954) and sodicity was determined using the cation-exchange-capacity (CEC) and exchangeable sodium concentrations. Dispersion potentials were derived from Emerson Crumb Tests. The detailed laboratory test reports and chain of custody documents are provided in Appendix D.

Table 1: Summary of Parameters Tested

Parameter		Units	Samples	Minimum	Maximum
pH		pH units	125	4.5	9.1
Chlorides		(mg/kg)	40	<10	530
Sulphates		(mg/kg)	40	<10	87
Aggressivity	to Concrete	[AS2159]	-	Non-Aggressive	Moderately Aggressive
	to Steel	[AS2159]	-	Non-Aggressive	Mildly Aggressive
Exchangeable Sodium (Na)		(meq/100g)	16	0.2	2.0
CEC (cation exchange capacity)		(meq/100g)	16	3.1	10

Parameter	Units	Samples	Minimum	Maximum
Sodicity [Na/CEC]	(ESP%)	16	4.3	37.7
Sodicity Class	[after DLWC]	-	Non-sodic	Highly Sodic
EC1:5 [Lab.]	(mS/cm)	125	10	720
Resistivity	Ω.cm	125	1388.9	100000
ECe [M x EC1:5] [1]	(dS/m)	125	0.1	5.0
Salinity Class	[after Richards 1954]	-	Non-Saline	Moderately Saline

1 M is soil textural factor

6.3.1 Aggressivity

Figures 1 presents variations of aggressivity with depth, based on pH profiles at all sampling locations, together with class ranges indicated in the Australian Standard AS2159 (2009). The absence of free groundwater in all locations and the permeability of the sampled clay-rich soils at all sampling locations indicate that soils are in Condition “B” as defined by AS2159.

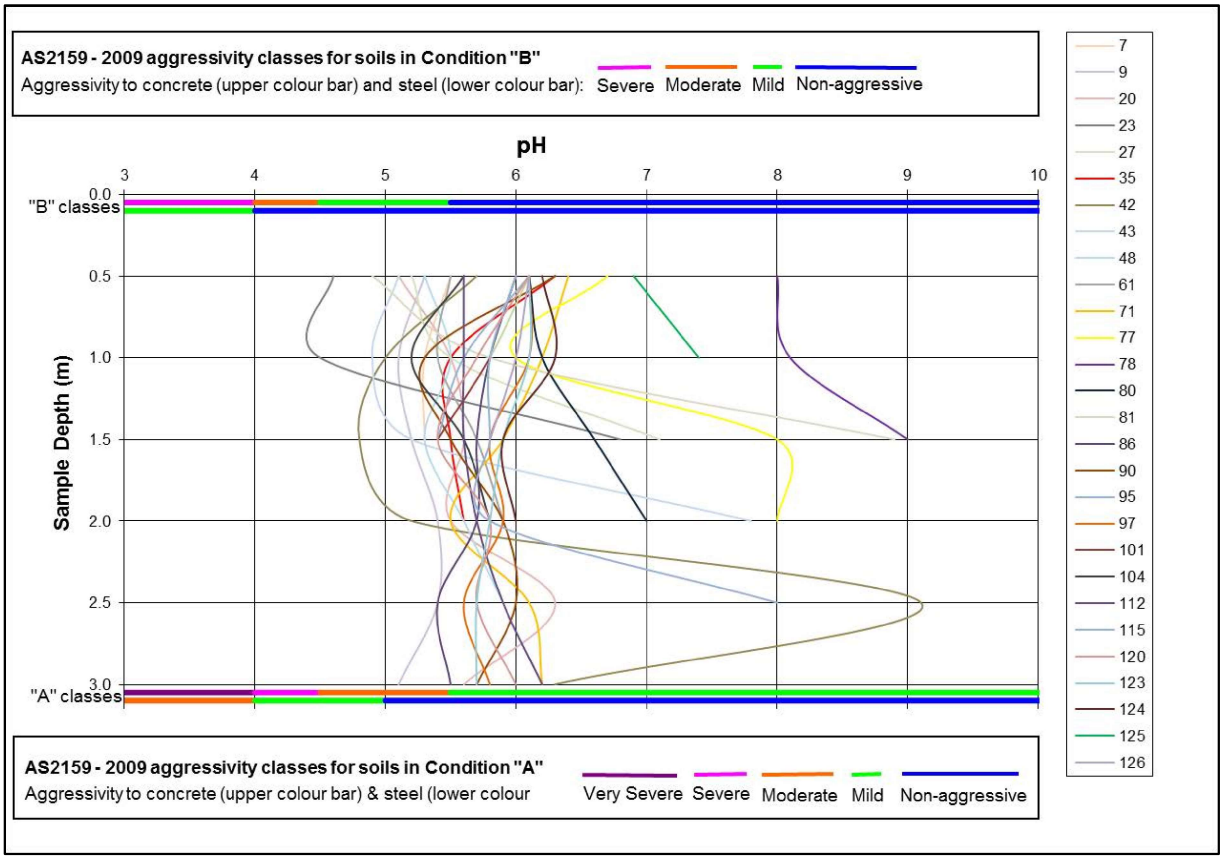


Figure 1: Vertical pH Profiles and Aggressivity Classes

Figure 1 shows non-aggressive to moderately aggressive classifications of soils based on pH values. The summary Table C1 (Appendix C) indicates that 69% of all tested samples were non-aggressive to concrete, 30% were mildly aggressive and 1% were moderately aggressive. The worst case results for each test pit were used to define approximate areas of mild (pH 4.5 - 5.5) aggressivity and moderately (pH < 4.5) aggressivity to concrete foundations and piles below current ground surface (Drawing 2, Appendix A).

The pH profiles of Figure 1 indicate that the materials throughout the site, at all investigated depths were non-aggressive to steel. This finding was generally supported by the resistivity results displayed in Table C1 (Appendix C) with the exception of TP23 TP42 and TP43 which were both classified as mildly aggressive to steel.

The worst case resistivity results for each test pit were used to define approximate areas of mild aggressivity to steel piles, represented by colour zones on Drawing 3 (Appendix A).

6.3.2 Salinity

Figure 2 presents the variations of salinity with depth, based on salinity (ECe) profiles at all sampling locations, together with the salinity classifications of Richards (1954).

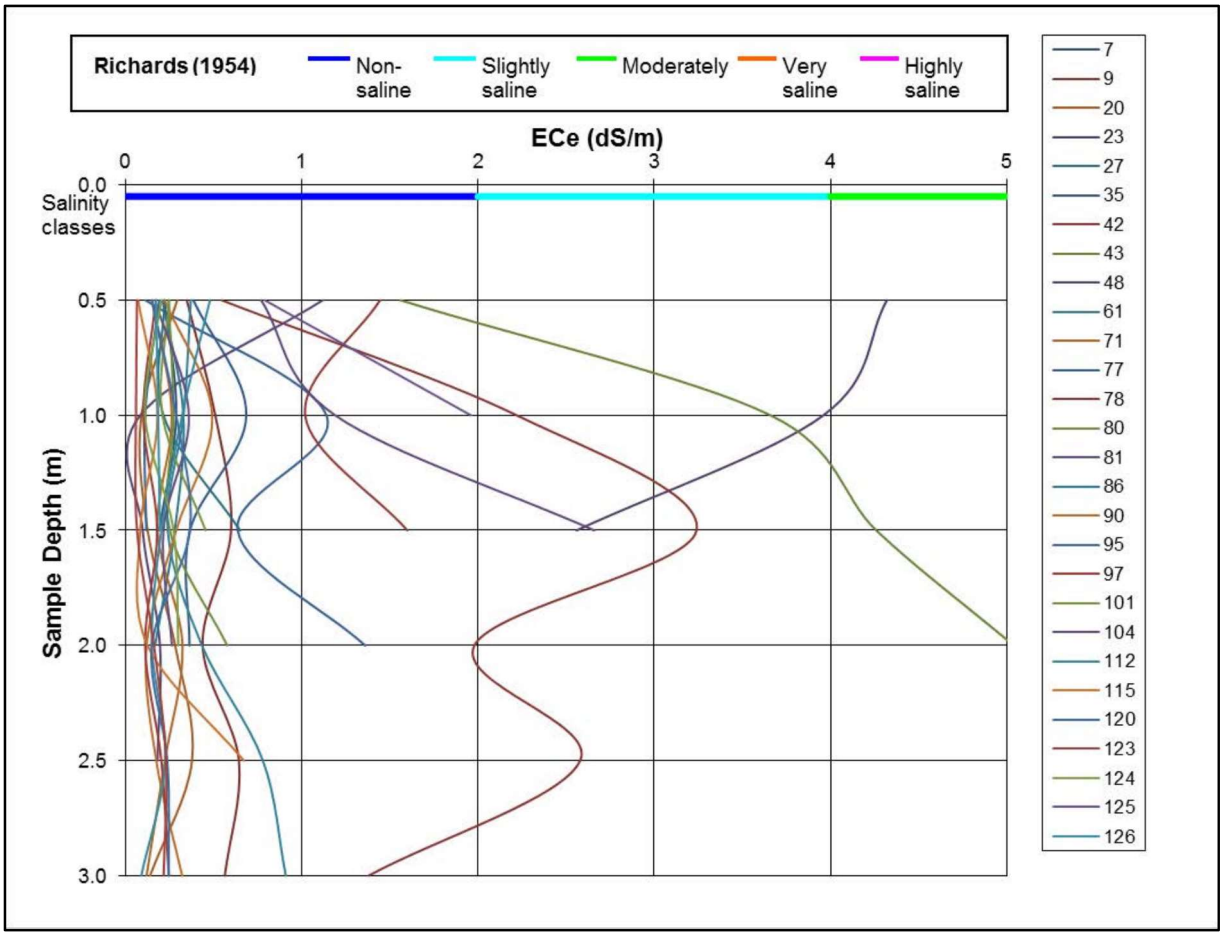


Figure 2: Vertical Salinity Profiles and Salinity Classes

Table C1 (Appendix C) indicates that 92% of soil samples were non-saline, 6% were slightly saline and 2% were moderately saline.

As, for aggressivity, worst case ECe values were interpolated and contoured to define areas of slightly saline (ECe 2 - 4 dS/m) and moderately saline (ECe 4 - 8 dS/m) (see Drawing 4, Appendix A).

6.4 Sodicity and Dispersibilty

The sodicity test reported in Table C1, Appendix C, shows non-sodic to highly sodic soils, indicating some potential for erodibility of soils left exposed. Approximately 50 % of the samples analysed were classified as highly sodic.

The dispersion potential of the soils, as measured by the Emerson Crumb Test (refer Table C1, Appendix C), were determined to be as follows:

- Class 1 (complete dispersion) – TP7 (0.5 m bgl – heavy clay) and TP97 (1.5 m bgl – clay loam);
- Class 2 (some dispersion) – TP86 (1.0 m bgl – heavy clay), TP104 (0.5 m bgl – heavy clay) and TP120 (1.0 m bgl – heavy clay);
- Class 3 (dispersive) – TP81 (0.5 m bgl – medium clay); and
- Class 6 (no dispersion) – TP20 and TP27 (1.0 m bgl – medium and heavy clay respectively).

Given the Emerson Crumb Class Numbers recorded, it is likely soils at the site have the potential to exhibit poor drainage and there is a tendency for water logging to occur.

7. Impacts of the Proposed Development

Mild to moderate aggressivity to concrete and mild aggressivity to steel, the presence of slightly saline to moderately saline material and sodic to highly sodic soils are naturally occurring features of the local landscape and are not considered to be significant impediments to the proposed development, provided appropriate remediation or management techniques are employed.

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 8).

Sodic soils 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.

8. Salinity Management Plan

The current salinity investigation indicates that materials within the site are non-saline to moderately saline. Testing of other parameters associated with salinity indicates that the materials within the site are non-aggressive to moderately aggressive to concrete and non-aggressive to mildly aggressive to steel (in accordance with AS 2159). In addition, 50% of soils were highly sodic.

The following management strategies are confined to the management of those factors mentioned above, with a potential to impact on the proposed development.

A. Management should focus on capping 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 (i.e. place excavated material onto in-situ soils with a similar or higher aggressivity or salinity classification). With respect to imported fill material, testing should be undertaken prior to importation, to determine the salinity characteristics of the material.

C. 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.

D. 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. Where wet basins are proposed, site specific investigation will be required to assess the need for liners (clay or HDPE).

E. 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.

F. 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.

G. 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.

The following additional strategies are recommended for completion of service installation and for house construction. These strategies should be complementary to standard good building practices recommended within the Building Code of Australia, including cover to reinforcement within concrete and correct installation of a brick damp course, so that it cannot be bridged to allow moisture to move into brick work and up the wall.

H. Where soils are classified as non-aggressive to concrete, piles should have a minimum strength of 32 MPa and a minimum cover to reinforcement of 45 mm (as per AS 2159).

I. Where soils are classified as mildly aggressive to concrete, piles should have a minimum strength of 32 MPa and a minimum cover to reinforcement of 60 mm (as per AS 2159) to limit the corrosive effects of the surrounding soils (in accordance with AS 2159).

J. Where soils are classified as moderately aggressive to concrete, piles should have a minimum strength of 40 MPa and a minimum cover to reinforcement of 65 mm (as per AS 2159) to limit the corrosive effects of the surrounding soils (in accordance with AS 2159).

K. With regard to concrete structures, for non-saline and slightly saline soils (with salinities less than 4 dS/m) (refer Drawing 4):

- Where soils are classified as non-aggressive to concrete (AS 3600 - A1) (Drawing 2), slabs and foundations should have a minimum strength of 20 MPa, and should be allowed to cure for a minimum of three days (as per AS 3600) to limit the corrosive effects of the surrounding soils; and
- Where soils are classified as mildly aggressive to concrete (AS 3600 - A2) (Drawing 2), slabs and foundations should have a minimum strength of 25 MPa, and should be allowed to cure for a minimum of three days (as per AS 3600) to limit the corrosive effects of the surrounding soils.

L. With regard to concrete structures, for moderately saline soils with salinities of 4 - 8 dS/m (refer Drawing 4) :

- Where soils are classified as non-aggressive to mildly aggressive to concrete (AS 3600 - A1 and A2) (Drawing 2), slabs and foundations should have a minimum strength of 25 MPa, a minimum cover to reinforcement of 45 mm from unprotected ground and should be allowed to cure for a minimum of three days (as per AS 3600) to limit the corrosive effects of the surrounding soils; and
- Where soils are classified as moderately aggressive to concrete (AS 3600 - B1) (Drawing 2), slabs and foundations should have a minimum strength of 32 MPa, a minimum cover to reinforcement of 50 mm from unprotected ground and should be allowed to cure for a minimum of seven days (as per AS 3600) to limit the corrosive effects of the surrounding soils.

M. 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, J, K and L above. Reference to the maximum and minimum test results of Table 1 (Section 7 of this report) and to Tables E1 and 3.1 of AS 4058 - 2007 “Precast concrete pipes” indicates that the site falls within the AS 4058 Clay/Stagnant (low sulphate) soil type (chlorides <=20,000 ppm, pH>=4.5 and sulphates <=1,000 ppm) and (in the absence of tidal water flow) falls within the AS 4058 Normal durability environment. 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.

N. Resistivity results indicate localised soils that are mildly aggressive to steel (1000 - 2000 Ohm-cm, refer Drawing 3, Appendix A). For these areas of soil identified as aggressive to steel, a uniform corrosion allowance 0.01 - 0.02 mm/year (as per AS 2159 - 2009) should be taken into account by the designer.

   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 as defined above.

9. Additional Recommendations and Conclusions

Additional investigation should be undertaken in development areas which are to be excavated deeper than 3 m, where direct sampling and testing of salinity has not been carried out. Salinity management strategies herein may need to be modified or extended following additional investigations by deep test pitting and/or drilling, sampling and testing for soil and water pH, electrical conductivity, TDS, sodicity, sulphates and chlorides. Such works, if required, could be conducted when final cut and fill requirements have been determined. Considering the potential for mass soil movements associated with bulk earthworks, consideration should be given to updating the assessment at lot classification, to renew the mapping of salinity across the site.

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.

10. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report (or services) for this project at Stages 1 and 2, Wilton Junction, NSW in accordance with DP's proposal MAC180005 dated 10 January 2018. The work was carried out under contract reference ME_132208996_5 (W2007). This report is provided for the exclusive use of Walker Corporation 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 sub-surface 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. Sub-surface 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.

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.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the (geotechnical / environmental / groundwater) components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

Drawings 1 to 4
About This Report

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

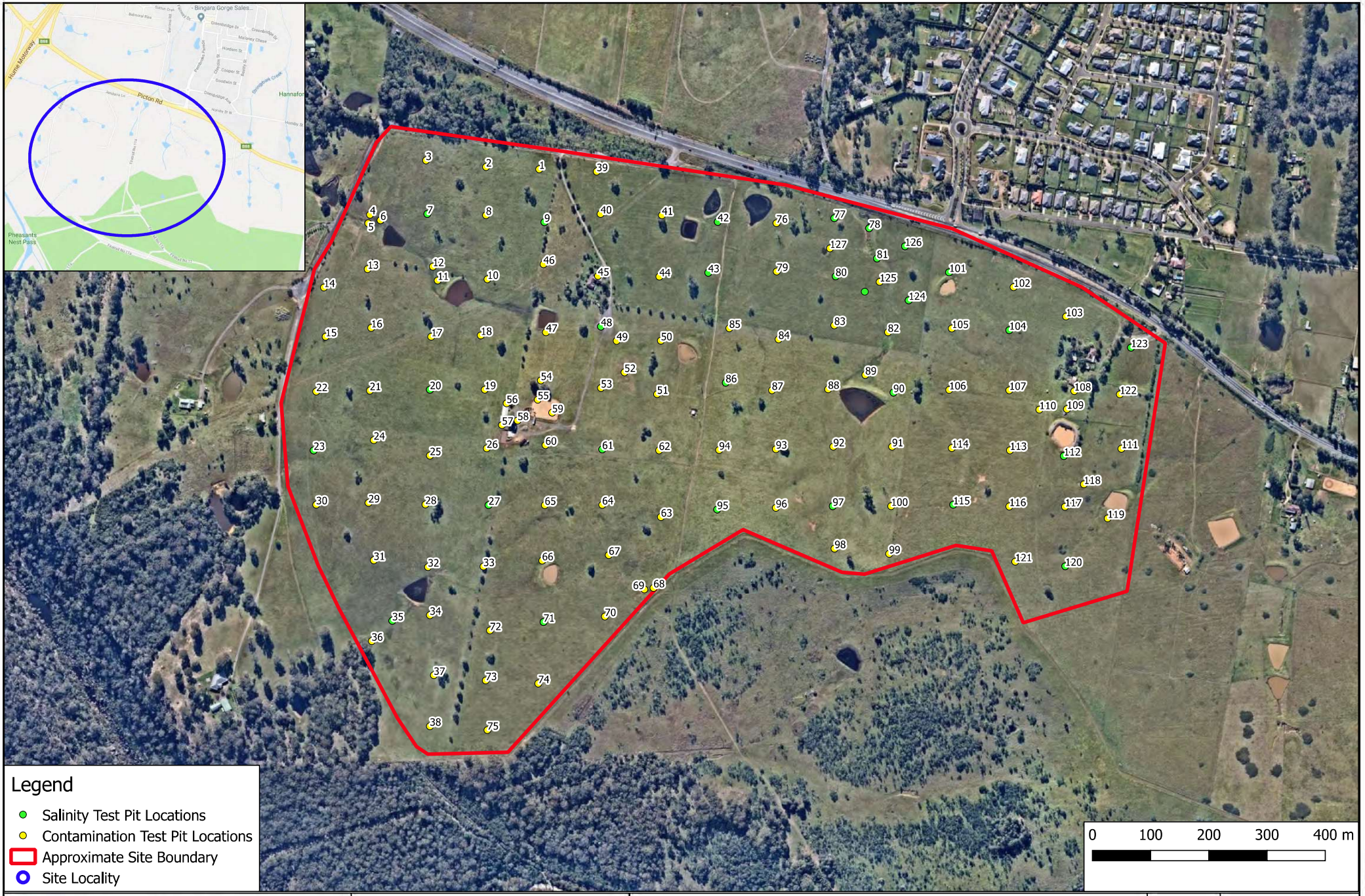
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later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



