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REPORT
on
PHASE 1 CONTAMINATION & ACID SULPHATE SOIL ASSESSMENT

COORANBONG TOWN COMMON
FREEMANS DRIVE, COORANBONG

Prepared for
JOHNSON PROPERTY GROUP PTY LIMITED
ON BEHALF OF AUSTRALIASIAN CONFERENCE ASSOCIATION LIMITED

PROJECT 41487

JUNE 2007

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EXECUTIVE SUMMARY

This report presents the results of a non intrusive Phase 1 Contamination Assessment (PCA) and an intrusive Acid Sulphate Soil Assessment (ASSA) undertaken at the site identified as Lot 34 in Deposited Plan 736908 and Lot 2 in Deposited Plan 517245, Freemans Drive, Cooranbong, NSW. It is noted that an unformed Babers Road reserve bisects Lots 34 and 2 and as such the unformed road reserve will form part of the final rezoning application and was therefore analysed as part of this assessment. The site, colloquially referred to as Cooranbong Town Common, is proposed to be rezoned to allow redevelopment for sporting and community facilities including sports grounds, cricket wickets, multi-purpose courts, club-house, parking and cycleway/pedestrian links.

We understand that the PCA was required to assess the potential for contamination prior to the proposed redevelopment for a recreational land use. The ASSA was required to assess for the presence, or absence, of acid sulphate soils that may be encountered/disturbed during redevelopment. We understand that this report is to be submitted to Lake Macquarie City Council as part of an application to have the subject site rezoned. The assessments were carried out at the request of the Johnson Property Group Pty Limited (JPG) on behalf of the landowner Australasian Conference Association Limited.

Prior to field work occurring on the site, we understand that Johnson Property Group forward a copy of our proposed scope of works / methodology to Council to ensure that proposed works would be acceptable to Council. Further we understand no response was received from Council staff, and as such field work commenced in accordance with the scope of works / methodology proposed by DP.

The assessment comprises a review of site history and other relevant background information as well as a site inspection. No intrusive sampling was undertaken as part of the PCA, although 26 test pits were excavated across the site as part of the ASSA.

With regards to the PCA, on the basis of the information gathered during the site walkover/history review, DP considers that overall the potential for contamination at the site is low and that the site is compatible with the proposed recreational land uses from a contamination standpoint.

The results of the ASSA indicate that acid sulphate soils are present on site and may become an issue if the site is disturbed/excavated during the redevelopment. Therefore, if soils on-site are to be disturbed/excavated as part of the proposed development, then it is recommended that redevelopment is undertaken in accordance with a site specific acid sulphate soil management plan prepared in accordance with ASSM (Ref 11). The plan should be prepared following finalisation of development plans and would not prevent the site from being rezoned to allow recreational facilities to be constructed..

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REPORT ON
PHASE 1 CONTAMINATION & ACID SULPHATE SOIL ASSESSMENT
COORANBONG TOWN COMMON
FREEMANS DRIVE, COORANBONG, NSW

1 INTRODUCTION

This report presents the results of a non intrusive Phase 1 Contamination Assessment (PCA) and an intrusive Acid Sulphate Soil Assessment (ASSA) undertaken at the above site by Douglas Partners Pty Ltd (DP). The site, colloquially referred to as Cooranbong Town Common, is proposed to be rezoned to allow redevelopment for sporting and community facilities including sports grounds, cricket wickets, multi-purpose courts, club-house, parking and cycleway/pedestrian links.

We understand that the PCA was required to assess the potential for contamination prior to the proposed redevelopment for a recreational land use. The ASSA was required to assess the presence, or absence, of acid sulphate soils that may be encountered/disturbed during redevelopment. We understand that this report is to be submitted to Lake Macquarie City Council as part of an application to have the subject site rezoned for recreational purposes. The assessments were carried out at the request of the Johnson Property Group Pty Limited (JPG) on behalf of the landowner, Australasian Conference Association Limited.

The assessment comprises a review of site history and other relevant background information as well as a site inspection. No intrusive sampling was undertaken as part of the PCA, although 26 test pits were excavated across the site as part of the ASSA.

1.1 Purpose of the Assessment

The objectives of the PCA were:

- Identify past and present potentially contaminating activities;
- Identify potential contamination types;
- Provide a preliminary assessment of potential site contamination; and
- Assess the need for further investigations.

The objective of the ASSA was to assess the presence or absence of acid sulphate soils on-site.