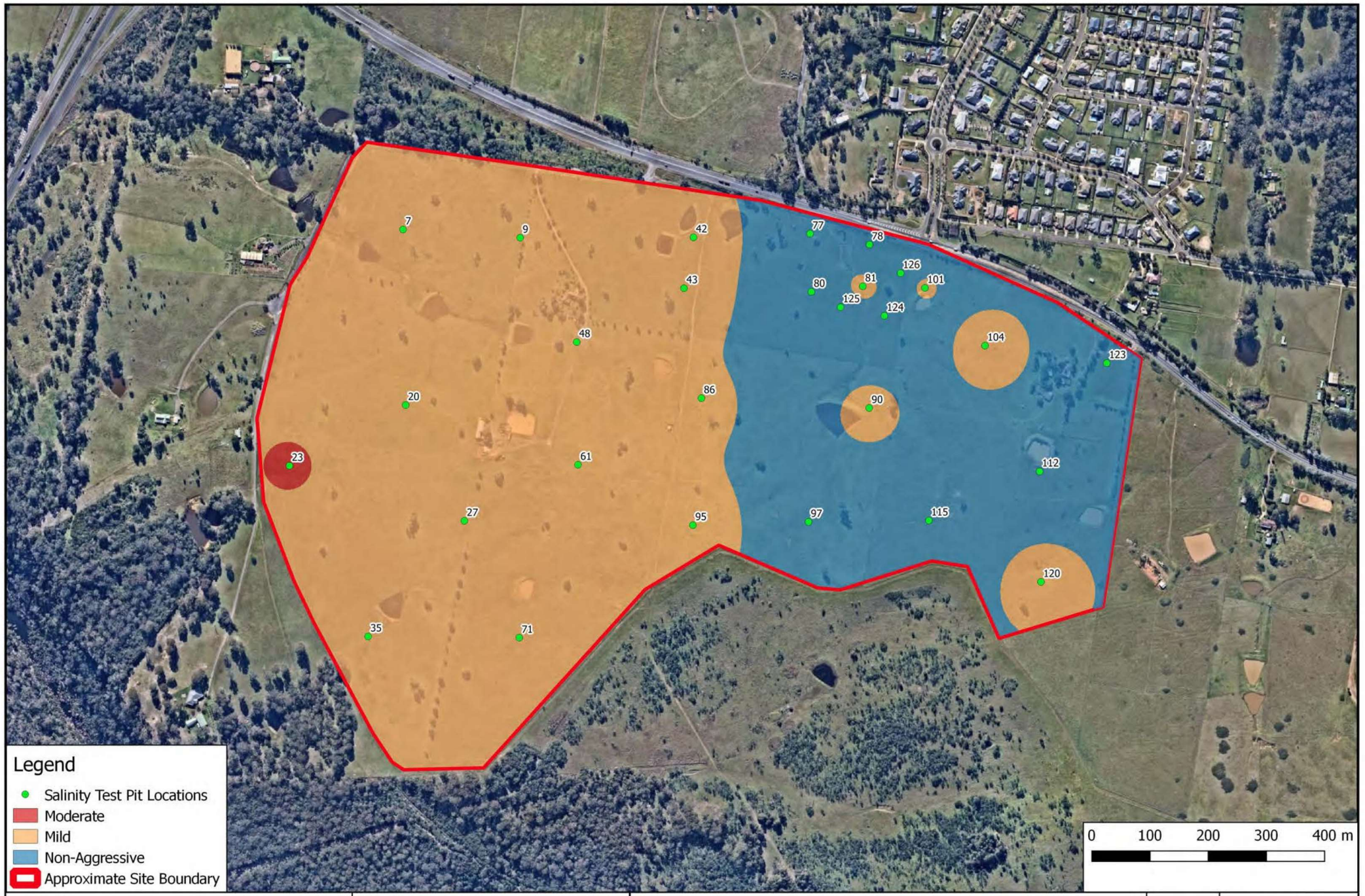
Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: Walker Corporation Pty Ltd	
OFFICE: Macarthur	DRAWN BY: KPW
SCALE: 1:6,000	DATE: 18 April 2018

TITLE: **Site and Test Pit Locations**
Salinity Investigation and Management Plan
Stages 1 and 2, Wilton Junction, NSW

MGA

PROJECT No:	92269.01
DRAWING No:	1
REVISION:	B



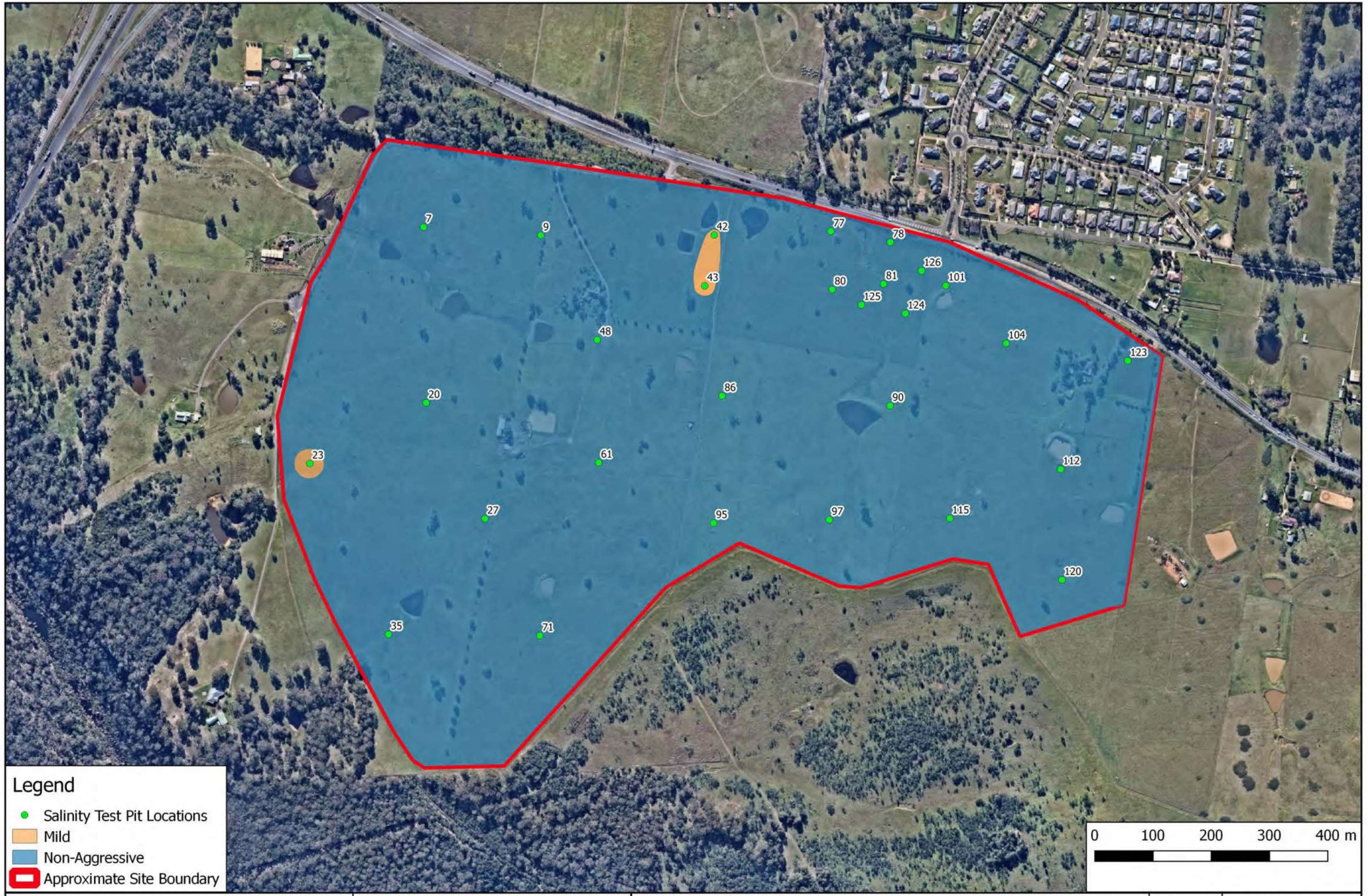
Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: Walker Corporation Pty Ltd	
OFFICE: Macarthur	DRAWN BY: KPW
SCALE: 1:6,000	DATE: 18 April 2018

TITLE: **Aggressivity to Concrete**
Salinity Investigation and Management Plan
Stages 1 and 2, Wilton Junction, NSW

N
MGA

PROJECT No:	92269.01
DRAWING No:	2
REVISION:	B



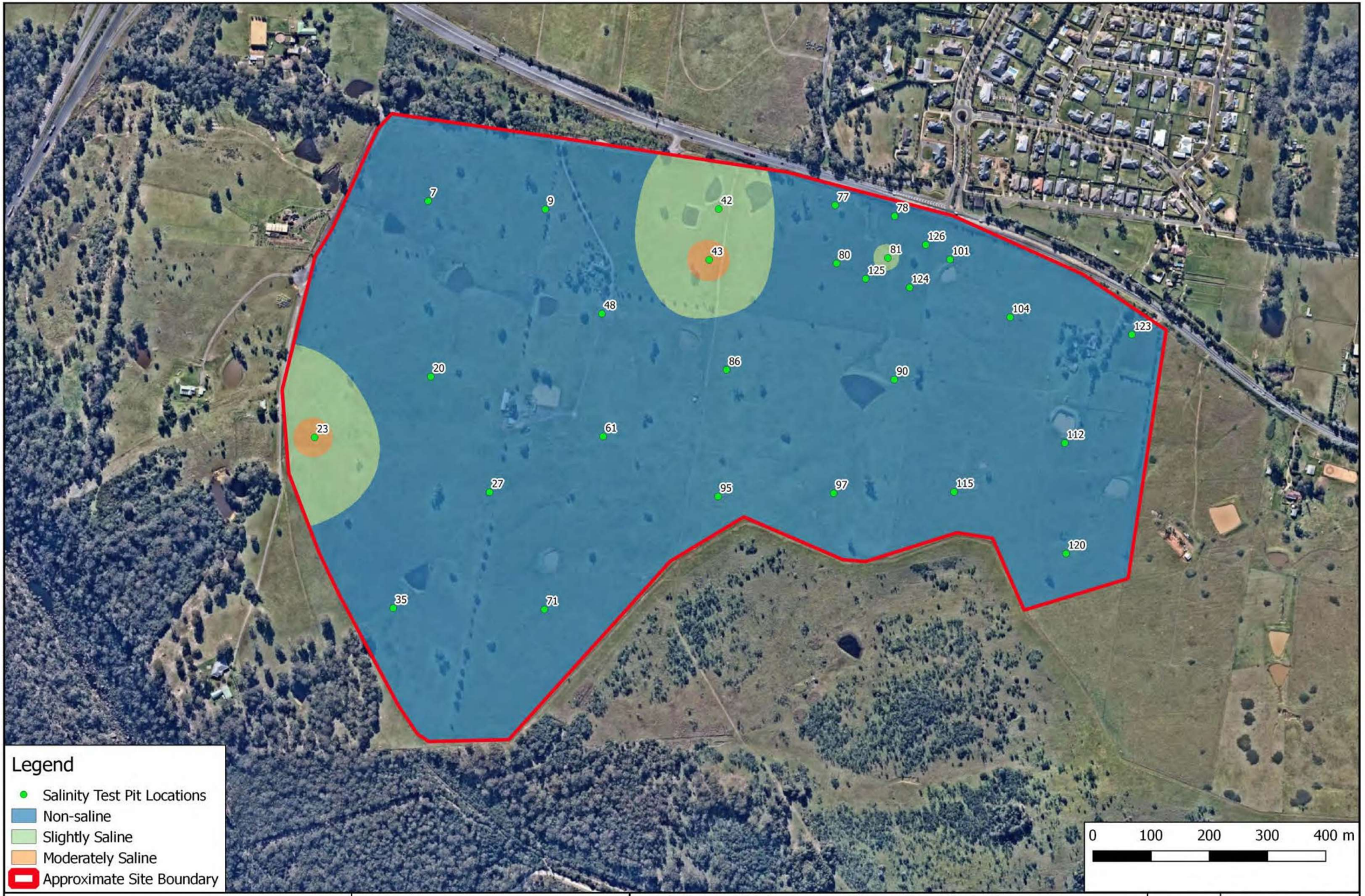
Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: Walker Corporation Pty Ltd	
OFFICE: Macarthur	DRAWN BY: KPW
SCALE: 1:6,000	DATE: 18 April 2018

TITLE: **Aggressivity to Steel**
Salinity Investigation and Management Plan
Stages 1 and 2, Wilton Junction, NSW

N
MGA

PROJECT No:	92269.01
DRAWING No:	3
REVISION:	B



Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: Walker Corporation Pty Ltd	
OFFICE: Macarthur	DRAWN BY: KPW
SCALE: 1:6,000	DATE: 18 April 2018

TITLE: **Salinity within Investigated Depth Zone (0 - 3 m)**
Salinity Investigation and Management Plan
Stages 1 and 2, Wilton Junction, NSW

N

PROJECT No:	92269.01
DRAWING No:	4
REVISION:	B

Appendix B

Soil Logs

TEST PIT LOG

CLIENT: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 226 mAHD
EASTING: 285763
NORTHING: 6209410

PIT No: 1
PROJECT No: 92269.00
DATE: 12/2/2018
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)
226	0.05	CLAYEY SILT - dark brown clayey silt with some rootlets			0.0				5 10 15 20
		SILTY CLAY - dark brown silty clay with a trace of rootlets		D*	0.2				
		- becoming firm, red brown with a trace of ironstone and shale gravel, MC<PL below 0.4m							
	0.7	Pit discontinued at 0.7m							
		- <<N>limit of investigation							
225	1								1
224	2								2
223	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD1/120218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 222 mAHD
EASTING: 285681
NORTHING: 6209431

PIT No: 2
PROJECT No: 92269.00
DATE: 12/2/2018
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)
222	0.09	CLAYEY SILT - dark brown clayey silt with a trace of shale gravel and rootlets (topsoil)		D	0.0				5 10 15 20
		SILTY CLAY - soft, dark brown silty clay with a trace of shale gravel and rootlets, MC<PL			0.2				
				D	0.4				
	0.8				0.5				
221	1	Pit discontinued at 0.8m - <<N>limit of investigation							1
220	2								2
219	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 215 mAHD
EASTING: 285590
NORTHING: 6209428

PIT No: 3
PROJECT No: 92269.00
DATE: 12/2/2018
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)
215		SILTY CLAY - soft, grey brown silty clay with a trace of rootlets		D	0.0				
					0.2				
		- becoming firm, brown mottled red silty clay with a trace of ironstone gravel, MC<PL below 0.4m		D	0.4				
					0.5				
	0.9	Pit discontinued at 0.9m							
214	1	- <<N>limit of investigation							1
213	2								2
212	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 212 mAHD
EASTING: 285457
NORTHING: 6209295

PIT No: 4
PROJECT No: 92269.00
DATE: 12/2/2018
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)
212	0.0	SILTY CLAY - soft, grey silty clay with a trace of rootlets		D	0.0				
					0.2				
		- becoming grey mottled orange with a trace of fine grained sand, MC<PL below 0.3m		D	0.4				
					0.5				
	0.6	SANDSTONE - high strength, moderately weathered, grey and orange sandstone							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
211	1								1
210	2								2
209	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 211 mAHD
EASTING: 285448
NORTHING: 6209299

PIT No: 5
PROJECT No: 92269.00
DATE: 12/2/2018
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)
211	0.1	CLAYEY SILT - grey brown clayey silt with some rootlets (topsoil)		D	0.0				
		SILTY CLAY - firm, grey silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
		- becoming grey and orange with a trace of sand and ironstone gravel, MC<PL below 0.5m			0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
210	1								1
209	2								2
208	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 212 mAHD
EASTING: 285477
NORTHING: 6209293

PIT No: 6
PROJECT No: 92269.00
DATE: 12/2/2018
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
212	0.0	CLAYEY SILT - light brown clayey silt with a trace of sand and rootlets (topsoil)		D	0.0				
	0.2	SILTY CLAY - firm, brown mottled red and grey silty clay with a trace of sand, grey sandstone gravel and roots, MC<PL			0.2				
				D	0.4				
					0.5				
211	1								1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
210	2								2
209	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 216 mAHD
EASTING: 285550
NORTHING: 6209337

PIT No: 7
PROJECT No: 92269.00
DATE: 12/2/2018
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)
216	0.1	FILLING - grey brown clayey silt with a trace of basaltic gravel and rootlets (topsoil)		D	0.0				
		SILTY CLAY - firm, brown silty clay with a trace of ironstone gravel			0.2				
		- becoming red with a trace of ironstone gravel below 0.3m		D	0.4				
					0.5				
		- becoming red mottled grey with a trace of sand, MC<PL below 0.7m							
215	1			D	0.9				1
					1.0				
	1.3	SANDSTONE - high strength, moderately weathered, grey and brown sandstone with some grey clayey sand		D	1.4				
					1.5				
	1.6	Pit discontinued at 1.6m - <<N>refusal on high strength sandstone							
214	2								2
213	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 220 mAHD
EASTING: 285615
NORTHING: 6209335

PIT No: 8
PROJECT No: 92269.00
DATE: 12/2/2018
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)
220	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				5 10 15 20
		SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
		- becoming dark brown and red, MC<PL below 0.6m			0.5				
	0.9	Pit discontinued at 0.9m							
219	1	- <<N>limit of investigation							1
218	2								2
217	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 226 mAHD
EASTING: 285741
NORTHING: 6209352

PIT No: 9
PROJECT No: 92269.00
DATE: 12/2/2018
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)
226	0.19	CLAYEY SILT - light brown clayey silt with a trace of rootlets		D	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
					0.5				
		- becoming brown mottled orange below 0.7m							
				D	0.9				
225	1				1.0				1
		- becoming grey mottled orange with some grey shale gravel and a trace of shale cobbles, MC<PL below 1.3m							
				D	1.4				
					1.5				
					1.9				
				D					
224	2				2.0				2
					2.4				
				D					
					2.5				
					2.9				
				D					
223	3 3.0	Pit discontinued at 3.0m - <<N>limit of investigation			3.0				3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 225 mAHD
EASTING: 285723
NORTHING: 6209275

PIT No: 10
PROJECT No: 92269.00
DATE: 12/2/2018
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)
225	0.01	CLAYEY SILT - dark brown clayey silt with a trace of rootlets (topsoil)		D*	0.0				
		SILTY CLAY - stiff, brown silty clay with a trace of ironstone gravel and rootlets			0.2				
		- becoming red brown with a trace of grey and brown shale gravel and cobbles, MC<PL below 0.4m		D	0.4 0.5				
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation							
224	1								1
223	2								2
222	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD2/120218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 216 mAHD
EASTING: 285566
NORTHING: 6209262

PIT No: 11
PROJECT No: 92269.00
DATE: 12/2/2018
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)
216	0.0	FILLING - dark brown silty clay with a trace of shale fragments and rootlets		D	0.0				
					0.2				
	0.4	SILTY CLAY - firm, brown mottled red silty clay with a trace of ironstone gravel, MC<PL		D	0.4				
					0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
215	1								1
214	2								2
213	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 219 mAHD
EASTING: 285582
NORTHING: 6209209

PIT No: 12
PROJECT No: 92269.00
DATE: 12/2/2018
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)
219		FILLING - dark brown clayey silt with a trace of basaltic gravel and rootlets		D	0.0				
					0.2				
	0.3	FILLING - dark brown silty clay with a trace of basaltic gravel and rootlets		D	0.4				
					0.5				
	0.8	SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets, MC<PL							
218	1								1
	1.3	Pit discontinued at 1.3m - <<N>limit of investigation							
217	2								2
216	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 222 mAHD
EASTING: 285465
NORTHING: 6209230

PIT No: 13
PROJECT No: 92269.00
DATE: 12/2/2018
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)
222	0.0	FILLING - light brown silty clay with a trace of shale gravel and rootlets (possible re-worked natural)		D	0.0				
					0.2				
	0.4	SILTY CLAY - very stiff, red silty clay with a trace of ironstone gravel and rootlets, MC<PL		D	0.4				
					0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
221	1								1
220	2								2
219	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 219 mAHD
EASTING: 285376
NORTHING: 6209171

PIT No: 14
PROJECT No: 92269.00
DATE: 12/2/2018
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)
219	0.01	CLAYEY SILT - light brown clayey silt with a trace of rootlets		D	0.0				5 10 15 20
		SILTY CLAY - very stiff, light brown silty clay with a trace of rootlets			0.2				
		- becoming red mottled light brown below 0.4m		D	0.4				
					0.5				
		- becoming red mottled grey with a trace of shale gravel, MC<PL below 0.8m							
	0.9	Pit discontinued at 0.9m							
218	1	- <<N>limit of investigation							1
217	2								2
216	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 216 mAHD
EASTING: 285416
NORTHING: 6209102

PIT No: 15
PROJECT No: 92269.00
DATE: 12/2/2018
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)
216	0.0	CLAYEY SILT - light brown clayey silt with a trace of rootlets		D	0.0				
	0.2	SILTY CLAY - very stiff, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
					0.5				
		- becoming red brown with some shale gravel, MC<PL below 0.8m							
215	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
214	2								2
213	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 224 mAHD
EASTING: 285486
NORTHING: 6209053

PIT No: 16
PROJECT No: 92269.00
DATE: 12/2/2018
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)
224		SILTY CLAY - very stiff, red brown silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
				D	0.4				
					0.5				
	0.6	SHALE - low strength, extremely weathered, grey shale with some red brown silty clay, MC<PL							
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation							
223	1								1
222	2								2
221	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 224 mAHD
EASTING: 285542
NORTHING: 6209091

PIT No: 17
PROJECT No: 92269.00
DATE: 12/2/2018
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)
224	0.01	CLAYEY SILT - light brown clayey silt with a trace of rootlets		D	0.0				
		SILTY CLAY - very stiff, red brown silty clay with a trace of shale gravel and rootlets MC<PL			0.2				
				D	0.4				
	0.5	SHALE - low strength, extremely weathered, grey shale with a trace of red brown silty clay			0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
223	1								1
222	2								2
221	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 230 mAHD
EASTING: 285688
NORTHING: 6209099

PIT No: 18
PROJECT No: 92269.00
DATE: 12/2/2018
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)
230	0.0								
	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - very stiff, light brown silty clay with a trace of shale gravel and rootlets			0.2				
		- becoming red brown with shale gravel, MC<PL below 0.45m		D	0.4				
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation			0.5				
229	1								1
228	2								2
227	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 231 mAHD
EASTING: 285655
NORTHING: 6209014

PIT No: 19
PROJECT No: 92269.00
DATE: 12/2/2018
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)
231	0.0	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
	0.2	SILTY CLAY - light brown silty clay with a trace of shale gravel and rootlets			0.2				
		- becoming red brown with some shale gravel, MC<PL below 0.4m		D	0.4				
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation			0.5				
230	1								1
229	2								2
228	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 228 mAHD
EASTING: 285580
NORTHING: 6209030

PIT No: 20
PROJECT No: 92269.00
DATE: 13/2/2018
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)
228	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D*	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of shale gravel			0.2				
		- becoming red brown mottled grey, MC<PL below 0.4m		D	0.4				
	0.6	SHALE - low strength, moderately weathered, grey shale			0.5				
		- with some grey mottled orange silty clay below 0.8m		D	0.9				
227	1				1.0				1
	1.1	SILTY CLAY - soft, grey mottled orange silty clay with some shale gravel, MC<PL		D	1.4				
					1.5				
				D	1.9				
226	2				2.0				2
				D	2.4				
					2.5				
	2.6	SHALE - high strength, dark grey shale		D	2.9				
225	3				3.0				3
	3.0	Pit discontinued at 3.0m - <<N>limit of investigation							

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD3/120218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 221 mAHD
EASTING: 285443
NORTHING: 6209030

PIT No: 21
PROJECT No: 92269.00
DATE: 13/2/2018
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)
221	0.0	FILLING - dark brown clayey silt with a trace of rootlets		D	0.0				
	0.15	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
					0.5				
		- becoming red mottled grey below 0.8m							
220	1	- becoming grey mottled red and orange, MC<PL below 1.0m							1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
219	2								2
218	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 220 mAHD
EASTING: 285332
NORTHING: 6208982

PIT No: 22
PROJECT No: 92269.00
DATE: 12/2/2018
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)
220	0.05	FILLING - dark brown clayey silt with a trace of basaltic gravel and rootlets		D	0.0				
		SILTY CLAY - very stiff, red brown silty clay with a trace of ironstone gravel and rootlets			0.2				
		- <<N>becoming light brown mottled grey and orange with a trace of shale gravel, MC<PL below 0.35m		D	0.4				
					0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
219	1								1
218	2								2
217	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 218 mAHD
EASTING: 285392
NORTHING: 6208936

PIT No: 23
PROJECT No: 92269.00
DATE: 13/2/2018
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)
218	0.1	FILLING - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - very stiff, brown and grey silty clay with a trace of fine grained sand and rootlets			0.2				
				D	0.4				
					0.5				
217	1			D	0.9				1
		- becoming grey mottled orange, MC<PL below 1.1m			1.0				
				D	1.4				
	1.5	SANDSTONE - high strength, moderately weathered, grey and brown sandstone with a trace of fine grained sand			1.5				
	1.7	Pit discontinued at 1.7m - <<N>refusal on high strength sandstone							
216	2								2
215	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 220 mAHD
EASTING: 285472
NORTHING: 6208922

PIT No: 24
PROJECT No: 92269.00
DATE: 13/2/2018
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)
220	0.0	FILLING - brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
	0.2	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel, MC<PL		D	0.2				
					0.4				
					0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
219	1								1
218	2								2
217	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 226 mAHD
EASTING: 285541
NORTHING: 6208912

PIT No: 25
PROJECT No: 92269.00
DATE: 13/2/2018
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)
226		FILLING - brown clayey silt with a trace of rootlets		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel and rootlets		D	0.4				
					0.5				
		- becoming red mottled grey below 0.8m							
225	1	- becoming grey mottled orange, MC<PL below 1.0m							1
	1.2	Pit discontinued at 1.2m - <<N>limit of investigation							
224	2								2
223	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 230 mAHD
EASTING: 285654
NORTHING: 6208918

PIT No: 26
PROJECT No: 92269.00
DATE: 13/2/2018
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)
230	0.0	FILLING - light brown silty clay with some shale gravel and a trace of rootlets (possible re-worked natural)		D	0.0				
					0.2				
				D	0.4				
					0.5				
	0.8	SHALE - high strength, moderately weathered, grey shale							
229	1								1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
228	2								2
227	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 229 mAHD
EASTING: 285637
NORTHING: 6208834

PIT No: 27
PROJECT No: 92269.00
DATE: 13/2/2018
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)
229	0.0	FILLING - light brown clayey silt with a trace of rootlets		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, red brown mottled grey silty clay with a trace of ironstone gravel		D	0.4				
					0.5				
228	1	- becoming grey mottled orange with a trace of sandstone gravel and sand, MC<PL below 0.9m		D	0.9				1
					1.0				
	1.2	SANDSTONE - high strength, moderately weathered sandstone with a trace of grey silty clay and fine grained sand		D	1.4				
					1.5				
	1.6	Pit discontinued at 1.6m - <<N>refusal on high strength sandstone							
227	2								2
226	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 215 mAHD
EASTING: 285554
NORTHING: 6208829

PIT No: 28
PROJECT No: 92269.00
DATE: 13/2/2018
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)
215	0.0								
	0.1	FILLING - brown clayey silt with a trace of rootlets		D	0.0				
		FILLING - brown silty clay with a trace of rootlets			0.2				
	0.4	SILTY CLAY - stiff, red brown silty clay with a trace of shale gravel and rootlets		D	0.4				
		- becoming grey mottled red with some grey shale gravel, MC<PL below 0.8m			0.5				
214	1 1.0	Pit discontinued at 1.0m - <<N>refusal on high strength sandstone							1
213	2								2
212	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 221 mAHD
EASTING: 285447
NORTHING: 6208836

PIT No: 29
PROJECT No: 92269.00
DATE: 13/2/2018
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)
221	0.0	FILLING - brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
					0.2				
	0.3	FILLING - brown silty clay with a trace of basaltic gravel, possible charcoal and rootlets		D	0.4				
					0.5				
	0.7	SILTY CLAY - stiff, red mottled grey silty clay with a trace of ironstone gravel and rootlets							
220	1	- becoming grey mottled red, MC<PL below 1.0m							1
	1.2	Pit discontinued at 1.2m - <<N>limit of investigation							
219	2								2
218	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 217 mAHD
EASTING: 285375
NORTHING: 6208832

PIT No: 30
PROJECT No: 92269.00
DATE: 13/2/2018
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)
217	0.0	FILLING - brown and grey silty clay with a trace of basaltic gravel and rootlets		D*	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel and rootlets		D	0.4				
					0.5				
216	1	- becoming grey mottled red and orange with a trace of fine grained sand, MC<PL below 0.9m							1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
215	2								2
214	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD4/130218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 222 mAHD
EASTING: 285452
NORTHING: 6208747

PIT No: 31
PROJECT No: 92269.00
DATE: 13/2/2018
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)
222		FILLING - grey brown clayey silt with a trace of basaltic gravel, sand and rootlets (topsoil)		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel		D	0.4				
					0.5				
221	1	- becoming grey mottled red and orange with a trace of sand, MC<PL below 0.75m							1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
220	2								2
219	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 222 mAHD
EASTING: 285522
NORTHING: 6208742

PIT No: 32
PROJECT No: 92269.00
DATE: 13/2/2018
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)
222		FILLING - light brown silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
	0.4	SILTY CLAY - stiff, light brown mottled red silty clay with a trace of ironstone gravel		D	0.4				
					0.5				
221	1	- <<N>becoming red mottled grey, MC<PL below 0.7m							1
	1.2	Pit discontinued at 1.2m							
		- <<N>limit of investigation							
220	2								2
219	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 223 mAHD
EASTING: 285627
NORTHING: 6208757

PIT No: 33
PROJECT No: 92269.00
DATE: 13/2/2018
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)
223		FILLING - grey brown silty clay with a trace of basaltic gravel and rootlets		D	0.0				
					0.2				
	0.4	SILTY CLAY - stiff, red brown silty clay with a trace of basaltic gravel and rootlets		D	0.4				
					0.5				
222	1	- becoming red mottled grey with a trace of fine grained sand, sandstone gravel and cobbles, MC<PL below 0.9m							1
	1.0	Pit discontinued at 1.0m - <<N>limit of investigation							
221	2								2
220	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 220 mAHD
EASTING: 285546
NORTHING: 6208666

PIT No: 34
PROJECT No: 92269.00
DATE: 13/2/2018
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)
220		FILLING - light brown silty clay with a trace of basaltic gravel and rootlets		D	0.0				
					0.2				
		- becoming brown and orange mottled red below 0.4m		D	0.4				
					0.5				
					0.9				
219	1			D	1.0				1
	1.2	FILLING - orange mottled red sandy silty clay with a trace of ironstone gravel							
				D	1.4				
	1.6				1.5				
		SANDSTONE - high strength, moderately weathered sandstone							
	1.8	Pit discontinued at 1.8m							
218	2	- <<N>refusal on high strength sandstone							2
217	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 218 mAHD
EASTING: 285501
NORTHING: 6208655

PIT No: 35
PROJECT No: 92269.00
DATE: 13/2/2018
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)
218	0.0	FILLING - grey brown silty clay with a trace of shale gravel and rootlets		D*	0.0				
					0.2				
				D	0.4				
	0.5	SILTY CLAY - light brown silty clay with a trace of ironstone gravel and rootlets			0.5				
					0.9				
217	1	- becoming light brown mottled red below 0.9m		D	1.0				1
		- becoming red mottled grey with a trace of fine grained sand, MC~PL below 1.2m							
				D	1.4				
	1.5	SANDY CLAY - soft, grey mottled orange sandy clay with a trace of sandstone gravel, MC<PL			1.5				
	1.8	SANDSTONE - high strength, moderately weathered, grey and brown sandstone			1.9				
216	2			D	2.0				2
	2.2	Pit discontinued at 2.2m - <<N>limit of investigation							
215	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD5/130218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 219 mAHD
EASTING: 285458
NORTHING: 6208599

PIT No: 36
PROJECT No: 92269.00
DATE: 13/2/2018
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)
219		FILLING - grey brown silty clay with a trace of sandstone gravel and rootlets (possible re-worked natural)		D	0.0				
					0.2				
				D	0.4				
		- becoming dark brown with a trace of sandstone gravel below 0.5m			0.5				
	0.9	Pit discontinued at 0.9m							
218	1	- <<N>refusal on rock)							1
217	2								2
216	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 224 mAHD
EASTING: 285576
NORTHING: 6208544

PIT No: 37
PROJECT No: 92269.00
DATE: 13/2/2018
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)
224	0.0	FILLING - grey brown silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
				D	0.4				
	0.5	SILTY CLAY - stiff, red brown silty clay with a trace of fine grained sand and rootlets - becoming orange brown mottled red, MC<PL below 0.6m			0.5				
	0.9								
223	1 1.0	SANDSTONE - high strength, moderately weathered sandstone							1
		Pit discontinued at 1.0m - <<N>limit of investigation							
222	2								2
221	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 222 mAHD
EASTING: 285561
NORTHING: 6208427

PIT No: 38
PROJECT No: 92269.00
DATE: 13/2/2018
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)
222	0.0	FILLING - dark brown silty clay with a trace of shale gravel		D	0.0				
					0.2				
				D	0.4				
	0.5	SILTY CLAY - very stiff, orange mottled grey silty clay with a trace of fine grained sand			0.5				
		- becoming grey mottled orange, MC<PL below 0.7m							
	0.8	SANDSTONE - medium strength, moderately weathered sandstone							
221	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
220	2								2
219	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 222 mAHD
EASTING: 285853
NORTHING: 6209392

PIT No: 39
PROJECT No: 92269.00
DATE: 14/2/2018
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)
222	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
		- becoming red brown, MC<PL below 0.4m		D	0.4				
	0.75				0.5				
		SHALE - medium strength, moderately weathered, grey shale							
	0.9	Pit discontinued at 0.9m							
221	1	- <<N>limit of investigation							1
220	2								2
219	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 227 mAHD
EASTING: 285874
NORTHING: 6209280

PIT No: 40
PROJECT No: 92269.00
DATE: 14/2/2018
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)
227	0.09	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D*	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of shale gravel and rootlets			0.2				
		- <<N>becoming red brown, MC<PL below 0.4m		D	0.4 0.5				
	0.8	SHALE - medium strength, moderately weathered, grey shale							
226	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
225	2								2
224	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD6/140218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 219 mAHD
EASTING: 285949
NORTHING: 6209316

PIT No: 41
PROJECT No: 92269.00
DATE: 14/2/2018
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)
219	0.0	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
	0.2	SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
		- becoming red brown below 0.5m			0.5				
218	1	- becoming grey mottled orange, MC<PL below 0.8m							1
	1.2	SHALE - medium strength, slightly weathered, grey shale							
	1.4	Pit discontinued at 1.4m - <<N>limit of investigation							
217	2								2
216	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 223 mAHD
EASTING: 286032
NORTHING: 6209281

PIT No: 42
PROJECT No: 92269.00
DATE: 14/2/2018
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)
223	0.0	FILLING - dark brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
	0.2	FILLING - brown silty clay with a trace of shale gravel and rootlets		D	0.2				
					0.4				
					0.5				
		- <<N>becoming red brown below 0.9m		D	0.9				
222	1				1.0				1
	1.2	SILTY CLAY - firm, orange mottled grey silty clay with a trace of sand and rootlets		D	1.4				
					1.5				
		- <N>>becoming grey mottled orange, MC<PL below 1.7m		D	1.9				
221	2 2.0	SANDY CLAY - firm, grey mottled orange sandy clay with a trace of sandstone gravel, MC<PL			2.0				2
				D	2.4				
	2.5	SANDSTONE - high strength, moderately weathered, brown and grey sandstone			2.5				
				D	2.9				
220	3 3.0	Pit discontinued at 3.0m - <<N>limit of investigation			3.0				3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 216 mAHD
EASTING: 285546
NORTHING: 6208666

PIT No: 43
PROJECT No: 92269.00
DATE: 14/2/2018
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)
216	0.0	FILLING - brown silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
				D	0.4				
	0.5	SILTY CLAY - stiff, orange mottled grey silty clay with a trace of fine grained sand and rootlets			0.5				
				D	0.9				
215	1				1.0				1
		- becoming grey mottled orange, MC<PL below 1.5m		D	1.4				
					1.5				
	1.7	SANDSTONE - high strength, slightly weathered, grey and brown sandstone							
214	2			D	1.9				2
					2.0				
	2.1	Pit discontinued at 2.1m - <<N>refusal on high strength sandstone							
213	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 223 mAHD
EASTING: 285940
NORTHING: 6209234

PIT No: 44
PROJECT No: 92269.00
DATE: 14/2/2018
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)
223	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				5 10 15 20
		SILTY CLAY - stiff, light brown silty clay with a trace of rootlets			0.2				
		- becoming red brown, MC<PL below 0.3m		D	0.4				
	0.6	SHALE - medium strength, moderately weathered, grey and brown shale			0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
222	1								1
221	2								2
220	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 232 mAHD
EASTING: 285840
NORTHING: 6209221

PIT No: 45
PROJECT No: 92269.00
DATE: 14/2/2018
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)
232	0.0	FILLING - brown silty clay with a trace of basaltic gravel and construction and demolition material comprising bricks and terracotta tile fragments		D	0.0				
					0.2				
	0.4	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone and shale gravel, MC<PL		D	0.4				
231	1				0.5				1
	1.2	Pit discontinued at 1.2m - <<N>limit of investigation							
230	2								2
229	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 227 mAHD
EASTING: 285778
NORTHING: 6209316

PIT No: 46
PROJECT No: 92269.00
DATE: 14/2/2018
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)
227	0.0	FILLING - light brown silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
	0.4	SILTY CLAY - stiff, red mottled grey silty clay with a trace of ironstone gravel and rootlets, MC<PL		D	0.4				
					0.5				
	0.8	SHALE - medium strength, slightly weathered, grey shale							
226	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
225	2								2
224	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 225 mAHD
EASTING: 285784
NORTHING: 6209162

PIT No: 47
PROJECT No: 92269.00
DATE: 14/2/2018
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)
225		SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets							
224	1	- becoming red brown mottled grey, MC<PL below 0.4m							1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
223	2								2
222	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 229 mAHD
EASTING: 285855
NORTHING: 6209156

PIT No: 48
PROJECT No: 92269.00
DATE: 14/2/2018
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)
229	0.1	FILLING - dark grey roadbase gravel		D	0.0				
		FILLING - dark brown silty clay with a trace of shale gravel			0.2				
	0.3	SHALE - low strength, moderately weathered, grey shale		D	0.4				
		- becoming medium strength, dark grey shale with grey mottled orange silty clay bands below 0.5m			0.5				
228	1			D	0.9				1
					1.0				
				D	1.4				
					1.5				
	1.6	SANDSTONE - high strength, highly weathered, brown and grey sandstone							
227	2			D	1.9				2
					2.0				
				D	2.4				
					2.5				
	2.8	Pit discontinued at 2.8m - <<N>refusal on high strength sandstone							
226	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 210 mAHD
EASTING: 285884
NORTHING: 6209109

PIT No: 49
PROJECT No: 92269.00
DATE: 14/2/2018
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)
210		FILLING - brown silty clay with a trace of shale gravel and rootlets		D	0.0				
	0.25	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel and rootlets, MC<PL		D	0.2				
	0.5	SHALE - medium strength, slightly weathered, grey shale			0.4				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation			0.5				
209	1								1
208	2								2
207	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 224 mAHD
EASTING: 285955
NORTHING: 6209109

PIT No: 50
PROJECT No: 92269.00
DATE: 14/2/2018
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)
224	0.08	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D*	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
		- becoming red brown mottled grey below 0.5m			0.5				
223	0.9	SHALE - medium strength, slightly weathered, grey shale							1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
222	2								2
221	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD7/140218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 227 mAHD
EASTING: 285968
NORTHING: 6209040

PIT No: 51
PROJECT No: 92269.00
DATE: 14/2/2018
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)
227	0.0	FILLING - dark brown silty clay with a trace of basaltic gravel and rootlets		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, light brown and orange mottled red silty clay with a trace of ironstone gravel, MC<PL		D	0.4				
					0.5				
226	1.0	Pit discontinued at 1.0m - <<N>limit of investigation							
225	2								
224	3								

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 204 mAHD
EASTING: 285920
NORTHING: 9209108

PIT No: 52
PROJECT No: 92269.00
DATE: 14/2/2018
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)
204	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				5 10 15 20
		SILTY CLAY - stiff, light brown silty clay with a trace of rootlets			0.2				
		- becoming brown mottled red with some shale gravel, MC<PL below 0.3m		D	0.4				
	0.6	SHALE - medium strength, slightly weathered, grey shale			0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
203	1								1
202	2								2
201	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 232 mAHD
EASTING: 285848
NORTHING: 6209064

PIT No: 53
PROJECT No: 92269.00
DATE: 14/2/2018
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)
232		SILTY CLAY - firm, light brown silty clay with a trace of rootlets		D	0.0				
					0.2				
		- becoming brown mottled red, MC<PL below 0.3m		D	0.4				
					0.5				
	0.6	SHALE - medium strength, slightly weathered, grey shale							
	0.9	Pit discontinued at 0.9m							
231	1	- <<N>limit of investigation							1
230	2								2
229	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285768
NORTHING: 6209038

PIT No: 54
PROJECT No: 92269.00
DATE: 14/2/2018
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)
233	0.1	FILLING - dark brown clayey silt with a trace of basaltic gravel and rootlets (topsoil)		D	0.0				
		SILTY CLAY - firm, light brown silty clay with a trace of rootlets			0.2				
				D	0.4				
					0.5				
		- becoming brown mottled red with a trace of shale gravel, MC<PL below 0.6m							
232	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
231	2								2
230	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285746
NORTHING: 6209001

PIT No: 55
PROJECT No: 92269.00
DATE: 14/2/2018
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)
233	0.01	FILLING - orange, red and light grey landscaping gravel							
		FILLING - dark brown silty clay with a trace of basaltic gravel							
	0.5	SILTY CLAY - soft, red brown silty clay with a trace of ironstone gravel							
232	1 1.0	- becoming red mottled grey with a trace of sandstone gravel and sand, MC<PL below 0.9m							1
		Pit discontinued at 1.0m - <<N>limit of investigation							
231	2								2
230	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285690
NORTHING: 6208994

PIT No: 56
PROJECT No: 92269.00
DATE: 12/2/2018
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)
233	0.0	FILLING - light brown silty clay with a trace of basaltic gravel and construction and demolition material comprising bricks and terracotta tiles							
	0.3	SILTY CLAY - very stiff, red brown silty clay with a trace of shale gravel, MC<PL							
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation							
232	1								1
231	2								2
230	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285692
NORTHING: 6208971