1.2 Site Identification

The site is identified as Lot 34 in Deposited Plan 736908 and Lot 2 in Deposited Plan 517245, located off Freemans Drive, near the intersection of Martinsville Road, Cooranbong, New South Wales. The site is bounded by Freemans Drive to the east, Dora Creek to the north, and by existing community and rural/residential properties to the south and west, as shown in Drawing 1 attached. It is noted that an unformed Babers Road reserve bisects Lots 34 and 2. It is expected that this unformed road reserve will form part of the final rezoning application and has therefore been included within this assessment.

The site comprises an irregular area of about 13.6 ha and has a frontage to both Freemans Drive and Babers Road, and access from Martiansville Road.

The site is located in the local government area of Lake Macquarie, Parish of Mandolong and county of Northumberland. Lot 34 is currently zoned 1(2) Rural (Living) and 7(1) Conservation (Primary), whereas, Lot 2 is currently zoned 1(2) Rural (Living) and 7(2) Conservation (Secondary).

1.3 Data Quality Objectives (DQOs)

Data quality objectives (DQOs) have been developed to define the type and quality of data required to achieve the project objectives.

The DQO process consists of a seven step planning approach, as defined in Australian Standard: *Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds* (AS 4482.1) (Ref 1). The DQO process includes the following steps:

1 State the Problem
2 Identify the Decision
3 Identify Inputs to the Decision
4 Define the Boundary of the Assessment
5 Develop a Decision Rule
6 Specify Acceptable Limits on Decision Errors
7 Optimise the Design for Obtaining Data

Table 1 summarises the data quality objectives, indicating the components of each step and the sections where the steps have been addressed.

Table 1 - Data Quality Objectives

DQO Step	Section Where DQO Addressed
Define the problem	S 1 Introduction S 1.1 Purpose of Assessment
Identify the problem	S 1 Introduction S 1.2 Site Identification
Identify the inputs of the decision	S 3 Physical Setting S 4 Site History S 5 Site Inspection / Observations
Define the study boundaries	S 1.2 Site Identification S 2 Scope of Works App A Drawing 1
Develop a decision rule	S 6 Contaminants of Concern S 7 Assessment Criteria
Specify tolerable limits on decision errors	S 2 Scope of Work S 12 Limitations of this Report
Optimise the design	S 11 Conclusions and Recommendations

2 SCOPE OF WORK

The PCA was carried out generally in accordance with the staged assessment approach outlined in *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55 – Ref 2) and the *Contaminated Site: Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA – Ref 3).

The site was initially considered to have a low risk of contamination given the rural setting and undeveloped nature of the site and, as such, the scope of work undertaken was limited to the scope outlined below (as provided by Johnson Property Group to Council on 23 March 2007).

In brief, DP's scope of works included:

- Collation and interpretation of data from the following sources:-
    - Published public data, including topographical, geological and hydrogeological maps;
    - Aerial photographs;
    - Historical land title records;
    - Groundwater bore licence search;
    - Section 149 (2 & 5) Planning Certificate;
    - NSW DEC public register of contaminated sites database search;
- Site inspection to provide a visual assessment of conditions and potential contamination sources.
- Assessment of acid sulphate soil conditions including:
    - Excavation of 26 test pits distributed across the site;
    - Screening of 78 soil samples collected for acid sulphate soils.
    - Analytical testing of seven selected soil samples at a NATA accredited laboratory for Suspension Peroxide Oxidation Combined Acidity & Sulphate (SPOCAS).
- Preparation of a report outlining the works undertaken, the findings of the PCA and ASSA. The report format has been developed with respect to NSW EPA *Guidelines for Consultants Reporting on Contaminated Sites* (Ref 3).

3 PHYSICAL SETTING

3.1 Topography

Reference to the topographical map for Morisset (Ref 4) and a site inspection indicates that topography at the site is dominated by Dora Creek along the northern boundary.

The site consisted of undulating slopes generally falling towards the north-east with slopes of less than 5°. Several drainage gullies direct surface water runoff north towards Dora Creek. Several smaller drainage ditches direct surface water runoff to the south-western side of Lot 2 where some ponded surface water was observed during the site walkover. Water was also observed in Dora Creek. The site was generally grass surfaced with mature trees lining Dora Creek and some of the gullies.

3.2 Adjacent Site Uses

Surrounding land uses include the following:

- North – Across Dora Creek are several semi-rural residential properties and Alton Villas, Avondale Retirement Village.
- East – Across Freemans Drive are rural/residential properties and some bushland surrounding Dora Creek.
- South – Church with graveyard, fire station and rural properties.
- West – Rural properties with primarily grazing land uses

The potential for contamination from the surrounding land uses to have impacted the subject site is considered to be low.

3.3 Geology & Soil Landscape

Reference to the draft 1:100 000 Geological Series Gosford-Lake Macquarie (Ref 5) indicates the site is underlain by the Quaternary sands and gravels.

Reference to the 1:100 000 Soil Landscape Series Sheet (Ref 6) prepared by the Department of Conservation and Land Management of NSW indicates that the soil landscape for the site forms part of the Yarramalong group. The landscape in this group generally consists of gently undulating dissected alluvial plains on Quaternary sediments (see above), slope gradients of <5%, local relief to 10 m, meander scrolls, terraces, oxbows and back swamps.

The Soil Landscape Sheet also suggests limitations of flooding, foundation hazard, seasonal water logging, stream bank erosion and low fertility.

3.4 Acid Sulphate Soils

Reference to the Lake Macquarie Acid Sulphate Soil Risk Map (Ref 6), prepared by the Department of Land and Water Conservation (DLWC), indicates that there is a probability of acid sulphate soils within 1 metre of the natural ground surface within the site.

Based on the mapping, intrusive investigation of acid sulphate soil conditions was warranted. Results the investigation is presented in Sections 8 and 9.

3.5 Groundwater

The regional groundwater flow regime is believed to be towards Dora Creek, which is located along the northern boundary of the site. Given the site's elevation (approximately 5 m AHD), the permanent groundwater table is likely to be present within 5 m of the ground surface, particularly within the lower lying areas of the site.

It is noted that groundwater was observed in pits 4 and 7 - 12, at depths ranging from 1.9 m to 2.7 m undertaken as part of the ASSA.

A registered groundwater bore search was undertaken as part of the PCA. The information provided by the Department Natural Resources (DNR) is presented in Appendix B. Two registered bores were located within a 1.0 km radius of the site. The closest bore (GW067263) appears to be located in the south-east corner of the site. The authorised purpose of the bore was domestic stock. The bore was installed to a depth of 6.0 m including a reported 3.0 m into fractured rock. The next closest registered bore was located approximately 500 m south-west of the site and also has similar construction installation/details.

4 SITE HISTORY

4.1 Regulatory Notices Search

The NSW EPA web site was searched for any Regulatory Notices that may be current on the site issued under the *Contaminated Land Management Act* 1997. Information obtained indicated that no Notices or Orders were issued for the site.

4.2 Historical Aerial Photographs

Historical aerial photographs were reviewed dating back to the earliest available record (1954) and approximately every 10 or 20 years thereafter to assess any major changes to the site and surrounding areas during this period. The following historical aerial photographs were reviewed:

- Photograph – Lake Macquarie NSW 45-5027, Run 2L, dated 07.03.54;
- Photograph – Gosford – Lake Macquarie NSW 1442 5117, dated 14.08.66;
- Photograph – Gosford NSW 2315 06 Run 2, dated 27.05.75;
- Photograph – Gosford NSW 4039 Run 3, dated 20.09.91; and
- Photograph – Gosford NSW 4585 (M2511), Run 2, Scale 1:25 000, dated 25.02.06.

1954

The majority of the site appears to be developed for a rural grazing land use with vegetation consisting of grass lands, with scattered trees concentrated around Dora Creek. Surrounding areas appeared to be either undeveloped or developed for a rural (grazing) land use. Buildings, appearing to be a residence and church, were observed adjacent to Martinsville Road. None of the surrounding properties had an intensive agricultural land use such as orchards, market gardens or poultry farms.

1966

The site and surrounding areas appear largely unchanged from the 1954 photograph. An off-site orchard land use is visible across Freemans Drive to the south-east of the site.

1975

The site and surrounding areas appear largely unchanged from the 1954 photograph. An additional residence and possibly the fire station have been constructed adjacent to the southern boundary of the site. The former off-site orchard land use across Freemans Drive to the south-east of the site was no longer present. Large sheds, most likely poultry farms, were visible surrounding the site, although none of these land uses were present on adjacent properties. An off-site orchard land use is visible across Dora Creek to the north of the site.

1991

The site and surrounding areas appear largely unchanged from the 1975 photograph and were also consistent with that encountered during the site walkover inspection.

The site to the north-west appears in the process of development for a medium density residential land use (Alton Villas Avondale Retirement Village). The area to the south-east has been developed for residential housing. The off-site orchard land use, visible across Dora Creek to the north of the site in the 1975 photograph, was no longer present.