PIT No: 57
PROJECT No: 92269.00
DATE: 13/2/2018
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)
233	0.0	FILLING - brown silty clay with a trace of basaltic gravel		D	0.0				
					0.2				
	0.3	SILTY CLAY - firm, red brown silty clay with a trace of shale gravel		D	0.4				
					0.5				
	0.7	SHALE - low strength, highly weathered, grey shale with a trace of red brown silty clay							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
232	1								
231	2								
230	3								

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 234 mAHD
EASTING: 285702
NORTHING: 6208980

PIT No: 58
PROJECT No: 92269.00
DATE: 13/2/2018
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)
234	0.01	FILLING - dark grey roadbase gravel			0.0				
		FILLING - dark brown silty clay with a trace of basaltic gravel		D	0.2				
	0.3	SILTY CLAY - stiff, red mottled grey silty clay with a trace of shale gravel and rootlets, MC<PL		D	0.4				
					0.5				
	0.7	SHALE - medium strength, moderately weathered, grey shale							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
233	1								1
232	2								2
231	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 234 mAHD
EASTING: 285775
NORTHING: 6209008

PIT No: 59
PROJECT No: 92269.00
DATE: 14/2/2018
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)
234	0.01	FILLING - orange, red and light grey landscaping gravel		D	0.0				
	0.2	FILLING - dark brown silty clay with a trace of basaltic gravel			0.2				
		SILTY CLAY - soft, red silty clay with a trace of ironstone gravel			0.4				
				D	0.5				
		- becoming red mottled grey, MC<PL below 0.6m							
	0.9	Pit discontinued at 0.9m							
233	1	- <<N>limit of investigation							1
232	2								2
231	3								3

5 10 15 20

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285766
NORTHING: 6208942

PIT No: 60
PROJECT No: 92269.00
DATE: 14/2/2018
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)
233	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D*	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of shale gravel and rootlets			0.2				
		- becoming red brown mottled grey below 0.3m		D	0.4				
					0.5				
		- becoming grey mottled orange, MC<PL below 0.8m							
	0.95								
232	1	Pit discontinued at 0.95m - <<N>limit of investigation							
231	2								
230	3								

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD8/150218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 228 mAHD
EASTING: 285846
NORTHING: 6208934

PIT No: 61
PROJECT No: 92269.00
DATE: 15/2/2018
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)
228		FILLING - light brown silty clay with a trace of shale gravel and rootlets (possible re-worked natural)		D	0.0				
					0.2				
	0.4	SILTY CLAY - stiff, red brown mottled grey silty clay with a trace of shale gravel, MC<PL		D	0.4				
					0.5				
	0.9	SHALE - low strength, slightly weathered, grey shale		D	0.9				
227	1				1.0				1
				D	1.4				
		- becoming medium strength, moderately weathered, grey shale below 1.6m			1.5				
					1.9				
226	2	- becoming high strength, extremely weathered, grey shale with grey silty clay bands below 1.9m		D	2.0				2
	2.1	Pit discontinued at 2.1m - <<N>refusal on high strength shale							
225	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 239 mAHD
EASTING: 285973
NORTHING: 6208921

PIT No: 62
PROJECT No: 92269.00
DATE: 15/2/2018
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)
239		CLAYEY SILT - red brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel, MC<PL		D	0.4				
					0.5				
238	1								1
	1.0	Pit discontinued at 1.0m - <<N>limit of investigation							
237	2								2
236	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 244 mAHD
EASTING: 285961
NORTHING: 6208831

PIT No: 63
PROJECT No: 92269.00
DATE: 15/2/2018
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)
244	0.15	FILLING - light brown clayey silt with a trace of shale gravel (topsoil)		D	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of rootlets			0.2				
		- becoming red mottled grey below 0.3m		D	0.4				
243	1	- becoming grey mottled red with a trace of shale gravel, MC<PL below 0.9m			0.5				1
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
242	2								2
241	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 235 mAHD
EASTING: 285870
NORTHING: 6208838

PIT No: 64
PROJECT No: 92269.00
DATE: 15/2/2018
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)
235	0.11	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets, MC<PL			0.2				
		- becoming red brown silty clay below 0.4m		D	0.4				
234	1.0	Pit discontinued at 1.0m - <<N>limit of investigation			0.5				
233	2								
232	3								

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 203 mAHD
EASTING: 285750
NORTHING: 6208850

PIT No: 65
PROJECT No: 92269.00
DATE: 15/2/2018
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)
203	0.08	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of rootlets			0.2				
		- becoming red mottled brown below 0.4m		D	0.4				
					0.5				
		- becoming red mottled grey with some shale gravel, MC<PL below 0.8m							
	0.9	Pit discontinued at 0.9m							
202	1	- <<N>limit of investigation							1
201	2								2
200	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 229 mAHD
EASTING: 285768
NORTHING: 6208736

PIT No: 66
PROJECT No: 92269.00
DATE: 15/2/2018
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)
229		FILLING - dark brown and red silty clay with a trace of basaltic gravel, sand and rootlets		D	0.0				
					0.2				
				D	0.4				
					0.5				
228	1								1
				D	1.0				
					1.2				
	1.5	SILTY CLAY - stiff, red mottled grey silty clay, MC<PL							
227	2								2
	2.1	Pit discontinued at 2.1m - <<N>limit of investigation							
226	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 236 mAHD
EASTING: 285862
NORTHING: 6208717

PIT No: 67
PROJECT No: 92269.00
DATE: 15/2/2018
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)
236	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - stiff, brown silty clay with a trace of ironstone gravel and rootlets			0.2				
		- becoming red brown mottled grey, MC<PL below 0.4m		D	0.4				
235	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation			0.5				1
234	2								2
233	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 248 mAHD
EASTING: 285926
NORTHING: 6208689

PIT No: 68
PROJECT No: 92269.00
DATE: 15/2/2018
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)
248	0.0	FILLING - light brown silty clay with a trace of shale gravel		D	0.0				
		- becoming grey mottled orange with some shale gravel (possible re-worked natural) below 0.1m			0.2				
				D	0.4				
	0.6				0.5				
247	1	SHALE - medium strength, slightly weathered, grey shale							1
	1.4	Pit discontinued at 1.4m - <<N>limit of investigation							
246	2								2
245	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 239 mAHD
EASTING: 285916
NORTHING: 6208687

PIT No: 69
PROJECT No: 92269.00
DATE: 15/2/2018
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)
239		SILTY CLAY - stiff, light brown silty clay with a trace of shale gravel and rootlets		D	0.0				
		- becoming red brown mottled grey below 0.1m			0.2				
		- becoming grey mottled red, MC<PL below 0.3m							
	0.4	SHALE - medium strength, moderately weathered, grey shale		D	0.4				
238	1				0.5				1
	1.0	Pit discontinued at 1.0m - <<N>limit of investigation							
237	2								2
236	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 235 mAHD
EASTING: 285871
NORTHING: 6208643

PIT No: 70
PROJECT No: 92269.00
DATE: 15/2/2018
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)
235	0.07	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D*	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
		- becoming red brown mottled grey, MC<PL below 0.5m			0.5				
	0.85	Pit discontinued at 0.85m							
234	1	- <<N>limit of investigation							1
233	2								2
232	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD9/150218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 229 mAHD
EASTING: 285769
NORTHING: 6208657

PIT No: 71
PROJECT No: 92269.00
DATE: 15/2/2018
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)
229	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - stiff, red brown silty clay with a trace of rootlets			0.2				
				D	0.4				
					0.5				
		- becoming red brown mottled grey below 0.6m							
				D	0.9				
228	1				1.0				1
				D	1.4				
					1.5				
		- becoming grey mottled red and orange with some shale gravel, MC<PL below 1.8m							
				D	1.9				
227	2				2.0				2
				D	2.4				
					2.5				
	2.7	SHALE - medium strength, moderately weathered, grey shale with grey silty clay bands							
				D	2.9				
226	3				3.0				3
	3.1	Pit discontinued at 3.1m - <<N>limit of investigation							

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 225 mAHD
EASTING: 285672
NORTHING: 6208648

PIT No: 72
PROJECT No: 92269.00
DATE: 15/2/2018
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)
225	0.0	FILLING - dark brown clayey silt with a trace of basaltic gravel and rootlets (topsoil)		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, red brown mottled grey silty clay, MC<PL		D	0.4				
					0.5				
224	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
	1								1
223	2								2
222	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 225 mAHD
EASTING: 285663
NORTHING: 6208563

PIT No: 73
PROJECT No: 92269.00
DATE: 15/2/2018
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)
225	0.11	FILLING - dark brown clayey silt with a trace of basaltic gravel and rootlets (topsoil)		D	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of rootlets			0.2				
		- becoming red brown mottled grey, MC<PL below 0.4m		D	0.4				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation			0.5				
224	1								1
223	2								2
222	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 228 mAHD
EASTING: 285778
NORTHING: 6208551

PIT No: 74
PROJECT No: 92269.00
DATE: 15/2/2018
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)
228	0.0	FILLING - dark brown clayey silt with a trace of basaltic gravel and rootlets (topsoil)		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, light brown silty clay with a trace of rootlets							
		- becoming red brown mottled grey with a trace of shale gravel, MC<PL below 0.5m		D	0.4				
					0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
227	1								1
226	2								2
225	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 226 mAHD
EASTING: 285683
NORTHING: 6208442

PIT No: 75
PROJECT No: 92269.00
DATE: 15/2/2018
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)
226		FILLING - dark brown clayey silt with a trace of basaltic gravel and rootlets (topsoil)		D	0.0				
	0.2	SILTY CLAY - stiff, light brown silty clay with a trace of rootlets - becoming red mottled grey below 0.3m			0.2				
				D	0.4 0.5				
		- becoming grey mottled red with a trace of shale gravel, MC<PL below 0.7m							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
225	1								
224	2								
223	3								

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Grass slightly scorched from grass fire; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 213 mAHD
EASTING: 286165
NORTHING: 6209327

PIT No: 76
PROJECT No: 92269.00
DATE: 15/2/2018
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)
213		FILLING - light brown silty clay with a trace of sand, sandstone cobbles and rootlets (possible re-worked natural)		D	0.0 0.2				5 10 15 20
	0.4	SILTY CLAY - stiff, red mottled orange silty clay with a trace of sand and rootlets		D	0.4 0.5				
		- becoming orange mottled red, MC<PL below 0.7m							
	0.8	SANDSTONE - low strength, moderately weathered, brown sandstone							
212	0.9 1	Pit discontinued at 0.9m - <<N>limit of investigation							1
211	2								2
210	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 211 mAHD
EASTING: 286275
NORTHING: 6209302

PIT No: 77
PROJECT No: 92269.00
DATE: 15/2/2018
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)
211		FILLING - dark brown clayey silt with a trace of sand, shale gravel and rootlets		D	0.0				
	0.2	SILTY CLAY - stiff, red silty clay with a trace of rootlets			0.2				
				D	0.4				
		- becoming orange mottled red below 0.5m			0.5				
				D	0.9				
210	1				1.0				1
		- becoming grey mottled orange with some sand and a trace of sandstone gravel, MC<PL below 1.3m		D	1.4				
					1.5				
	1.9	SANDSTONE - high strength, moderately weathered, brown sandstone with some fine grained grey and orange sand		D	1.9				
209	2				2.0				2
	2.2	Pit discontinued at 2.2m - <<N>refusal on high strength sandstone							
208	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 210 mAHD
EASTING: 286310
NORTHING: 6209318

PIT No: 78
PROJECT No: 92269.00
DATE: 16/2/2018
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)
210	0.0	FILLING - dark brown clayey silt with a trace of sand and rootlets (topsoil)		D	0.0				
					0.2				
				D	0.4				
					0.5				
	0.7	FILLING - dark brown silty clay with a trace of sand, sandstone cobbles and rootlets							
	0.8	SANDY SILTY CLAY - soft, orange mottled grey sandy silty clay with a trace of sandstone gravel							
209	1								1
		- becoming grey mottled orange, MC~PL below 1.3m							
	1.4	SANDSTONE - high strength, moderately weathered, grey and brown sandstone		D	1.4				
					1.5				
	1.6	Pit discontinued at 1.6m - <<N>refusal on high strength sandstone							
208	2								2
207	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 209 mAHD
EASTING: 286243
NORTHING: 6209275

PIT No: 79
PROJECT No: 92269.00
DATE: 15/2/2018
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)
209		FILLING - red mottled grey silty clay with a trace of sand, rootlets and sandstone boulders (possible re-worked natural)		D	0.0 0.2				
	0.4	SILTY CLAY - soft, orange mottled grey silty clay with some sand and sandstone cobbles, MC~PL		D	0.4 0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
208	1								1
207	2								2
206	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 194 mAHD
EASTING: 286207
NORTHING: 6209222

PIT No: 80
PROJECT No: 92269.00
DATE: 16/2/2018
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)
194	0.0	FILLING - brown clayey silt with a trace of rootlets and shale gravel		D*	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, brown mottled red silty clay with a trace of sand		D	0.4				
					0.5				
		- <<N>becoming orange mottled red and grey, MC<PL below 0.7m							
				D	0.9				
193	1				1.0				1
	1.2	SANDSTONE - high strength, slightly weathered, grey sandstone with grey mottled orange silty clay bands and a trace of sand							
				D	1.4				
					1.5				
					1.9				
192	2			D	2.0				2
	2.1	Pit discontinued at 2.1m - <<N>refusal on high strength sandstone							
191	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD10/160218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 209 mAHD
EASTING: 286322
NORTHING: 6209266

PIT No: 81
PROJECT No: 92269.00
DATE: 16/2/2018
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)
209		FILLING - brown silty clay with a trace of rootlets, sand, sandstone cobbles and grey mottled orange silty clay (possible re-worked natural)		D	0.0				
					0.2				
				D	0.4				
					0.5				
					0.9				
208	1			D	1.0				1
	1.3	FILLING - dark grey and brown silty clay with a trace of sandstone gravel and sand (possibly washed in over time)							
				D	1.4				
	1.6	SANDY SILTY CLAY - soft, grey mottled orange sandy silty clay with some sandstone gravel, MC~PL			1.5				
207	2								2
	2.0	SANDSTONE - high strength, moderately weathered, brown sandstone							
	2.1	Pit discontinued at 2.1m - <<N>refusal on high strength sandstone							
206	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 194 mAHD
EASTING: 286366
NORTHING: 6209125

PIT No: 82
PROJECT No: 92269.00
DATE: 16/2/2018
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)
194	0.0	FILLING - dark brown clayey silt with a trace of rootlets and sandstone gravel		D	0.0				
	0.25	SILTY CLAY - stiff, red mottled orange silty clay with a trace of rootlets			0.2				
		- becoming red mottled orange and grey, MC<PL below 0.5m		D	0.4				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation			0.5				
193	1								1
192	2								2
191	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 217 mAHD
EASTING: 286292
NORTHING: 6209170

PIT No: 83
PROJECT No: 92269.00
DATE: 16/2/2018
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)
217	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - stiff, light brown silty clay with a trace of rootlets			0.2				
		- becoming red brown with a trace of sandstone gravel below 0.4m		D	0.4				
	0.9	- becoming red mottled grey with a trace of sandstone gravel, MC<PL below 0.8m			0.5				
216	1	Pit discontinued at 0.9m - <<N>limit of investigation							
215	2								
214	3								

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 222 mAHD
EASTING: 286201
NORTHING: 6209119

PIT No: 84
PROJECT No: 92269.00
DATE: 16/2/2018
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)
222	0.0	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
	0.2	SILTY CLAY - stiff, light brown silty clay with a trace of rootlets and ironstone gravel			0.2				
				D	0.4				
		- becoming red brown, MC<PL below 0.5m			0.5				
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
221	1								1
220	2								2
219	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 218 mAHD
EASTING: 286070
NORTHING: 6209131

PIT No: 85
PROJECT No: 92269.00
DATE: 16/2/2018
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
218		FILLING - light brown clayey silt with a trace of rootlets and sandstone gravel		D	0.0				
					0.2				
	0.3	SILTY CLAY - stiff, red brown silty clay with a trace of rootlets		D	0.4				
					0.5				
		- becoming red mottled grey below 0.6m							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
217	1								1
216	2								2
215	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 86
PROJECT No: 92269.00
DATE: 16/2/2018
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 - brown silty clay with rootlets		D	0.0				
	0.1	SILTY CLAY - hard, brown silty clay with rootlets, MC<PL			0.1				
	0.4	SILTY CLAY - hard, red brown mottled grey silty clay with a trace of rootlets, MC<PL		D	0.4				
				D	0.5				
	1	- becoming orange brown mottled grey with orange grey shale		D	1.0				1
	1.4	SHALE - extremely low strength, extremely weathered, grey and orange shale		D	1.5				
	2	- becoming more grey below 2.0m		D	2.0				2
				D	2.5				
	3 3.0	Pit discontinued at 3.0m - <<N>limit of investigation		D	3.0				3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: CLN

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 87
PROJECT No: 92269.00
DATE: 16/2/2018
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 - brown silty clay with rootlets		D	0.0				
	0.1	SILTY CLAY - brown silty clay with a trace of rootlets			0.1				
	0.3	SHALE - extremely low strength, extremely weathered, orange and red shale with some very low to low strength, orange and grey shale bands		D	0.4				
	0.6	Pit discontinued at 0.6m - <<N>limit of investigation			0.5				
	1								1
	2								2
	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: CLN

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 88
PROJECT No: 92269.00
DATE: 16/2/2018
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)
	0.1	TOPSOIL - brown silty clay with rootlets		D	0.0				
		SILTY CLAY - hard, brown silty clay with a trace of rootlets, MC<PL			0.1				
		- becoming red brown mottled grey with very low strength orange and grey shale bands below 0.3m		D	0.4				
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation			0.5				
	1								
	2								
	3								

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: CLN

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 89
PROJECT No: 92269.00
DATE: 16/2/2018
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 - dark brown and grey mottled orange silty clay with roots		D	0.0				
	0.1				0.1				
		SILTY CLAY - dark brown and grey mottled orange silty clay, MC<PL							
				D	0.4				
		- becoming more orange below 0.5m			0.5				
	0.6	Pit discontinued at 0.6m - <<N>limit of investigation							
	1								1
	2								2
	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: CLN

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 90
PROJECT No: 92269.00
DATE: 16/2/2018
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 - brown silty clay with rootlets		D	0.0				
	0.1	SILTY CLAY - brown silty clay with a trace of rootlets			0.1				
	0.4	SILTY CLAY - hard, orange brown mottled grey silty clay with a trace of rootlets		D	0.4				
				D	0.5				
	0.85	SHALE - extremely low strength, extremely weathered, red brown mottled grey shale							
1				D	1.0				1
				D	1.5				
2		- becoming orange and grey below 2.0m		D	2.0				2
		- becoming very low to low strength, orange and grey below 2.5m		D	2.5				
		- becoming dark grey below 2.7m							
3	3.0	Pit discontinued at 3.0m - <<N>limit of investigation		D	3.0				3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: CLN

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 91
PROJECT No: 92269.00
DATE: 16/2/2018
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)
	0.1	TOPSOIL - brown silty clay with some shale gravel and rootlets		D	0.0				
	0.2	SILTY CLAY - brown silty clay with some shale gravel and a trace of rootlets			0.1				
		SILTY CLAY - hard, red mottled grey silty clay with with some shale gravel and a trace of rootlets, MC<PL		D	0.4				
	0.5	SHALE - very low to low strength, grey and orange shale			0.5				
	0.6	Pit discontinued at 0.6m - <<N>limit of investigation							
	1								
	2								
	3								

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: CLN

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 221 mAHD
EASTING: 286294
NORTHING: 6208925

PIT No: 92
PROJECT No: 92269.00
DATE: 19/2/2018
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)
221	0.15	CLAYEY SILT - grey brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - very stiff, orange mottled grey silty clay with a trace of sand and sandstone gravel, MC<PL			0.2				
				D	0.4				
					0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
220	1								1
219	2								2
218	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 237 mAHD
EASTING: 286172
NORTHING: 6208925

PIT No: 93
PROJECT No: 92269.00
DATE: 19/2/2018
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)
237	0.0	FILLING - red brown clayey silt with a trace of rootlets and possible charcoal (topsoil)		D	0.0				
	0.2	SILTY CLAY - very stiff, red brown silty clay with a trace of rootlets, MC<PL			0.2				
				D	0.4				
					0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
236	1								1
235	2								2
234	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Slight scorching on nearby tree; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 286052
NORTHING: 6208970

PIT No: 94
PROJECT No: 92269.00
DATE: 19/2/2018
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)
233		CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
	0.2	SILTY CLAY - hard, light brown silty clay with a trace of rootlets			0.2				
				D	0.4				
		- becoming red brown, MC<PL below 0.5m			0.5				
232	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
231	2								2
230	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 95
PROJECT No: 92269.00
DATE: 19/2/2018
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	FILLING - light brown clayey silt with a trace of rootlets and shale gravel (topsoil)		D	0.0				
	0.15	FILLING - light brown silty clay with a trace of rootlets and shale gravel			0.2				
	0.3	SILTY CLAY - hard, red brown silty clay with a trace of rootlets and shale gravel, MC<PL		D	0.4				
					0.5				
	0.6	SHALE - low strength, slightly weathered, grey shale							
	1	- becoming medium to high strength, moderately weathered, grey and brown shale with grey silty clay bands below 0.85		D	0.9				1
					1.0				
				D	1.4				
	1.5	Pit discontinued at 1.5m - <<N>refusal on medium to high strength shale			1.5				
	2								2
	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 251 mAHD
EASTING: 286151
NORTHING: 6208814