2006

The site and surrounding areas appear to have remained generally unchanged, although trees onsite have gradually become sparser. The neighbourhood park including outdoor auditorium appears to have been constructed.

Change in Land Use

Since the first aerial photograph in 1954, the site appears to have remained generally developed for a rural grazing land use. An area in the south-east corner of the site was recently developed as park including outdoor auditorium. No intensive agricultural land uses such as orchards or market gardens were observed on-site. The off-site orchard land uses observed are unlikely to have affected the contamination status of the site as both of the former land uses were physically separated from the site by features such as Freemans Drive and Dora Creek.

4.3 Information Obtained From Council

A certificate issued under Section 149 (2 & 5) of the Environmental Planning and Assessment Act 1979 was obtained for the site (dated 26 March 2007). A copy of the certificates is provided in *Appendix B*. No information indicating that the site may be potentially contaminated land by reason of its past/present use was provided in the certificates.

A property enquiry was completed through Lake Macquarie City Council's web site. Council records showed that two previous development applications had been submitted for the site. Applications in 1992 and 1993 were for a Community Use-Erection of Foot Bridge and Toilets, and Music/Entertainment Pavilion. No other pertinent information was obtained.

4.4 Historical Land Titles

The results of the title deed searches are summarised in Tables 2 and 3 below and a copy of the search results are included as Appendix B.

Table 2 – Results of Title Deed Search of Lot 2

Date	Registered Proprietor	Occupation/Possible Land Use
September 1906	Margaret Smith	Unknown / Possibly Rural or Vacant
August 1910	Leslie Edward Taylor	Bridge Carpenter / Possibly Grazing or Vacant
January 1938	# Australian Conference Association Limited	Company / Possibly Grazing

# Denotes current registered proprietor

Table 3 – Results of Title Deed Search of Lot 34

Date	Registered Proprietor	Occupation/Possible Land Use
June 1911	William Joseph Russell	Grazier / Grazing
March 1920	Christian Rosendahl	Unknown / Unknown, Possibly Grazing
May 1923	# Australian Conference Association Limited	Company / Possibly Grazing

# Denotes current registered proprietor

A summary of the historical title deeds indicates that the site has probably been vacant or had a primarily rural land use since around 1911. The information acquired does not indicate that the site may be potentially contaminated as a result of historical land use at the site.

5 SITE INSPECTION / OBSERVATIONS

A site walkover and inspection was undertaken as part of the site activities outlined in Section 2. The site walkover was undertaken on the 11 April 2007 by Brent Kerry (Environmental Engineer / Associate) of DP. The site features observed during the inspection are summarised below and are identified in Drawing 1 (Appendix A) where appropriate.

The general site condition is consistent with that observed in the 2001 aerial photograph, with the site generally consisting of a clear area with generally mature trees scattered across the site, although the trees were concentrated in areas adjacent to Dora Creek and the gullies on-site.

The south-east corner of the site consisted of a public park with playground, picnic, toilet and outdoor auditorium facilities. Some minor reworking of on-site soils may have occurred in this area of the site as part of the construction of the infrastructure, although given the site's elevation no significant quantities of filling appear to have been imported to site.

Photo 1 – Playground & Community Facilities

Remaining areas of the site appear to have continued to be used for a rural grazing land use with cattle stockyards adjacent to Freemans Drive (north-east corner of site). No significant filling was observed in the remaining areas of the site, although an area within the adjacent church site included a raised area with a retaining wall on the adjoining property boundary. This raised area contained a sewer pump station (Photo 3).

Photo 2 – Remaining Site Area from Freemans Drive

Photo 3 – Filling Retained on Adjacent Site Boundary

Generally no significant signs of cutting or filling were observed at the site, other than those areas mentioned above. This is consistent with the subsurface conditions encountered in the test pits excavated for the ASSA (Section 8.2). No areas of surfical waste materials were observed at the site, other than fragments of a metal bath tub located in a small gulley (Photo 4) and stockpile of trees and branches positioned towards the southern site boundary (Photo 5). Neither of the surficial materials would affect the site's contamination status.

Photo 4 – Metal Bath Tub

Photo 5 – Stockpiled Trees & Branches

6 CONTAMINANTS OF CONCERN

6.1 Potential Contamination Sources

Based on the findings of the desktop review and site walkover, DP considers that there is a low potential for contamination given the generally rural (grazing) land use. The more intensive agricultural land uses such as the nearby historical orchard land uses were considered not to have the potential to adversely affect the site, as the land uses are not directly adjacent to the site boundary. Therefore, any overspray of chemicals applied to these adjacent land uses would not have a significant affect on the contamination status of the subject site.

7 ASSESSMENT CRITERIA

The results of any future intrusive investigations or bulk soils that are imported during redevelopment of the site should be compared to appropriate assessment criteria selected from the following guidelines.

- NSW EPA (2006). Contaminated Sites - Guidelines for the Site Auditor Scheme (Ref 8);
- NSW EPA (1994). Contaminated Sites - Guidelines for Assessing Service Station Sites, (Ref 9);
- NSW EPA (1999). Environmental Guidelines: Assessment, Classification & Management of Liquid and Non-Liquid Wastes (Ref 10);
- NSW Acid Sulphate Soil Management Advisory Committee (1998). *Acid Sulphate Soil Manual (ASSM)*, (Ref 11)

The *NSW EPA Guidelines for the NSW Site Auditor Scheme* contains National Environmental Health Forum (NEHF) investigation levels for various beneficial use scenarios including: low density residential (A), high density residential (D), recreational (E) and commercial/industrial (F). The levels of contaminants in soil are to be assessed against the adopted threshold concentrations, viz. the Health based Investigation levels (HIL) for recreational land uses and Provisional phytotoxicity based investigation levels for sandy loams (PPIL). In addition to the threshold concentrations outlined in the above guidelines consideration of aesthetic issues (ie. soil odours or discolouration) is also required by Reference 8.

The *NSW EPA Guidelines for Assessing Service Station Sites* are used to assess Petroleum Hydrocarbons (Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethyl Benzene & Xylenes (BTEX)) contamination across the site. The criteria adopted for TPH and BTEX are those for a sensitive land use.

The *NSW EPA Environmental Guidelines for the Assessment, Classification & Management of Liquid & Non-Liquid Wastes* should be used to assess the waste class of the fill/soils for possible off-site disposal or for material that are imported to site. The waste classification guidelines are for waste disposal purposes only and are not relevant for assessing the suitability of site soils for the proposed land use.

Reference is also made to the NSW Acid Sulphate Soil Management Advisory Committee, *Acid Sulphate Soil Manual (ASSM)* for the assessment of acid sulphate soils (ASS). Results of ASS screening and further analytical tests were compared to action criteria described in the manual and were used to assess the likely presence of acid sulphate soils and/or the need for management of acid sulphate soils during redevelopment.

8 FIELD WORK

8.1 Sampling Rationale & Laboratory Methods

The field work for the ASSA was undertaken on 26 and 27 March 2007. The field investigation comprised excavation of 26 test pits (Pit 1 to Pit 26) providing broad coverage of the site. The pits were excavated using a Case Backhoe fitted with a 450 mm wide bucket. Test pits were excavated to depths ranging from 2.5 to 2.8 m.

The test pits were logged by a geo-environmental engineer who also collected soil samples at regular depth intervals for strata identification and testing purposes. Sampling was carried out in accordance with the DP Field Procedures Manual.

The approximate investigation locations are presented on *Drawing 1, Appendix A*.

Acid sulphate pH screening tests (pH in water and pH in hydrogen peroxide) were undertaken on seventy six soil samples collected from the test pits. The selected samples were screened for the presence of acid sulphate soil by measuring the soil pH in distilled water and the soil pH after forced oxidation using hydrogen peroxide. ASSM (Ref 11) indicates that the oxidation of pyrite (or actual acid sulphate soil conditions) occurs when the soil pH in water is less than 4.0, and that the potential for forming acidic conditions exists when the difference between the soil pH in water and soil pH after forced oxidation using hydrogen peroxide is greater than 1.0. Results of initial screening are summarised in Table 4 below.

Based on the results of the screening tests, seven soil samples were forwarded to SGS Australia Pty Ltd for Suspension Peroxide Oxidation Combined Acidity & Sulphate (SPOCAS) testing. Detailed results are contained in the laboratory report sheets in Appendix D. The results of the acid sulphate screening tests and laboratory analysis are summarised in Table 4 below.

8.2 Field Work Results and Observations

Results of the field work are summarised below and are included in the test pit report sheets attached in *Appendix C*. These reports should be read in conjunction with the attached notes which define the descriptive terms and classification methods used.

The pits undertaken as part of the ASSA encountered slightly varied conditions across the site, and a broad summary is given below.