PIT No: 96
PROJECT No: 92269.00
DATE: 19/2/2018
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)
251		FILLING - light brown clayey silt with a trace of rootlets and shale gravel (topsoil)		D	0.0				
	0.2	SILTY CLAY - very stiff, red brown silty clay with a trace of rootlets			0.2				
				D	0.4				
					0.5				
	0.8	SHALE - low strength, slightly weathered, grey shale							
250	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
249	2								2
248	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 238 mAHD
EASTING: 286262
NORTHING: 6208808

PIT No: 97
PROJECT No: 92269.00
DATE: 19/2/2018
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)
238	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - hard, light brown silty clay with a trace of rootlets, MC<PL			0.2				
		- becoming red brown mottled grey below 0.4m		D	0.4				
					0.5				
		- becoming stiff, grey mottled red with a trace of ironstone gravel below 0.8m			0.9				
237	1			D	1.0				1
					1.4				
				D	1.5				
					1.9				
				D	2.0				
236	2	- becoming firm, grey with a trace of sand below 2.0m							2
					2.4				
				D	2.5				
					2.9				
				D					
235	3	3.0 Pit discontinued at 3.0m - <<N>limit of investigation			3.0				3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 247 mAHD
EASTING: 286268
NORTHING: 6208732

PIT No: 98
PROJECT No: 92269.00
DATE: 19/2/2018
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)
247	0.09	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - hard, light brown clayey silt with a trace of rootlets			0.2				
		- <<N>becoming red brown mottled grey with some shale gravel, MC<PL below 0.4m		D	0.4				
	0.8				0.5				
	0.9	SHALE - low strength, moderately weathered, grey shale							
246	1	Pit discontinued at 0.9m - <<N>limit of investigation							
245	2								
244	3								

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Scorched grass near test pit; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 247 mAHD
EASTING: 286331
NORTHING: 6208736

PIT No: 99
PROJECT No: 92269.00
DATE: 19/2/2018
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)
247	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets and charcoal associated with recent grass fire, (topsoil)		D	0.0				
		SILTY CLAY - very stiff, light brown silty clay with a trace of rootlets, ironstone gravel and sand, MC<PL			0.2				
				D	0.4				
	0.5	SANDSTONE - low strength, moderately weathered, brown shale			0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
246	1								1
245	2								2
244	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 237 mAHD
EASTING: 286338
NORTHING: 6208813

PIT No: 100
PROJECT No: 92269.00
DATE: 19/2/2018
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)
237	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D*	0.0				
		SILTY CLAY - hard, light brown silty clay with a trace of rootlets and ironstone gravel			0.2				
				D	0.4				
					0.5				
		- becoming red brown mottled red, MC<PL below 0.7m							
236	1.0	Pit discontinued at 1.0m - <<N>limit of investigation							
235	2								
234	3								

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD13/190218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 216 mAHD
EASTING: 286449
NORTHING: 6209231

PIT No: 101
PROJECT No: 92269.00
DATE: 19/2/2018
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)
216	0.0	FILLING - brown clayey silt and silty clay with a trace of rootlets, ironstone gravel and sandstone gravel		D	0.0				
					0.2				
				D	0.4				
					0.5				
	0.9				0.9				
215	1	SILTY CLAY - hard, orange brown mottled grey silty clay with a trace of rootlets and sandstone gravel, MC<PL		D	1.0				1
	1.4				1.4				
	1.5	SANDSTONE - high strength, highly weathered, grey and brown sandstone		D	1.5				
		Pit discontinued at 1.5m - <<N>refusal on high strength sandstone							
214	2								2
213	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 227 mAHD
EASTING: 286572
NORTHING: 6209231

PIT No: 102
PROJECT No: 92269.00
DATE: 19/2/2018
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)
227	0.0	FILLING - dark brown clayey silt and silty clay with a trace of rootlets and shale gravel (possible re-worked natural)		D	0.0				
					0.2				
	0.3	SILTY CLAY - hard, red brown silty clay with a trace of rootlets and shale gravel, MC<PL		D	0.4				
	0.5	SHALE - low strength, moderately weathered, grey shale			0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
226	1								1
225	2								2
224	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 203 mAHD
EASTING: 286698
NORTHING: 6209166

PIT No: 103
PROJECT No: 92269.00
DATE: 19/2/2018
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)
203	0.0	FILLING - light brown clayey silt and silty clay with a trace of sandstone gravel and rootlets		D	0.0				
					0.2				
		- becoming dark red silty clay below 0.4m		D	0.4				
					0.5				
	0.7	SILTY CLAY - hard, grey mottled orange silty clay with a trace of sandstone gravel and rootlets							
202	1								1
	1.2	Pit discontinued at 1.2m - <<N>limit of investigation							
201	2								2
200	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 203 mAHD
EASTING: 286607
NORTHING: 6209147

PIT No: 104
PROJECT No: 92269.00
DATE: 19/2/2018
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)
203		FILLING - dark brown clayey silt and silty clay with a trace of rootlets and ceramic tiles		D	0.0				
	0.2	SILTY CLAY - hard, red brown silty clay with a trace of shale gravel			0.2				
		- becoming red mottled grey below 0.4m		D	0.4				
					0.5				
		- <<N>becoming grey mottled red, MC<PL below 0.8m							
				D	0.9				
202	1				1.0				1
	1.3	SHALE - medium strength, slightly weathered, grey shale							
				D	1.4				
					1.5				
		- becoming high strength, moderately weathered, dark grey below 1.8m							
201	2			D	1.9				2
	2.1	Pit discontinued at 2.1m			2.0				
		- <<N>refusal on high strength shale							
200	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 218 mAHD
EASTING: 286448
NORTHING: 6209172

PIT No: 105
PROJECT No: 92269.00
DATE: 19/2/2018
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)
218		CLAYEY SILT - grey brown clayey silt with a trace of rootlets (topsoil)		D	0.0				5 10 15 20
					0.2				
		- becoming red brown below 0.5m		D	0.4				
					0.5				
217	0.9 1	SILTY CLAY - hard, brown clayey silt with a trace of sand ad rootlets							1
	1.2	- becoming red mottled grey, MC<PL below 1.1m							
		Pit discontinued at 1.2m - <<N>limit of investigation							
216	2								2
215	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 231 mAHD
EASTING: 286428
NORTHING: 6209058

PIT No: 106
PROJECT No: 92269.00
DATE: 19/2/2018
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)
231	0.25	FILLING - brown clayey silt with a trace of rootlets and tree bark (topsoil)		D	0.0				
					0.2				
	0.6	FILLING - brown silty clay with a trace of sand and rootlets (possible re-worked natural)		D	0.4				
230	1				0.5				1
	1.1	SILTY CLAY - hard, red mottled grey silty clay with a trace of sand and rootlets, MC<PL							
229	2	Pit discontinued at 1.1m - <<N>limit of investigation							2
228	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 226 mAHD
EASTING: 286518
NORTHING: 6209040

PIT No: 107
PROJECT No: 92269.00
DATE: 19/2/2018
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)
226	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - hard, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
		- becoming red brown below 0.3m		D	0.4				
					0.5				
		- becoming brown and orange below 0.6m							
		- becoming orange mottled grey below 0.8m							
225	0.9	SHALE - low strength, moderately weathered, grey shale							1
	1								
	1.1	Pit discontinued at 1.1m - <<N>limit of investigation							
224	2								2
223	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 234 mAHD
EASTING: 286650
NORTHING: 6209005

PIT No: 108
PROJECT No: 92269.00
DATE: 19/2/2018
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)
234	0.0	FILLING - brown clayey silt and silty clay with a trace of basaltic gravel and rootlets		D	0.0				
					0.2				
		- becoming red brown silty clay with a trace of shale gravel below 0.3m		D	0.4				
					0.5				
	0.7	SHALE - low strength, moderately weathered, grey shale with a trace of grey silty clay							
233	1								1
	1.2	Pit discontinued at 1.2m - <<N>limit of investigation							
232	2								2
231	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 236 mAHD
EASTING: 286638
NORTHING: 6208984

PIT No: 109
PROJECT No: 92269.00
DATE: 19/2/2018
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)
236	0.0	FILLING - brown silty clay with a trace of shale gravel, basaltic gravel and rootlets (possible re-worked natural)		D	0.0				
					0.2				
				D	0.4				
					0.5				
	0.8	SILTY CLAY - hard, light brown silty clay with a trace of rootlets							
235	1								1
		- becoming red mottled grey with a trace of shale gravel below 1.3m							
	1.5	SHALE - low strength, moderately weathered, grey shale							
	1.7	Pit discontinued at 1.7m - <<N>limit of investigation							
234	2								2
233	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 235 mAHD
EASTING: 286613
NORTHING: 6208998

PIT No: 110
PROJECT No: 92269.00
DATE: 19/2/2018
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)
235	0	FILLING - brown silty clay with a trace of shale gravel, basaltic gravel, rootlets and construction and demolition material comprising bricks, timber, cinder blocks, plastic sheeting and plastic piping		D*	0.0				
					0.2				
				D	0.4				
					0.5				
					0.8				
				D					
234	1				1.0				1
	1.3	SHALE - medium strength, slightly weathered, dark grey shale							
	1.8	Pit discontinued at 1.8m - <<N>limit of investigation							
233	2								2
232	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD14/190218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 231 mAHD
EASTING: 286748
NORTHING: 6208893

PIT No: 111
PROJECT No: 92269.00
DATE: 19/2/2018
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)
231	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				5 10 15 20
		SILTY CLAY - hard, light brown clayey silt with a trace of rootlets			0.2				
		- becoming red brown mottled grey, MC<PL below 0.4m		D	0.4				
	0.9	Pit discontinued at 0.9m			0.5				
230	1	- <<N>limit of investigation							1
229	2								2
228	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 241 mAHD
EASTING: 286634
NORTHING: 6208895

PIT No: 112
PROJECT No: 92269.00
DATE: 20/2/2018
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)
241	0.1	CLAYEY SILT - light brown clayey silt with a trace of rootlets (topsoil)		D	0.0				
		SILTY CLAY - hard, light brown silty clay with a trace of rootlets			0.2				
		- becoming red brown below 0.4m		D	0.4				
		- becoming red mottled grey below 0.7m			0.5				
				D	0.9				
240	1				1.0				1
		- becoming stiff, red mottled grey and orange below 1.2m							
				D	1.4				
					1.5				
		- becoming firm, grey mottled orange with a trace of shale gravel below 1.8m		D	1.9				
239	2				2.0				2
		- becoming grey with some shale gravel, MC<PL below 2.2m							
				D	2.4				
					2.5				
	2.8	SHALE - medium strength, moderately weathered, grey shale with grey silty clay bands		D	2.9				
238	3 3.0	Pit discontinued at 3.0m - <<N>limit of investigation			3.0				3

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 225 mAHD
EASTING: 286538
NORTHING: 6208968

PIT No: 113
PROJECT No: 92269.00
DATE: 19/2/2018
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
225		FILLING - light brown clayey silt and silty clay with a trace of shale gravel, sand and rootlets		D	0.0				
					0.2				
				D	0.4				
					0.5				
	0.9								
224	1	FILLING - grey, red and orange silty clay with a trace of sand		D	1.0				1
					1.2				
	1.4	Pit discontinued at 1.4m - <<N>limit of investigation							
223	2								2
222	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 229 mAHD
EASTING: 286421
NORTHING: 6208976

PIT No: 114
PROJECT No: 92269.00
DATE: 20/2/2018
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)
229		FILLING - light brown clayey silt and silty clay with a trace of rootlets and possible charcoal		D	0.0 0.2				
	0.4	SILTY CLAY - very stiff, red mottled grey silty clay with a trace of ironstone gravel and rootlets, MC<PL		D	0.4 0.5				
	0.9	Pit discontinued at 0.9m - <<N>limit of investigation							
228	1								1
227	2								2
226	3								3

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 250 mAHD
EASTING: 286492
NORTHING: 6208822

PIT No: 115
PROJECT No: 92269.00
DATE: 20/2/2018
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)
250		FILLING - light brown clayey silt and silty clay with a trace of basaltic gravel and rootlets		D	0.0				
					0.2				
		- becoming red silty clay with a trace of shale gravel below 0.3m		D	0.4				
					0.5				
	0.6	SILTY CLAY - hard, orange brown mottled grey silty clay with some shale gravel							
				D	0.9				
249	1				1.0				1
		- becoming grey mottled orange below 1.1m							
				D	1.4				
					1.5				
					1.9				
248	2			D	2.0				2
	2.3	SHALE - high strength, moderately weathered, grey shale with grey silty clay bands							
				D	2.4				
		- becoming high strength, slightly weathered, grey below 2.5m			2.5				
	2.6	Pit discontinued at 2.6m - <<N>limit of investigation							
247	3								3

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 248 mAHD
EASTING: 286562
NORTHING: 6208857

PIT No: 116
PROJECT No: 92269.00
DATE: 20/2/2018
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)
248	0.0	FILLING - dark brown clayey silt and silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
	0.4	SILTY CLAY - hard, red mottled grey silty clay with a trace of rootlets		D	0.4				
					0.5				
		- becoming grey mottled red and orange, MC<PL below 0.75m							
	0.9	Pit discontinued at 0.9m							
247	1	- <<N>limit of investigation							1
246	2								2
245	3								3

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

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 241 mAHD
EASTING: 286647
NORTHING: 6208845

PIT No: 117
PROJECT No: 92269.00
DATE: 20/2/2018
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)
241	0.0	FILLING - brown silty clay with a trace of rootlets		D	0.0				
					0.2				
	0.25	SILTY CLAY - hard, red brown silty clay with a trace of rootlets							
				D	0.4				
		- becoming red mottled grey, MC<PL below 0.5m			0.5				
	0.6	SHALE - low strength, moderately weathered, grey shale							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
240	1								1
239	2								2
238	3								3

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

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 238 mAHD
EASTING: 286676
NORTHING: 6208873

PIT No: 118
PROJECT No: 92269.00
DATE: 20/2/2018
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)
238		FILLING - brown silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
				D	0.4				
					0.5				
	0.8	SILTY CLAY - very stiff, red brown silty clay, MC<PL							
237	1								1
	1.3	Pit discontinued at 1.3m - <<N>limit of investigation							
236	2								2
235	3								3

5 10 15 20

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 236 mAHD
EASTING: 286732
NORTHING: 6208800

PIT No: 119
PROJECT No: 92269.00
DATE: 20/2/2018
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)
236	0.0	FILLING - brown silty clay with a trace of shale gravel and rootlets		D	0.0				
					0.2				
	0.4	SILTY CLAY - hard, red mottled grey silty clay with a trace of rootlets		D	0.4				
235	1				0.5				1
	1.0	Pit discontinued at 1.0m - <<N>limit of investigation							
234	2								2
233	3								3

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

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 249 mAHD
EASTING: 286666
NORTHING: 6208699

PIT No: 120
PROJECT No: 92269.00
DATE: 20/2/2018
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)
249	0.0	FILLING - light brown silty clay with a trace of shale gravel and rootlets		D*	0.0				
					0.2				
				D	0.4				
	0.5	SILTY CLAY - hard, red mottled grey silty clay with a trace of rootlets			0.5				
					0.9				
248	1			D	1.0				1
		- becoming grey mottled red and orange with a trace of shale gravel, MC<PL below 1.0m							
					1.4				
				D	1.5				
					1.9				
247	2			D	2.0				2
	2.1	SHALE - low strength, moderately weathered, grey shale with a trace of grey mottled red and orange silty clay							
				D	2.4				
		- becoming medium strength, moderately weathered, with grey silty clay bands below 2.5m			2.5				
					2.9				
246	3			D	3.0				3
	3.1	Pit discontinued at 3.1m - <<N>limit of investigation							

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD15/190218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 257 mAHD
EASTING: 286578
NORTHING: 6208719

PIT No: 121
PROJECT No: 92269.00
DATE: 20/2/2018
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
257		SILTY CLAY - hard, light brown silty clay with a trace of rootlets		D	0.0				
					0.2				
		- becoming red mottled light brow and grey below 0.4m		D	0.4				
					0.5				
	0.6	SHALE - low strength, moderately weathered, grey shale							
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation							
256	1								1
255	2								2
254	3								3

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 228 mAHD
EASTING: 286744
NORTHING: 6209008

PIT No: 122
PROJECT No: 92269.00
DATE: 20/2/2018
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)
228	0.08	FILLING - light brow clayey silt with a trace of shale gravel and rootlets (topsoil)		D	0.0				5 10 15 20
		SILTY CLAY - hard, light brown silty clay with a trace of ironstone gravel and rootlets			0.2				
				D	0.4				
		- becoming red brown below 0.5m			0.5				
227	1 1.0	Pit discontinued at 1.0m - <<N>limit of investigation							1
226	2								2
225	3								3

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 226 mAHD
EASTING: 286772
NORTHING: 6209091

PIT No: 123
PROJECT No: 92269.00
DATE: 20/2/2018
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)
226		FILLING - brown clayey silt and silty clay with a trace of basaltic gravel and rootlets		D	0.0				
					0.2				
		- becoming red brown silty clay with a trace of shale cobbles below 0.3m		D	0.4				
					0.5				
	0.7	SHALE - low strength, moderately weathered, grey shale							
225	1			D	0.9				1
					1.0				
		- becoming medium strength below 1.4m		D	1.4				
					1.5				
224	2			D	1.9				2
					2.0				
		- becoming high strength with grey silty clay bands below 2.4m		D	2.4				
					2.5				
223	3			D	2.9				3
	3.0	Pit discontinued at 3.0m - <<N>limit of investigation			3.0				

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 215 mAHD
EASTING: 286388
NORTHING: 6209204

PIT No: 124
PROJECT No: 92269.00
DATE: 16/2/2018
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)
215	0.0	FILLING - dark brown clayey silt with a trace of sand, sandstone gravel and rootlets (topsoil)		D	0.0				
					0.2				
	0.3	FILLING - red brown silty clay with a trace of sandstone gravel and sand (possible re-worked natural)		D	0.4				
					0.5				
	0.7	FILLING - sandstone cobbles							
214	1			D	0.9				1
					1.0				
	1.1	SILTY CLAY - firm, orange mottled grey silty clay with a trace of sandstone gravel and sand							
				D	1.4				
					1.5				
		- becoming grey mottled orange, MC<PL below 1.7m							
213	2			D	1.9				2
	2.0	SANDSTONE - high strength, moderately weathered, brown sandstone			2.0				
				D	2.2				
	2.3	Pit discontinued at 2.3m - <<N>limit of investigation			2.3				
212	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 212 mAHD
EASTING: 286336
NORTHING: 6209233

PIT No: 125
PROJECT No: 92269.00
DATE: 16/2/2018
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)
212	0.12	FILLING - dark brown clayey silt with a trace of sandstone gravel, sand and rootlets (topsoil)		D	0.0				
		FILLING - light brown silty clay with a trace of sandstone cobbles and sand (possible re-worked natural)			0.2				
				D	0.4				
					0.5				
	0.8	SANDSTONE - high strength, moderately weathered, brown sandstone		D	0.9				
211	1				1.0				1
	1.1	Pit discontinued at 1.1m - <<N>refusal on high strength sandstone							
210	2								2
209	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 190 mAHD
EASTING: 286387
NORTHING: 6209298

PIT No: 126
PROJECT No: 92269.00
DATE: 16/2/2018
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)
190	0.0	FILLING - dark brown clayey silt with a trace of sandstone gravel, sand and rootlets (topsoil)		D*	0.0 – 0.2				
	0.3	SILTY CLAY - stiff, red brown mottled grey silty clay with a trace of sandstone gravel and sand		D	0.4 – 0.5				
189	1	- becoming grey mottled red and orange with some sand, MC<PL below 0.8m		D	0.9 – 1.0				1
	1.4	SANDSTONE - high strength, moderately weathered, grey and brown sandstone		D	1.4 – 1.5				
	1.6	Pit discontinued at 1.6m - <<N>refusal on high strength sandstone							
188	2								2
187	3								3

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

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: * Replicate sample BD11/160218 collected; Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 212 mAHD
EASTING: 286244
NORTHING: 6209284

PIT No: 127
PROJECT No: 92269.00
DATE: 15/2/2018
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)
212		FILLING - light brown silty clay with a trace of sand, rootlets and construction and demolition material comprising bricks		D	0.0				
					0.2				
				D	0.6				
					0.7				
		- becoming dark brown below 0.8m							
	0.9								
211	1	SILTY CLAY - firm, orange mottled red silty clay with a trace of sand, MC<PL							1
	1.8								
		Pit discontinued at 1.8m - <<N>limit of investigation							
210	2								2
209	3								3

RIG: JCB 3CX backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING: 285690
NORTHING: 6208974

PIT No: ST1
PROJECT No: 92269.00
DATE: 21/2/2018
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)
		FILLING - dark and light brown silty clay with a trace of shale gravel and rootlets							
	0.3	SILTY CLAY - very stiff, red brown silty clay							
	0.4	Pit discontinued at 0.4m - <<N>limit of investigation							

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285681
NORTHING: 6208979

PIT No: ST2
PROJECT No: 92269.00
DATE: 21/2/2018
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)
233	0.5	FILLING - light and dark brown silty clay with a trace of shale gravel, basaltic gravel, construction and demolition material comprising concrete cobbles, plastic piping, timber and rubbish (plastic bottles)							
	0.6	SILTY CLAY - very stiff, red brown silty clay							
		Pit discontinued at 0.6m - <<N>limit of investigation							
232	1								1
231	2								2
230	3								3

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285687
NORTHING: 6208999

PIT No: ST3
PROJECT No: 92269.00
DATE: 21/2/2018
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)
233	0.0	FILLING - light and dark brown silty clay with a trace of roadbase gravel, basaltic gravel, shale gravel, roots and rootlets							
	0.5	SILTY CLAY - very stiff, red brown silty clay with a trace of rootlets							
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation							
232	1								1
231	2								2
230	3								3

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

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 233 mAHD
EASTING: 285685
NORTHING: 6209007

PIT No: ST4
PROJECT No: 92269.00
DATE: 21/2/2018
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)
233		FILLING - light and dark brown silty clay with a trace of roadbase gravel, shale gravel, roots, rootlets and construction and demolition material comprising concrete cobbles and plastic							
	0.6	SILTY CLAY - very stiff, red brown silty clay with a trace of rootlets							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
232	1								1
231	2								2
230	3								3

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

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: 211 mAHD
EASTING: 285439
NORTHING: 6209327

PIT No: ST5
PROJECT No: 92269.00
DATE: 21/2/2018
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
211	0.1	FILLING - dark brown clayey silt with a trace of rootlets (topsoil)							
		FILLING - light brown silty clay with a trace of sandstone cobbles and boulders (possible re-worked natural)							
	0.6	SILTY CLAY - stiff, grey mottled orange silty clay with a trace of sand and rootlets							
	0.8	Pit discontinued at 0.8m - <<N>limit of investigation							
210	1								1
209	2								2
208	3								3

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: ST6
PROJECT No: 92269.00
DATE: 21/2/2018
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)
		FILLING - brown silty clay with a trace of sandstone cobbles (washed in)							
	0.4	SILTY CLAY - stiff, orange mottled grey silty clay with a trace of sand							
	0.7	Pit discontinued at 0.7m - <<N>limit of investigation							

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: ST7
PROJECT No: 92269.00
DATE: 21/2/2018
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)
		FILLING - brown silty clay with a trace of basaltic gravel and construction and demolition material comprising concrete cobbles and bricks		D	0.0				
	0.3	SILTY CLAY - very stiff, red brown silty clay with a trace of ironstone gravel			0.4				
	0.5	Pit discontinued at 0.5m - <<N>limit of investigation							

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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: Walker Corporation Pty Ltd
PROJECT: Proposed Residential Subdivision
LOCATION: Stages 1 and 2
Janderra Lane, Wilton, NSW

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: ST8
PROJECT No: 92269.00
DATE: 21/2/2018
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	FILLING - dark brown silty clay with a trace of basaltic gravel and construction and demolition waste material comprising concrete cobbles and bricks		D					
	0.4	SILTY CLAY - stiff, red brown silty clay with a trace of ironstone gravel			0.4				
	0.6	Pit discontinued at 0.6m - <<N>limit of investigation							
	1								1
	2								2
	3								3

5 10 15 20

RIG: John Deere 315 SG backhoe - 300mm bucket

LOGGED: KPW

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Soil strengths based on tactile assessment

☐ 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 C

Laboratory Results Summary

Test Bore or Pit	Test Location		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
	East	North					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 MGA56)	(m MGA56)	(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]
7	285550.0	6209337.0	0.5	5.5	20	44	27027	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	5	12	Sodic	1	Complete	Heavy clay	6.0	37.0	0.2	Non-Saline
			1.0	5.3			20833	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	48.0	0.3	Non-Saline
			1.5	5.3			31250	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	32.0	0.2	Non-Saline
9	285741.0	6209352.0	0.5	5.3			17241	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	58.0	0.3	Non-Saline
			1.0	5.1	78	20	11765	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	85.0	0.5	Non-Saline
			1.5	5.2			10000	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	100.0	0.6	Non-Saline
			2.0	5.4			13699	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	73.0	0.4	Non-Saline
			2.5	5.4			10870	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7.0	92.0	0.6	Non-Saline
			3.0	5.1			10638	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	94.0	0.6	Non-Saline
20	285580.0	6209030.0	0.5	5.1			20408	B	Mild		Non-Aggressive		Non-Aggressive					6	No	Heavy clay	6.0	49	0.3	Non-Saline
			1.0	5.5			76923	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7.0	13	0.1	Non-Saline
			1.5	5.6	10	10	55556	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.69	4.7	15	Sodic			Medium clay	7.0	18	0.1	Non-Saline
			2.0	5.5			21277	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	47	0.3	Non-Saline
			2.5	6.3			15873	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	63	0.4	Non-Saline
			3.0	5.6			50000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	20	0.1	Non-Saline
23	285392.0	6208936.0	0.5	4.6			1389	B	Mild		Non-Aggressive		Mild							Heavy clay	6.0	720	4.3	Moderately Saline
			1.0	4.5			1515	B	Moderate		Non-Aggressive		Mild							Heavy clay	6.0	660	4.0	Slightly Saline
			1.5	6.8			3125	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light medium clay	8.0	320	2.6	Slightly Saline
27	285637.0	6208834.0	0.5	5.2			27027	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	37	0.2	Non-Saline
			1.0	5.5			27778	B	Mild		Non-Aggressive		Non-Aggressive					6	No	Heavy clay	6.0	36	0.2	Non-Saline
			1.5	7.1			10753	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	93	0.7	Non-Saline
35	285501.0	6208655.0	0.5	6.3			18182	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	55	0.4	Non-Saline
			1.0	5.5			10204	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7.0	98	0.7	Non-Saline
			1.5	5.5			16393	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	61	0.4	Non-Saline
			2.0	5.6			19231	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	52	0.4	Non-Saline
42	286032.0	6209281.0	0.5	5.7			10989	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	91	0.5	Non-Saline
			1.0	5			2703	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	370	2.2	Slightly Saline
			1.5	4.8			1852	B	Mild		Non-Aggressive		Mild							Heavy clay	6.0	540	3.2	Slightly Saline
			2.0	5.2			3030	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	330	2.0	Non-Saline
			2.5	9.1	530	87	2326	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	430	2.6	Slightly Saline
.	.	.	3.0	6.3			4348	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	230	1.4	Non-Saline

Test Bore or Pit	Test Location		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
	East	North					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 MGA56)	(m MGA56)	(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]
43	285546.0	6208666.0	0.5	5.1			3846	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	260	1.6	Non-Saline
			1.0	4.9			1639	B	Mild		Non-Aggressive		Mild							Heavy clay	6.0	610	3.7	Slightly Saline
			1.5	5.2			1408	B	Mild		Non-Aggressive		Mild							Heavy clay	6.0	710	4.3	Moderately Saline
			2.0	7.8			1389	B	Non-Aggressive		Non-Aggressive		Mild							Medium clay	7.0	720	5.0	Moderately Saline
48	285855.0	6209156.0	0.5	5.3			6250	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7.0	160	1.1	Non-Saline
			1.0	5.5	<10	<10	83333	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.18	3.3	5	Sodic			Medium clay	7.0	12	0.1	Non-Saline
			1.5	5.3			71429	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7.0	14	0.1	Non-Saline
			2.0	5.6			35714	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	28	0.2	Non-Saline
			2.5	5.9			38462	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	26	0.2	Non-Saline
61	285846.0	6208934.0	0.5	5.5	23	20	28571	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.37	3.6	10	Sodic			Heavy clay	6.0	35	0.2	Non-Saline
			1.0	5.4			21277	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7.0	47	0.3	Non-Saline
			1.5	5.7	37	10	25000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	40	0.3	Non-Saline
			2.0	5.9			41667	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	24	0.2	Non-Saline
71	285769.0	6208657.0	0.5	6.4			40000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	25	0.2	Non-Saline
			1.0	6.2	26	10	32258	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1.1	10	11	Sodic			Light clay	8.5	31	0.3	Non-Saline
			1.5	5.9			38462	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	26	0.2	Non-Saline
			2.0	5.5	24	51	18519	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	54	0.3	Non-Saline
			2.5	6.1			31250	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	32	0.2	Non-Saline
			3.0	6.2	<10	10	50000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	20	0.1	Non-Saline
77	286275.0	6209302.0	0.5	6.7			52632	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	19	0.1	Non-Saline
			1.0	6			5263	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	190	1.1	Non-Saline
			1.5	8	85	20	10989	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.39	3.4	11	Sodic			Medium clay	7.0	91	0.6	Non-Saline
			2.0	8			6250	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	8.5	160	1.4	Non-Saline
78	286310.0	6209318.0	0.5	8	150	71	5882	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light clay	8.5	170	1.4	Non-Saline
			1.0	8.1			5882	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	170	1.0	Non-Saline
.	.	.	1.5	9	130	57	6250	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.22	5.1	4	Non-Sodic			Loam	10.0	160	1.6	Non-Saline

Test Bore or Pit	Test Location		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
	East	North					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											
	(m MGA56)	(m MGA56)	(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]
80	286207.0	6209222.0	0.5	6.1			24390	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	41	0.2	Non-Saline
			1.0	6.2	20	21	25641	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	39	0.3	Non-Saline
			1.5	6.6			23810	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	42	0.3	Non-Saline
			2.0	7	44	10	14706	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light clay	8.5	68	0.6	Non-Saline
81	286322.0	6209266.0	0.5	4.9			9091	B	Mild		Non-Aggressive		Non-Aggressive					3	Dispersive	Medium clay	7.0	110	0.8	Non-Saline
			1.0	5.8	180	63	5882	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	170	1.2	Non-Saline
			1.5	8.9			2632	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	380	2.7	Slightly Saline
			2.0	8.7			3704	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	270	1.9	Non-Saline
86	286068.0	6209045.0	0.5	6			18868	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	53	0.4	Non-Saline
			1.0	5.8			18182	B	Non-Aggressive		Non-Aggressive		Non-Aggressive					2	Some	Heavy clay	6.0	55	0.3	Non-Saline
			1.5	5.7	25	20	25000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1.4	4.6	30	Highly Sodic			Heavy clay	6.0	40	0.2	Non-Saline
			2.0	5.7			16129	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	62	0.4	Non-Saline
			2.5	5.4			7692	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	130	0.8	Non-Saline
			3.0	5.5	120	33	7692	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	130	0.9	Non-Saline
90	286357.0	6209028.0	0.5	6.3			27027	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	37	0.2	Non-Saline
			1.0	5.3			12195	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	82	0.5	Non-Saline
			1.5	5.5	45	10	20833	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	48	0.3	Non-Saline
			2.0	5.9			50000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	20	0.1	Non-Saline
			2.5	6	20	<10	40000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.7	4	18	Highly Sodic			Medium clay	7.0	25	0.2	Non-Saline
	.	.	3.0	5.7			21739	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	46	0.3	Non-Saline
95	286054.0	6208828.0	0.5	6.1	<10	24	31250	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	32	0.2	Non-Saline
			1.0	5.6			62500	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	16	0.1	Non-Saline
			1.5	5.4			58824	B	Mild		Non-Aggressive		Non-Aggressive							Medium clay	7.0	17	0.1	Non-Saline
97	286253.0	6208833.0	0.5	6.1			34483	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	29	0.2	Non-Saline
			1.0	6.1	10	<10	58824	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.66	3.5	19	Highly Sodic			Heavy clay	6.0	17	0.1	Non-Saline
			1.5	5.8			50000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive					1	Complete	Clay loam	9.0	20	0.2	Non-Saline
			2.0	5.9	10	<10	62500	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	16	0.1	Non-Saline
			2.5	5.6			29412	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	34	0.2	Non-Saline
.	.	.	3.0	5.8			34483	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	8.5	29	0.2	Non-Saline

Test Bore or Pit	Test Location		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
	East	North					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 MGA56)	(m MGA56)	(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]
101	286449.0	6209231.0	0.5	6.1	10	21	32258	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Light medium clay	8.0	31	0.2	Non-Saline
			1.0	5.8			28571	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	35	0.2	Non-Saline
			1.5	5.4	72	<10	15385	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	65	0.5	Non-Saline
104	286607.0	6209147.0	0.5	5.6			35714	B	Non-Aggressive		Non-Aggressive		Non-Aggressive					2	Some	Heavy clay	6.0	28	0.2	Non-Saline
			1.0	5.2	63	<10	16667	B	Mild	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	60	0.4	Non-Saline
			1.5	5.6			27778	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	36	0.2	Non-Saline
			2.0	5.8	28	30	22727	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	5.3	19	Highly Sodic			Heavy clay	6.0	44	0.3	Non-Saline
112	286634.0	6208895.0	0.5	5.6			12500	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	80	0.5	Non-Saline
			1.0	5.6	42	22	21739	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	46	0.3	Non-Saline
			1.5	5.6			29412	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	34	0.2	Non-Saline
			2.0	5.7	<10	<10	40000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	25	0.2	Non-Saline
			2.5	5.9			26316	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	38	0.2	Non-Saline
			3.0	6.2	<10	20	66667	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	2	5.3	38	Highly Sodic			Heavy clay	6.0	15	0.1	Non-Saline
115	286492.0	6208822.0	0.5	6	<10	10	83333	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.39	4.5	9	Sodic			Heavy clay	6.0	12	0.1	Non-Saline
			1.0	5.8			38462	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	26	0.2	Non-Saline
			1.5	5.8			71429	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	14	0.1	Non-Saline
			2.0	5.8	10	10	47619	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	21	0.1	Non-Saline
			2.5	8			10417	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	96	0.7	Non-Saline
120	286666.0	6208699.0	0.5	6.1			40000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	25	0.2	Non-Saline
			1.0	5.7	46	<10	20833	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1	4	25	Highly Sodic	2	Some	Heavy clay	6.0	48	0.3	Non-Saline
			1.5	5.4			16393	B	Mild		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	61	0.4	Non-Saline
			2.0	5.8	20	10	40000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	25	0.2	Non-Saline
			2.5	5.7			29412	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	34	0.2	Non-Saline
.	.	.	3.0	6			24390	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	41	0.2	Non-Saline

Test Bore or Pit	Test Location		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
	East	North					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 MGA56)	(m MGA56)	(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]
123	286772.0	6209091.0	0.5	6.1	<10	<10	90909	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	11	0.1	Non-Saline
			1.0	6.1			100000	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	10	0.1	Non-Saline
			1.5	5.9			90909	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	11	0.1	Non-Saline
			2.0	5.8	10	20	37037	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	0.56	3.1	18	Highly Sodic			Heavy clay	6.0	27	0.2	Non-Saline
			2.5	5.7			30303	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	33	0.2	Non-Saline
			3.0	5.7			32258	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	31	0.2	Non-Saline
124	286388.0	6209204.0	0.5	6.2			29412	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	34	0.2	Non-Saline
			1.0	6.3	<10	<10	62500	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	16	0.1	Non-Saline
			1.5	5.9			25641	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Medium clay	7.0	39	0.3	Non-Saline
			2.0	6	41	10	20000	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Heavy clay	6.0	50	0.3	Non-Saline
125	286336.0	6209233.0	0.5	6.9			10753	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Light clay	8.5	93	0.8	Non-Saline
			1.0	7.4	380	27	3571	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive							Medium clay	7.0	280	2.0	Non-Saline
126	286387.0	6209298.0	0.5	6.1			34483	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	29	0.2	Non-Saline
			1.0	6			32258	B	Non-Aggressive		Non-Aggressive		Non-Aggressive							Heavy clay	6.0	31	0.2	Non-Saline
.	.	.	1.5	5.8	20	10	35714	B	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	Non-Aggressive	1.4	6	23	Highly Sodic			Medium clay	7.0	28	0.2	Non-Saline

Appendix D

Laboratory Certificates of Analysis

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

CERTIFICATE OF ANALYSIS 185390

Client Details

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

Sample Details

Your Reference	**92269.00, WILTON, Janderra Lane, St 1 & 2, DSI**
Number of Samples	42 Soil
Date samples received	15/02/2018
Date completed instructions received	16/02/2018

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.

Report Details

Date results requested by	23/02/2018
Date of Issue	22/02/2018

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Long Pham, Team Leader, Metals
Priya Samarawickrama, Senior Chemist

Authorised By

David Springer, General Manager

Misc Inorg - Soil						
Our Reference		185390-1	185390-2	185390-3	185390-4	185390-5
Your Reference	UNITS	TP7/0.4-0.5	TP7/0.9-1.0	TP7/1.4-1.5	TP9/0.4-0.5	TP9/0.9-1.0
Date Sampled		12.02.18	12.02.18	12.02.18	12.02.18	12.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	5.5	5.3	5.3	5.3	5.1
Electrical Conductivity 1:5 soil:water	µS/cm	37	48	32	58	85
Chloride, Cl 1:5 soil:water	mg/kg	20	[NA]	[NA]	[NA]	78
Sulphate, SO4 1:5 soil:water	mg/kg	44	[NA]	[NA]	[NA]	20

Misc Inorg - Soil						
Our Reference		185390-6	185390-7	185390-8	185390-9	185390-10
Your Reference	UNITS	TP9/1.4-1.5	TP9/1.9-2.0	TP9/2.4-2.5	TP9/2.9-3.0	TP20/0.4-0.5
Date Sampled		12.02.18	12.02.18	12.02.18	12.02.18	12.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	5.2	5.4	5.4	5.1	5.1
Electrical Conductivity 1:5 soil:water	µS/cm	100	73	92	94	49

Misc Inorg - Soil						
Our Reference		185390-11	185390-12	185390-13	185390-14	185390-15
Your Reference	UNITS	TP20/0.9-1.0	TP20/1.4-1.5	TP20/1.9-2.0	TP20/2.4-2.5	TP20/2.9-3.0
Date Sampled		12.02.18	12.02.18	12.02.18	12.02.18	13.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	5.5	5.6	5.5	6.3	5.6
Electrical Conductivity 1:5 soil:water	µS/cm	13	18	47	63	20
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	10	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	10	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		185390-16	185390-17	185390-18	185390-19	185390-20
Your Reference	UNITS	TP23/0.4-0.5	TP23/1.4-1.5	TP27/0.4-0.5	TP27/0.9-1.0	TP27/1.4-1.5
Date Sampled		13.02.18	13.02.18	13.02.18	13.02.18	13.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	4.6	6.8	5.2	5.5	7.1
Electrical Conductivity 1:5 soil:water	µS/cm	720	320	37	36	93

Misc Inorg - Soil						
Our Reference		185390-21	185390-22	185390-23	185390-24	185390-25
Your Reference	UNITS	TP34/0.9-1.0	TP34/1.4-1.5	TP35/0.4-0.5	TP35/0.9-1.0	TP35/1.4-1.5
Date Sampled		13.02.18	13.02.18	13.02.18	13.02.18	13.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	6.3	6.0	6.3	5.5	5.5
Electrical Conductivity 1:5 soil:water	µS/cm	47	32	55	98	61

Misc Inorg - Soil						
Our Reference		185390-26	185390-27	185390-28	185390-29	185390-30
Your Reference	UNITS	TP35/1.9-2.0	TP42/0.4-0.5	TP42/0.9-1.0	TP42/1.4-1.5	TP42/1.9-2.0
Date Sampled		13.02.18	14.02.18	14.02.18	14.02.18	14.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	5.6	5.7	5.0	4.8	5.2
Electrical Conductivity 1:5 soil:water	µS/cm	52	91	370	540	330

Misc Inorg - Soil						
Our Reference		185390-31	185390-32	185390-33	185390-34	185390-35
Your Reference	UNITS	TP42/2.4-2.5	TP42/2.9-3.0	TP43/0.4-0.5	TP43/0.9-1.0	TP43/1.4-1.5
Date Sampled		14.02.18	12.02.18	14.02.18	14.02.18	14.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	9.1	6.3	5.1	4.9	5.2
Electrical Conductivity 1:5 soil:water	µS/cm	430	230	260	610	710
Chloride, Cl 1:5 soil:water	mg/kg	530	[NA]	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	87	[NA]	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		185390-36	185390-37	185390-38	185390-39	185390-40
Your Reference	UNITS	TP43/1.9-2.0	TP48/0.4-0.5	TP48/0.9-1.0	TP48/1.4-1.5	TP48/1.9-2.0
Date Sampled		14.02.18	14.02.18	14.02.18	14.02.18	14.02.18
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	7.8	5.3	5.5	5.3	5.6
Electrical Conductivity 1:5 soil:water	µS/cm	720	160	12	14	28
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	<10	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	<10	[NA]	[NA]

Misc Inorg - Soil			
Our Reference		185390-41	185390-42
Your Reference	UNITS	TP48/2.4-2.5	TP23/0.9-1.0
Date Sampled		14.02.18	13.02.18
Type of sample		Soil	Soil
Date prepared	-	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units	5.9	4.5
Electrical Conductivity 1:5 soil:water	µS/cm	26	660

ESP/CEC				
Our Reference		185390-1	185390-12	185390-38
Your Reference	UNITS	TP7/0.4-0.5	TP20/1.4-1.5	TP48/0.9-1.0
Date Sampled		12.02.18	12.02.18	14.02.18
Type of sample		Soil	Soil	Soil
Date prepared	-	19/02/2018	19/02/2018	19/02/2018
Date analysed	-	19/02/2018	19/02/2018	19/02/2018
Exchangeable Ca	meq/100g	0.3	0.1	0.3
Exchangeable K	meq/100g	0.2	0.2	0.2
Exchangeable Mg	meq/100g	3.9	3.6	2.7
Exchangeable Na	meq/100g	0.59	0.69	0.18
Cation Exchange Capacity	meq/100g	5.0	4.7	3.3
ESP	%	12	15	5

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. Alternatively determined by colourimetry/turbidity using Discrete Analyer.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	185390-2
Date prepared	-			19/02/2018	1	19/02/2018	19/02/2018		19/02/2018	19/02/2018
Date analysed	-			19/02/2018	1	19/02/2018	19/02/2018		19/02/2018	19/02/2018
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	5.5	5.4	2	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	37	36	3	98	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	20	10	67	97	113
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	44	36	20	100	110

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			[NT]	11	19/02/2018	19/02/2018		19/02/2018	[NT]
Date analysed	-			[NT]	11	19/02/2018	19/02/2018		19/02/2018	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	11	5.5	5.5	0	99	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	11	13	14	7	95	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	21	19/02/2018	19/02/2018		[NT]	[NT]
Date analysed	-			[NT]	21	19/02/2018	19/02/2018		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	21	6.3	6.1	3	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	21	47	51	8	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	32	19/02/2018	19/02/2018		[NT]	[NT]
Date analysed	-			[NT]	32	19/02/2018	19/02/2018		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	32	6.3	6.3	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	32	230	220	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]	41	19/02/2018	19/02/2018		[NT]	[NT]
Date analysed	-			[NT]	41	19/02/2018	19/02/2018		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	41	5.9	5.9	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	41	26	34	27	[NT]	[NT]

QUALITY CONTROL: ESP/CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			19/02/2018	1	19/02/2018	19/02/2018		19/02/2018	[NT]
Date analysed	-			19/02/2018	1	19/02/2018	19/02/2018		19/02/2018	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	1	0.3	0.3	0	104	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	1	0.2	0.2	0	115	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	1	3.9	4.2	7	108	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	1	0.59	0.66	11	118	[NT]
ESP	%	1	Metals-009	[NT]	1	12	12	0	[NT]	[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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.00	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP7/0.4-0.5	1	12.02.18	S	P	X	X	X	X	X					
TP7/0.9-1.0	2	12.02.18	S	P	X	X								
TP7/1.4-1.5	3	12.02.18	S	P	X	X								
TP9/0.4-0.5	4	12.02.18	S	P	X	X								
TP9/0.9-1.0	5	12.02.18	S	P	X	X	X	X						
TP9/1.4-1.5	6	12.02.18	S	P	X	X								
TP9/1.9-2.0	7	12.02.18	S	P	X	X								
TP9/2.4-2.5	8	12.02.18	S	P	X	X								
TP9/2.9-3.0	9	12.02.18	S	P	X	X								
TP20/0.4-0.5	10	12.02.18	S	P	X	X								
TP20/0.9-1.0	11	12.02.18	S	P	X	X								
TP20/1.4-1.5	12	12.02.18	S	P	X	X	X	X	X					

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 185390
Date Received: 15/2
Time Received: 16:30
Received by: A
Temp: Cool/Ambient 25.9
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 14.02.18	**Received by:**		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.00	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

	Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: pH	EC	Chloride	Sulphate	Sodicity					Notes/preservation
	185390														
	TP20/1.9-2.0	13	12.02.18	S	P	X	X								
	TP20/2.4-2.5	14	12.02.18	S	P	X	X								
	TP20/2.9-3.0	15	13.02.18	S	P	X	X								
	TP23/0.4-0.5	16	13.02.18	S	P	X	X								
NR	TP23/0.9-1.0	—	13.02.18	S	P	X	X								
	TP23/1.4-1.5	17	13.02.18	S	P	X	X								
NR	TP23/1.9-2.0	—	13.02.18	S	P	X	X								
NR	TP23/2.4-2.5	—	13.02.18	S	P	X	X	X	X						
NR	TP23/2.9-3.0	—	13.02.18	S	P	X	X								
	TP27/0.4-0.5	18	13.02.18	S	P	X	X								
	TP27/0.9-1.0	19	13.02.18	S	P	X	X								
	TP27/1.4-1.5	20	13.02.18	S	P	X	X								
NR	TP34/0.4-0.5	—	13.02.18	S	P	X	X	X	X	X					

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 14.02.18	**Received by:**		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.00	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Sampling Date	Sample Type	Container Type	Analytes									Notes/preservation
			S - soil W - water	G - glass P - plastic	pH	EC	Chloride	Sulphate	Sodicity					
185390														
TP34/0.9-1.0	21	13.02.18	S	P	X	X								
TP34/1.4-1.5	22	13.02.18	S	P	X	X								
TP35/0.4-0.5	23	13.02.18	S	P	X	X								
TP35/0.9-1.0	24	13.02.18	S	P	X	X								
TP35/1.4-1.5	25	13.02.18	S	P	X	X								
TP35/1.9-2.0	26	13.02.18	S	P	X	X								
TP42/0.4-0.5	27	14.02.18	S	P	X	X								
TP42/0.9-1.0	28	14.02.18	S	P	X	X								
TP42/1.4-1.5	29	14.02.18	S	P	X	X								
TP42/1.9-2.0	30	14.02.18	S	P	X	X								
TP42/2.4-2.5	31	14.02.18	S	P	X	X	X	X						
TP42/2.9-3.0	32	12.02.18	S	P	X	X								
TP43/0.4-0.5	33	14.02.18	S	P	X	X								

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 14.02.18	**Received by:**		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.00	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
	185390				pH	EC	Chloride	Sulphate	Sodicity					
TP43/0.9-1.0	34	14.02.18	S	P	X	X								
TP43/1.4-1.5	35	14.02.18	S	P	X	X								
TP43/1.9-2.0	36	14.02.18	S	P	X	X								
TP48/0.4-0.5	37	14.02.18	S	P	X	X								
TP48/0.9-1.0	38	14.02.18	S	P	X	X	X	X	X					
TP48/1.4-1.5	39	14.02.18	S	P	X	X								
TP48/1.9-2.0	40	14.02.18	S	P	X	X								
TP48/2.4-2.5	41	14.02.18	S	P	X	X								
Extra TP34/0.9-1.0	42													

AB 15/2/18

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 14.02.18	**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 McGinty, Kurtis Wathen

Sample Login Details

Your reference	92269.00, WILTON, Janderra Lane, St 1 & 2, DSI
Envirolab Reference	185390
Date Sample Received	15/02/2018
Date Instructions Received	16/02/2018
Date Results Expected to be Reported	23/02/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	42 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	25.9
Cooling Method	None
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:

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 ID	pH1:5 soil:water	Electrical Conductivity1:5 soil:water	Chloride, Cl1:5 soil:water	Sulphate, SO41:5 soil:water	ESP/CEC
TP7/0.4-0.5	✓	✓	✓	✓	✓
TP7/0.9-1.0	✓	✓			
TP7/1.4-1.5	✓	✓			
TP9/0.4-0.5	✓	✓			
TP9/0.9-1.0	✓	✓	✓	✓	
TP9/1.4-1.5	✓	✓			
TP9/1.9-2.0	✓	✓			
TP9/2.4-2.5	✓	✓			
TP9/2.9-3.0	✓	✓			
TP20/0.4-0.5	✓	✓			
TP20/0.9-1.0	✓	✓			
TP20/1.4-1.5	✓	✓	✓	✓	✓
TP20/1.9-2.0	✓	✓			
TP20/2.4-2.5	✓	✓			
TP20/2.9-3.0	✓	✓			
TP23/0.4-0.5	✓	✓			
TP23/1.4-1.5	✓	✓			
TP27/0.4-0.5	✓	✓			
TP27/0.9-1.0	✓	✓			
TP27/1.4-1.5	✓	✓			
TP34/0.9-1.0	✓	✓			
TP34/1.4-1.5	✓	✓			
TP35/0.4-0.5	✓	✓			
TP35/0.9-1.0	✓	✓			
TP35/1.4-1.5	✓	✓			
TP35/1.9-2.0	✓	✓			
TP42/0.4-0.5	✓	✓			
TP42/0.9-1.0	✓	✓			
TP42/1.4-1.5	✓	✓			
TP42/1.9-2.0	✓	✓			
TP42/2.4-2.5	✓	✓	✓	✓	
TP42/2.9-3.0	✓	✓			

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 ID	pH1:5 soil:water	Electrical Conductivity1:5 soil:water	Chloride, Cl1:5 soil:water	Sulphate, SO41:5 soil:water	ESP/CEC
TP43/0.4-0.5	✓	✓			
TP43/0.9-1.0	✓	✓			
TP43/1.4-1.5	✓	✓			
TP43/1.9-2.0	✓	✓			
TP48/0.4-0.5	✓	✓			
TP48/0.9-1.0	✓	✓	✓	✓	✓
TP48/1.4-1.5	✓	✓			
TP48/1.9-2.0	✓	✓			
TP48/2.4-2.5	✓	✓			
TP24/0.9-1.0	✓	✓			

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.

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

CERTIFICATE OF ANALYSIS 185802

Client Details

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

Sample Details

Your Reference	**92269.00, Wilton Janderra Lane St 1 & 2, DSI**
Number of Samples	87 Soil
Date samples received	22/02/2018
Date completed instructions received	22/02/2018

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.

Report Details

Date results requested by	01/03/2018
Date of Issue	01/03/2018

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Long Pham, Team Leader, Metals
Priya Samarawickrama, Senior Chemist

Authorised By

David Springer, General Manager

Misc Inorg - Soil						
Our Reference		185802-1	185802-2	185802-3	185802-4	185802-5
Your Reference	UNITS	TP61	TP61	TP61	TP61	TP71
Depth		0.4-0.5	0.9-1.0	1.4-1.5	1.9-2.0	0.4-0.5
Date Sampled		15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	5.5	5.4	5.7	5.9	6.4
Electrical Conductivity 1:5 soil:water	µS/cm	35	47	40	24	25
Chloride, Cl 1:5 soil:water	mg/kg	23	[NA]	37	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	20	[NA]	10	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		185802-6	185802-7	185802-8	185802-9	185802-10
Your Reference	UNITS	TP71	TP71	TP71	TP71	TP71
Depth		0.9-1.0	1.4-1.5	1.9-2.0	2.4-2.5	2.9-3.0
Date Sampled		15/02/2018	15/02/2018	15/02/2018	15/02/2018	15/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.2	5.9	5.5	6.1	6.2
Electrical Conductivity 1:5 soil:water	µS/cm	31	26	54	32	20
Chloride, Cl 1:5 soil:water	mg/kg	26	[NA]	24	[NA]	<10
Sulphate, SO4 1:5 soil:water	mg/kg	10	[NA]	51	[NA]	10

Misc Inorg - Soil						
Our Reference		185802-11	185802-12	185802-13	185802-14	185802-15
Your Reference	UNITS	TP77	TP77	TP77	TP77	TP78
Depth		0.4-0.5	0.9-1.0	1.4-1.5	1.9-2.0	0.4-0.5
Date Sampled		15/02/2018	15/02/2018	15/02/2018	15/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.7	6.0	8.0	8.0	8.0
Electrical Conductivity 1:5 soil:water	µS/cm	19	190	91	160	170
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	85	[NA]	150
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	20	[NA]	71

Misc Inorg - Soil						
Our Reference		185802-16	185802-17	185802-18	185802-19	185802-20
Your Reference	UNITS	TP78	TP78	TP80	TP80	TP80
Depth		0.9-1.0	1.4-1.5	0.4-0.5	0.9-1.0	1.4-1.5
Date Sampled		16/02/2018	16/02/2018	16/02/2018	16/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	8.1	9.0	6.1	6.2	6.6
Electrical Conductivity 1:5 soil:water	µS/cm	170	160	41	39	42
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	130	[NA]	20	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	57	[NA]	21	[NA]

Misc Inorg - Soil						
Our Reference		185802-21	185802-22	185802-23	185802-24	185802-25
Your Reference	UNITS	TP80	TP81	TP81	TP81	TP86
Depth		1.9-2.0	0.4-0.5	0.9-1.0	1.4-1.5	0.5
Date Sampled		16/02/2018	16/02/2018	16/02/2018	16/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.9	4.9	5.8	8.9	6.0
Electrical Conductivity 1:5 soil:water	µS/cm	66	110	170	380	53
Chloride, Cl 1:5 soil:water	mg/kg	37	[NA]	180	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	20	[NA]	63	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		185802-26	185802-27	185802-28	185802-29	185802-30
Your Reference	UNITS	TP86	TP86	TP86	TP86	TP86
Depth		1.0	1.5	2.0	2.5	3.0
Date Sampled		16/02/2018	16/02/2018	16/02/2018	16/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	5.8	5.7	5.7	5.4	5.5
Electrical Conductivity 1:5 soil:water	µS/cm	55	40	62	130	130
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	25	[NA]	[NA]	120
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	20	[NA]	[NA]	33

Misc Inorg - Soil						
Our Reference		185802-31	185802-32	185802-33	185802-34	185802-35
Your Reference	UNITS	TP90	TP90	TP90	TP90	TP90
Depth		0.5	1.0	1.5	2.0	2.5
Date Sampled		16/02/2018	16/02/2018	16/02/2018	16/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.3	5.3	5.5	5.9	6.0
Electrical Conductivity 1:5 soil:water	µS/cm	37	82	48	20	25
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	45	[NA]	20
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	10	[NA]	<10

Misc Inorg - Soil						
Our Reference		185802-36	185802-37	185802-38	185802-39	185802-40
Your Reference	UNITS	TP90	TP95	TP95	TP95	TP97
Depth		3.0	0.4-0.5	0.9-1.0	1.4-1.5	0.4-0.5
Date Sampled		16/02/2018	16/02/2018	16/02/2018	19/02/2018	19/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	5.7	6.1	5.6	5.4	6.1
Electrical Conductivity 1:5 soil:water	µS/cm	46	32	16	17	29
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	<10	[NA]	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	24	[NA]	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		185802-41	185802-42	185802-43	185802-44	185802-45
Your Reference	UNITS	TP97	TP97	TP97	TP97	TP97
Depth		0.9-1.0	1.4-1.5	1.9-2.0	2.4-2.5	2.9-3.0
Date Sampled		19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.1	5.8	5.9	5.6	5.8
Electrical Conductivity 1:5 soil:water	µS/cm	17	20	16	34	29
Chloride, Cl 1:5 soil:water	mg/kg	10	[NA]	10	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	<10	[NA]	<10	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		185802-46	185802-47	185802-48	185802-49	185802-50
Your Reference	UNITS	TP101	TP101	TP101	TP104	TP104
Depth		0.4-0.5	0.9-1.0	1.4-1.5	0.4-0.5	0.9-1.0
Date Sampled		19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.1	5.8	5.4	5.6	5.2
Electrical Conductivity 1:5 soil:water	µS/cm	31	35	65	28	60
Chloride, Cl 1:5 soil:water	mg/kg	10	[NA]	72	[NA]	63
Sulphate, SO4 1:5 soil:water	mg/kg	21	[NA]	<10	[NA]	<10

Misc Inorg - Soil						
Our Reference		185802-51	185802-52	185802-53	185802-54	185802-55
Your Reference	UNITS	TP104	TP104	TP112	TP112	TP112
Depth		1.4-1.5	1.9-2.0	0.4-0.5	0.9-1.0	1.4-1.5
Date Sampled		19/02/2018	19/02/2018	20/02/2018	20/02/2018	20/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	5.6	5.8	5.6	5.6	5.6
Electrical Conductivity 1:5 soil:water	µS/cm	36	44	80	46	34
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	28	[NA]	42	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	30	[NA]	22	[NA]

Misc Inorg - Soil						
Our Reference		185802-56	185802-57	185802-58	185802-59	185802-60
Your Reference	UNITS	TP112	TP112	TP112	TP115	TP115
Depth		1.9-2.0	2.4-2.5	2.9-3.0	0.4-0.5	0.9-1.0
Date Sampled		20/02/2018	20/02/2018	20/02/2018	20/02/2018	20/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	5.7	5.9	6.2	6.0	5.8
Electrical Conductivity 1:5 soil:water	µS/cm	25	38	15	12	26
Chloride, Cl 1:5 soil:water	mg/kg	<10	[NA]	<10	<10	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	<10	[NA]	20	10	[NA]

Misc Inorg - Soil						
Our Reference		185802-61	185802-62	185802-63	185802-64	185802-65
Your Reference	UNITS	TP115	TP115	TP115	TP120	TP120
Depth		1.4-1.5	1.9-2.0	2.4-2.5	0.4-0.5	0.9-1.0
Date Sampled		20/02/2018	20/02/2018	20/02/2018	20/02/2018	20/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	5.8	5.8	8.0	6.1	5.7
Electrical Conductivity 1:5 soil:water	µS/cm	14	21	96	25	48
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	10	[NA]	[NA]	46
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	10	[NA]	[NA]	<10

Misc Inorg - Soil						
Our Reference		185802-66	185802-67	185802-68	185802-69	185802-70
Your Reference	UNITS	TP120	TP120	TP120	TP120	TP123
Depth		1.4-1.5	1.9-2.0	2.4-2.5	2.9-3.0	0.4-0.5
Date Sampled		20/02/2018	20/02/2018	20/02/2018	20/02/2018	20/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	5.4	5.8	5.7	6.0	6.1
Electrical Conductivity 1:5 soil:water	µS/cm	61	25	34	41	11
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	20	[NA]	[NA]	<10
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	10	[NA]	[NA]	<10

Misc Inorg - Soil						
Our Reference		185802-71	185802-72	185802-73	185802-74	185802-75
Your Reference	UNITS	TP123	TP123	TP123	TP123	TP123
Depth		0.9-1.0	1.4-1.5	1.9-2.0	2.4-2.5	2.9-3.0
Date Sampled		20/02/2018	20/02/2018	20/02/2018	20/02/2018	20/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.1	5.9	5.8	5.7	5.7
Electrical Conductivity 1:5 soil:water	µS/cm	10	11	27	33	31
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	10	[NA]	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	20	[NA]	[NA]

Misc Inorg - Soil						
Our Reference		185802-76	185802-77	185802-78	185802-79	185802-80
Your Reference	UNITS	TP124	TP124	TP124	TP124	TP124
Depth		0.4-0.5	0.9-1.0	1.4-1.5	1.9-2.0	2.4-2.5
Date Sampled		16/02/2018	16/02/2018	16/02/2018	16/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.2	6.3	5.9	6.0	7.0
Electrical Conductivity 1:5 soil:water	µS/cm	34	16	39	50	83
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	<10	[NA]	41	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	<10	[NA]	10	[NA]

Misc Inorg - Soil						
Our Reference		185802-81	185802-82	185802-83	185802-84	185802-85
Your Reference	UNITS	TP125	TP125	TP126	TP126	TP126
Depth		0.4-0.5	0.9-1.0	0.4-0.5	0.9-1.0	1.4-1.5
Date Sampled		16/02/2018	16/02/2018	16/02/2018	16/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units	6.9	7.4	6.1	6.0	5.8
Electrical Conductivity 1:5 soil:water	µS/cm	93	280	29	31	28
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	380	[NA]	[NA]	20
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	27	[NA]	[NA]	10

ESP/CEC						
Our Reference		185802-1	185802-6	185802-13	185802-17	185802-27
Your Reference	UNITS	TP61	TP71	TP77	TP78	TP86
Depth		0.4-0.5	0.9-1.0	1.4-1.5	1.4-1.5	1.5
Date Sampled		15/02/2018	15/02/2018	15/02/2018	16/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Exchangeable Ca	meq/100g	0.7	0.5	0.3	1.8	<0.1
Exchangeable K	meq/100g	0.2	0.3	<0.1	0.1	0.2
Exchangeable Mg	meq/100g	2.4	8.6	2.6	2.9	3.1
Exchangeable Na	meq/100g	0.37	1.1	0.39	0.22	1.4
Cation Exchange Capacity	meq/100g	3.6	10	3.4	5.1	4.6
ESP	%	10	11	12	4	30

ESP/CEC						
Our Reference		185802-35	185802-41	185802-52	185802-58	185802-59
Your Reference	UNITS	TP90	TP97	TP104	TP112	TP115
Depth		2.5	0.9-1.0	1.9-2.0	2.9-3.0	0.4-0.5
Date Sampled		16/02/2018	19/02/2018	19/02/2018	20/02/2018	20/02/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018	26/02/2018	26/02/2018
Exchangeable Ca	meq/100g	0.1	0.1	<0.1	<0.1	0.3
Exchangeable K	meq/100g	0.3	0.1	0.3	0.3	0.2
Exchangeable Mg	meq/100g	3.0	2.5	3.9	2.9	3.6
Exchangeable Na	meq/100g	0.70	0.66	1.0	2.0	0.39
Cation Exchange Capacity	meq/100g	4.0	3.5	5.3	5.3	4.5
ESP	%	17	19	20	38	9

ESP/CEC				
Our Reference		185802-65	185802-73	185802-85
Your Reference	UNITS	TP120	TP123	TP126
Depth		0.9-1.0	1.9-2.0	1.4-1.5
Date Sampled		20/02/2018	20/02/2018	16/02/2018
Type of sample		Soil	Soil	Soil
Date prepared	-	26/02/2018	26/02/2018	26/02/2018
Date analysed	-	26/02/2018	26/02/2018	26/02/2018
Exchangeable Ca	meq/100g	<0.1	0.4	<0.1
Exchangeable K	meq/100g	0.2	0.3	<0.1
Exchangeable Mg	meq/100g	2.8	1.9	4.5
Exchangeable Na	meq/100g	1.0	0.56	1.4
Cation Exchange Capacity	meq/100g	4.0	3.1	6.0
ESP	%	25	18	23

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. Alternatively determined by colourimetry/turbidity using Discrete Analyer.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	185802-3
Date prepared	-			26/02/2018	1	26/02/2018	26/02/2018		26/02/2018	26/02/2018
Date analysed	-			26/02/2018	1	26/02/2018	26/02/2018		26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	5.5	5.5	0	103	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	35	36	3	99	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	23	25	8	97	90
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	20	20	0	104	98

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	185802-43
Date prepared	-			[NT]	11	26/02/2018	26/02/2018		26/02/2018	26/02/2018
Date analysed	-			[NT]	11	26/02/2018	26/02/2018		26/02/2018	26/02/2018
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	11	6.7	6.7	0	102	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	11	19	18	5	100	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	21	37	44	17	103	80
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	21	20	10	67	104	89

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			[NT]	21	26/02/2018	26/02/2018		26/02/2018	[NT]
Date analysed	-			[NT]	21	26/02/2018	26/02/2018		26/02/2018	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	21	6.9	7.0	1	102	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	21	66	68	3	97	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	41	10	20	67	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	41	<10	<10	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			[NT]	31	26/02/2018	26/02/2018		26/02/2018	[NT]
Date analysed	-			[NT]	31	26/02/2018	26/02/2018		26/02/2018	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	31	6.3	6.3	0	102	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	31	37	37	0	95	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	62	10	<10	0	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	62	10	<10	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	26/02/2018	26/02/2018		26/02/2018	[NT]
Date analysed	-			[NT]	41	26/02/2018	26/02/2018		26/02/2018	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	41	6.1	6.1	0	102	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	41	17	16	6	95	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	51	26/02/2018	26/02/2018		[NT]	[NT]
Date analysed	-			[NT]	51	26/02/2018	26/02/2018		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	51	5.6	5.6	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	51	36	33	9	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	62	26/02/2018	26/02/2018		[NT]	[NT]
Date analysed	-			[NT]	62	26/02/2018	26/02/2018		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	62	5.8	5.8	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	62	21	20	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]	71	26/02/2018	26/02/2018		[NT]	[NT]
Date analysed	-			[NT]	71	26/02/2018	26/02/2018		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	71	6.1	6.1	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	71	10	9	11	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	81	26/02/2018	26/02/2018		[NT]	[NT]
Date analysed	-			[NT]	81	26/02/2018	26/02/2018		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	81	6.9	6.8	1	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	81	93	96	3	[NT]	[NT]

QUALITY CONTROL: ESP/CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			26/02/2018	1	26/02/2018	26/02/2018		26/02/2018	[NT]
Date analysed	-			26/02/2018	1	26/02/2018	26/02/2018		26/02/2018	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	1	0.7	0.9	25	109	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	1	0.2	0.2	0	119	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	1	2.4	2.6	8	111	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	1	0.37	0.40	8	114	[NT]
ESP	%	1	Metals-009	[NT]	1	10	10	0	[NT]	[NT]

QUALITY CONTROL: ESP/CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	65	26/02/2018	26/02/2018		[NT]	[NT]
Date analysed	-			[NT]	65	26/02/2018	26/02/2018		[NT]	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	[NT]	65	<0.1	<0.1	0	[NT]	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	[NT]	65	0.2	0.2	0	[NT]	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	[NT]	65	2.8	2.8	0	[NT]	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	[NT]	65	1.0	0.99	1	[NT]	[NT]
ESP	%	1	Metals-009	[NT]	65	25	25	0	[NT]	[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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

Aileen Hie

From: Ken Nguyen
Sent: Wednesday, 7 March 2018 1:17 PM
To: Aileen Hie
Subject: FW: Results for Registration 185802 92269.00, Wilton Janderra Lane St 1 & 2, DSI

Regards,

Envirolab. Ref: 185802 A
DJe : 14/3/18
Std TAT

Ken Nguyen | Chemist | Envirolab Services Pty Ltd
(Monday to Friday 1pm to 9pm)

Great Science, Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 F 612 9910 6201
E knguyen@envirolab.com.au | W www.envirolab.com.au

From: Kurtis Wathen [mailto:Kurtis.Wathen@douglaspartners.com.au]
Sent: Wednesday, 7 March 2018 10:36 AM
To: Ken Nguyen <KNguyen@envirolab.com.au>
Subject: RE: Results for Registration 185802 92269.00, Wilton Janderra Lane St 1 & 2, DSI

Hi Ken,

Could I please have sample TP81/1.9-2.0 (87) analysed for pH and EC on a standard turnaround?

Thanks for your help,

Kurtis Wathen | Environmental Engineer
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
18 Waler Crescent Smeaton Grange NSW 2567
P: 02 4647 0075 | F: 02 4646 1886 | M: 0457 820 847 | E: Kurtis.Wathen@douglaspartners.com.au

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

CERTIFICATE OF ANALYSIS 185802-A

Client Details

Client	Douglas Partners Pty Ltd Smeaton Grange
Attention	Kurtis Wathen
Address	18 Waler Crescent, Smeaton Grange, NSW, 2567

Sample Details

Your Reference	**92269.00, Wilton Janderra Lane St 1 & 2, DSI**
Number of Samples	Additional Testing on 1 Soil
Date samples received	22/02/2018
Date completed instructions received	07/03/2018

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.

Report Details

Date results requested by	09/03/2018
Date of Issue	09/03/2018

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Team Leader, Inorganics

Authorised By

David Springer, General Manager

Misc Inorg - Soil		
Our Reference		185802-A-87
Your Reference	UNITS	TP81
Depth		1.9-2.0
Date Sampled		16/02/2018
Type of sample		Soil
Date prepared	-	09/03/2018
Date analysed	-	09/03/2018
pH 1:5 soil:water	pH Units	8.7
Electrical Conductivity 1:5 soil:water	µS/cm	270

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.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			09/03/2018	[NT]	[NT]	[NT]	[NT]	09/03/2018	[NT]
Date analysed	-			09/03/2018	[NT]	[NT]	[NT]	[NT]	09/03/2018	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	106	[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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-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.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.0	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP61/0.4-0.5	1	15.2.18	S	P	X	X	X	X	X					
TP61/0.9-1.0	2	15.2.18	S	P	X	X								
TP61/1.4-1.5	3	15.2.18	S	P	X	X	X	X						
TP61/1.9-2.0	4	15.2.18	S	P	X	X								
TP71/0.4-0.5	5	15.2.18	S	P	X	X								
TP71/0.9-1.0	6	15.2.18	S	P	X	X	X	X	X					
TP71/1.4-1.5	7	15.2.18	S	P	X	X								
TP71/1.9-2.0	8	15.2.18	S	P	X	X	X	X						
TP71/2.4-2.5	9	15.2.18	S	P	X	X								
TP71/2.9-3.0	10	15.2.18	S	P	X	X	X	X						
TP77/0.4-0.5	11	15.2.18	S	P	X	X								
TP77/0.9-1.0	12	15.2.18	S	P	X	X								

Envirolab Services
12 Ashley St
Chatswood NSW 2067
(02) 9910 6200

ENVIRO Lab

Job No: 185802
Date Received: 22.2.18
Time Received: 16:45
Received by: JE
Temp: Cool/Ambient 25.3°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No:			
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567	**Phone:** (02) 4647 0075 **Fax:** (02) 4646 1886
Relinquished by:	KPW	**Transported to laboratory by:**	
Signed:	**Date & Time:** 20.02.18	**Received by:** ELS JE 22.2.18 16:45	

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.01	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

185802

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP77/1.4-1.5	13	15.2.18	S	P	X	X	X	X	X					
TP77/1.9-2.0	14	15.2.18	S	P	X	X								
TP78/0.4-0.5	15	16.2.18	S	P	X	X	X	X						
TP78/0.9-1.0	16	16.2.18	S	P	X	X								
TP78/1.4-1.5	17	16.2.18	S	P	X	X	X	X	X					
TP80/0.4-0.5	18	16.2.18	S	P	X	X								
TP80/0.9-1.0	19	16.2.18	S	P	X	X	X	X						
TP80/1.4-1.5	20	16.2.18	S	P	X	X								
TP80/1.9-2.0	21	16.2.18	S	P	X	X	X	X						
TP81/0.4-0.5	22	16.2.18	S	P	X	X								
TP81/0.9-1.0	23	16.2.18	S	P	X	X	X	X						
TP81/1.4-1.5	24	16.2.18	S	P	X	X								
TP86/0.5	25	16.2.18	S	P	X	X								

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 20.02.18	**Received by:** ELS JE 22.2.18		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.01	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

185802

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP86/1.0	26	16.2.18	S	P	X	X								
TP86/1.5	27	16.2.18	S	P	X	X	X	X	X					
TP86/2.0	28	16.2.18	S	P	X	X								
TP86/2.5	29	16.2.18	S	P	X	X								
TP86/3.0	30	16.2.18	S	P	X	X	X	X						
TP90/0.5	31	16.2.18	S	P	X	X								
TP90/1.0	32	16.2.18	S	P	X	X								
TP90/1.5	33	16.2.18	S	P	X	X	X	X						
TP90/2.0	34	16.2.18	S	P	X	X								
TP90/2.5	35	16.2.18	S	P	X	X	X	X	X					
TP90/3.0	36	16.2.18	S	P	X	X								
TP95/0.4-0.5	37	19.2.18	S	P	X	X	X	X						
TP95/0.9-1.0	38	19.2.18	S	P	X	X								

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 20.02.18	**Received by:** JE 22.2.18		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.01	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

185802

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP95/1.4-1.5	39	19.2.18	S	P	X	X								
TP97/0.4-0.5	40	19.2.18	S	P	X	X								
TP97/0.9-1.0	41	19.2.18	S	P	X	X	X	X	X					
TP97/1.4-1.5	42	19.2.18	S	P	X	X								
TP97/1.9-2.0	43	19.2.18	S	P	X	X	X	X						
TP97/2.4-2.5	44	19.2.18	S	P	X	X								
TP97/2.9-3.0	45	19.2.18	S	P	X	X								
TP101/0.4-0.5	46	19.2.18	S	P	X	X	X	X						
TP101/0.9-1.0	47	19.2.18	S	P	X	X								
TP101/1.4-1.5	48	19.2.18	S	P	X	X	X	X						
TP104/0.4-0.5	49	19.2.18	S	P	X	X								
TP104/0.9-1.0	50	19.2.18	S	P	X	X	X	X						

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW	**Transported to laboratory by:**			
Signed:	**Date & Time:** 20.02.18	**Received by:** JE 22.2.18			

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.01	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

185802

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP104/1.4-1.5	51	19.2.18	S	P	X	X								
TP104/1.9-2.0	52	19.2.18	S	P	X	X	X	X	X					
TP112/0.4-0.5	53	20.2.18	S	P	X	X								
TP112/0.9-1.0	54	20.2.18	S	P	X	X	X	X						
TP112/1.4-1.5	55	20.2.18	S	P	X	X								
TP112/1.9-2.0	56	20.2.18	S	P	X	X	X	X						
TP112/2.4-2.5	57	20.2.18	S	P	X	X								
TP112/2.9-3.0	58	20.2.18	S	P	X	X	X	X	X					
TP115/0.4-0.5	59	20.2.18	S	P	X	X	X	X	X					
TP115/0.9-1.0	60	20.2.18	S	P	X	X								
TP115/1.4-1.5	61	20.2.18	S	P	X	X								
TP115/1.9-2.0	62	20.2.18	S	P	X	X	X	X						
TP115/2.4-2.5	~~63~~	20.2.18	S	P	X	X								

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 20.02.18	**Received by:** JE 22.2.18		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.01	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

185802

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP120/0.4-0.5	64	20.2.18	S	P	X	X								
TP120/0.9-1.0	65	20.2.18	S	P	X	X	X	X	X					
TP120/1.4-1.5	66	20.2.18	S	P	X	X								
TP120/1.9-2.0	67	20.2.18	S	P	X	X	X	X						
TP120/2.4-2.5	68	20.2.18	S	P	X	X								
TP120/2.9-3.0	69	20.2.18	S	P	X	X								
TP123/0.4-0.5	70	20.2.18	S	P	X	X	X	X						
TP123/0.9-1.0	71	20.2.18	S	P	X	X								
TP123/1.4-1.5	72	20.2.18	S	P	X	X								
TP123/1.9-2.0	73	20.2.18	S	P	X	X	X	X	X					
TP123/2.4-2.5	74	20.2.18	S	P	X	X								
TP123/2.9-3.0	75	20.2.18	S	P	X	X								

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 20.02.18	**Received by:** JE 22.2.18		

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY

Project Name:	WILTON, Janderra Lane, St 1 & 2, DSI			**To:**	Envirolab Services
Project No:	92269.01	**Sampler:**	KPW		12 Ashley Street, Chatswood NSW 2067
Project Mgr:	Emily McGinty	**Mob. Phone:**	0457820847	**Attn:**	Tania Notaras
Email:	emily.mcginty@douglaspartners.com.au; kurtis.wathen@douglaspartners.com.a			**Phone:**	(02) 9910 6200 **Fax:** (02) 9910 6201
Date Required:	Standard			**Email:**	tnotaras@envirolabservices.com.au

185802

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									Notes/preservation
					pH	EC	Chloride	Sulphate	Sodicity					
TP124/0.4-0.5	76	16.2.18	S	P	X	X								
TP124/0.9-1.0	77	16.2.18	S	P	X	X	X	X						
TP124/1.4-1.5	78	16.2.18	S	P	X	X								
TP124/1.9-2.0	79	16.2.18	S	P	X	X	X	X						
TP124/2.4-2.5	80	16.2.18	S	P	X	X								
TP125/0.4-0.5	81	16.2.18	S	P	X	X								
TP125/0.9-1.0	82	16.2.18	S	P	X	X	X	X						
TP126/0.4-0.5	83	16.2.18	S	P	X	X								
TP126/0.9-1.0	84	16.2.18	S	P	X	X								
TP126/1.4-1.5	85	16.2.18	S	P	X	X	X	X	X					
Extra JE — TP32/2.0	86													
TP81/1.9-2.0	87													

Lab Report No:					
Send Results to:	Douglas Partners Pty Ltd	**Address** 18 Waler Crescent Smeaton Grange NSW 2567		**Phone:** (02) 4647 0075	**Fax:** (02) 4646 1886
Relinquished by:	KPW		**Transported to laboratory by:**		
Signed:		**Date & Time:** 20.02.18	**Received by:** JE	22.2.18	

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 McGinty, Kurtis Wathen

Sample Login Details

Your reference	92269.00, Wilton Janderra Lane St 1 & 2, DSI
Envirolab Reference	185802
Date Sample Received	22/02/2018
Date Instructions Received	22/02/2018
Date Results Expected to be Reported	01/03/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	87 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	25.3
Cooling Method	None
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:

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 ID	pH1:5 soil:water	Electrical Conductivity1:5 soil:water	Chloride, Cl1:5 soil:water	Sulphate, SO41:5 soil:water	ESP/CEC	On Hold
TP61-0.4-0.5	✓	✓	✓	✓	✓	
TP61-0.9-1.0	✓	✓				
TP61-1.4-1.5	✓	✓	✓	✓		
TP61-1.9-2.0	✓	✓				
TP71-0.4-0.5	✓	✓				
TP71-0.9-1.0	✓	✓	✓	✓	✓	
TP71-1.4-1.5	✓	✓				
TP71-1.9-2.0	✓	✓	✓	✓		
TP71-2.4-2.5	✓	✓				
TP71-2.9-3.0	✓	✓	✓	✓		
TP77-0.4-0.5	✓	✓				
TP77-0.9-1.0	✓	✓				
TP77-1.4-1.5	✓	✓	✓	✓	✓	
TP77-1.9-2.0	✓	✓				
TP78-0.4-0.5	✓	✓	✓	✓		
TP78-0.9-1.0	✓	✓				
TP78-1.4-1.5	✓	✓	✓	✓	✓	
TP80-0.4-0.5	✓	✓				
TP80-0.9-1.0	✓	✓	✓	✓		
TP80-1.4-1.5	✓	✓				
TP80-1.9-2.0	✓	✓	✓	✓		
TP81-0.4-0.5	✓	✓				
TP81-0.9-1.0	✓	✓	✓	✓		
TP81-1.4-1.5	✓	✓				
TP86-0.5	✓	✓				
TP86-1.0	✓	✓				
TP86-1.5	✓	✓	✓	✓	✓	
TP86-2.0	✓	✓				
TP86-2.5	✓	✓				
TP86-3.0	✓	✓	✓	✓		
TP90-0.5	✓	✓				
TP90-1.0	✓	✓				

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 ID	pH1:5 soil:water	Electrical Conductivity1:5 soil:water	Chloride, Cl1:5 soil:water	Sulphate, SO41:5 soil:water	ESP/CEC	On Hold
TP90-1.5	✓	✓	✓	✓		
TP90-2.0	✓	✓				
TP90-2.5	✓	✓	✓	✓	✓	
TP90-3.0	✓	✓				
TP95-0.4-0.5	✓	✓	✓	✓		
TP95-0.9-1.0	✓	✓				
TP95-1.4-1.5	✓	✓				
TP97-0.4-0.5	✓	✓				
TP97-0.9-1.0	✓	✓	✓	✓	✓	
TP97-1.4-1.5	✓	✓				
TP97-1.9-2.0	✓	✓	✓	✓		
TP97-2.4-2.5	✓	✓				
TP97-2.9-3.0	✓	✓				
TP101-0.4-0.5	✓	✓	✓	✓		
TP101-0.9-1.0	✓	✓				
TP101-1.4-1.5	✓	✓	✓	✓		
TP104-0.4-0.5	✓	✓				
TP104-0.9-1.0	✓	✓	✓	✓		
TP104-1.4-1.5	✓	✓				
TP104-1.9-2.0	✓	✓	✓	✓	✓	
TP112-0.4-0.5	✓	✓				
TP112-0.9-1.0	✓	✓	✓	✓		
TP112-1.4-1.5	✓	✓				
TP112-1.9-2.0	✓	✓	✓	✓		
TP112-2.4-2.5	✓	✓				
TP112-2.9-3.0	✓	✓	✓	✓	✓	
TP115-0.4-0.5	✓	✓	✓	✓	✓	
TP115-0.9-1.0	✓	✓				
TP115-1.4-1.5	✓	✓				
TP115-1.9-2.0	✓	✓	✓	✓		
TP115-2.4-2.5	✓	✓				
TP120-0.4-0.5	✓	✓				

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 ID	pH1:5 soil:water	Electrical Conductivity1:5 soil:water	Chloride, Cl1:5 soil:water	Sulphate, SO41:5 soil:water	ESP/CEC	On Hold
TP120-0.9-1.0	✓	✓	✓	✓	✓	
TP120-1.4-1.5	✓	✓				
TP120-1.9-2.0	✓	✓	✓	✓		
TP120-2.4-2.5	✓	✓				
TP120-2.9-3.0	✓	✓				
TP123-0.4-0.5	✓	✓	✓	✓		
TP123-0.9-1.0	✓	✓				
TP123-1.4-1.5	✓	✓				
TP123-1.9-2.0	✓	✓	✓	✓	✓	
TP123-2.4-2.5	✓	✓				
TP123-2.9-3.0	✓	✓				
TP124-0.4-0.5	✓	✓				
TP124-0.9-1.0	✓	✓	✓	✓		
TP124-1.4-1.5	✓	✓				
TP124-1.9-2.0	✓	✓	✓	✓		
TP124-2.4-2.5	✓	✓				
TP125-0.4-0.5	✓	✓				
TP125-0.9-1.0	✓	✓	✓	✓		
TP126-0.4-0.5	✓	✓				
TP126-0.9-1.0	✓	✓				
TP126-1.4-1.5	✓	✓	✓	✓	✓	
TP32-2.0						✓
TP81-1.9-2.0						✓

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.