SILT	Dark brown silt with some fine grained sand with a grass covering extending to depths 0.3 – 0.6 m.
SANDY CLAY	Orange brown generally firm or stiff alluvial sandy clay with some silt generally extending to the limit of investigation (2.5 – 2.8 m). Several pits encountered clayey sands or sands below depths of approximately 1.5 m.

Free groundwater was observed in pits 4 and 7 - 12, at depths ranging from 1.9 m to 2.7 m. Groundwater levels are affected by recent weather conditions and soil permeability, and can therefore vary with time.

Visual and olfactory "screening" identified no distinct signs of potential contamination. No filling was encountered in any of the 26 test pits excavated across the site.

9 LABORATORY TESTING

9.1 Soil Laboratory Results

Acid sulphate pH screening tests (pH in water and pH in hydrogen peroxide) were undertaken on seventy six soil samples collected from the test pits.

Based on the results of the screening tests, seven soil samples were forwarded to SGS Australia Pty Ltd for SPOCAS testing. Detailed results are contained in the laboratory report sheets, presented in Appendix D. The results of the acid sulphate screening tests and laboratory analysis are summarised in Table 4 below.

Table 4 – Results of Screening Tests and Laboratory Results

Pit	Sample Depth [a] (m)	Sample Description	Screening Test Results				Laboratory Results					
			pH			Strength of Reaction [b]						
			pH_F	pH_{FOX}	pH_F - pH_{FOX}		pH_{KCL}	pH_{OX}	S_{POS} (%S)	TAA (moles H+/tonne)	TPA (moles H+/tonne)	TSA (moles H+/tonne)
01	0.5	Dark brown SILT	6.08	3.45	2.63	2	-	-	-	-	-	-
	1.0	Orange brown SANDY CLAY	5.41	3.82	1.59	1	-	-	-	-	-	-
	1.5	Orange brown SANDY CLAY	5.26	3.71	1.55	2	-	-	-	-	-	-
02	1.5	Orange brown SANDY CLAY	5.37	4.65	0.72	-	-	-	-	-	-	-
	2.0	Orange brown mottled grey SANDY CLAY	5.75	4.35	1.40	1	-	-	-	-	-	-
	2.5	Orange brown mottled grey SANDY CLAY	5.88	5.13	0.75	-	-	-	-	-	-	-
03	0.5	Dark brown SILT	4.60	2.76	1.84	2	4.5	7.2	0.014	**29**	<5	<5
	1.0	Orange brown SANDY CLAY	5.41	3.63	1.78	-	5.4	6.5	<0.005	6	<5	<5
	1.5	Orange brown SANDY CLAY	5.54	4.57	0.97	-	-	-	-	-	-	-
04	1.5	Orange brown SANDY CLAY	4.83	3.85	0.98	-	-	-	-	-	-	-
	2.0	Orange brown mottled dark grey SANDY CLAY	4.56	3.73	0.83	-	-	-	-	-	-	-
	2.5	Orange brown mottled dark grey SANDY CLAY	4.84	3.82	1.02	-	-	-	-	-	-	-
05	0.5	Dark brown SILT	4.95	4.22	0.73	-	-	-	-	-	-	-
	1.0	Orange brown CLAY	5.12	4.09	1.03	1	-	-	-	-	-	-
	1.5	Orange brown CLAY	5.18	4.25	0.93	-	-	-	-	-	-	-
Guideline		Sands to loamy sands	<4[c]	<3.5[d]	≥1	-	-	-	0.03	18	18	18
		Sandy loams to light clays							0.06[e]/0.03[f]	36[e]/18[f]	36[e]/18[f]	36[e]/18[f]
		Medium to heavy clays							0.1[e]/0.03[f]	62[e]/18[f]	62[e]/18[f]	62[e]/18[f]

Legend to Table 4:

a. Depth below ground surface
b. Strength of Reaction
1 denotes no or slight reaction
2 denotes moderate reaction
3 denotes violent reaction
F denotes bubbling/frothy reaction indicative of organics of material
C denotes colour change
H denotes heat change
O denoted odour
c For actual acid sulphate soils (AASS)
d Indicative value only for Potential Acid Sulphate Soils (PASS)
e ASSMAC Action Criteria for disturbance of 1-1000 tonnes of material
f ASSMAC Action Criteria for disturbance of more than 1000 tonnes
NT Not Tested

Table 4 – Results of Screening Tests and Laboratory Results (con't)

Pit	Sample Depth [a] (m)	Sample Description	Screening Test Results				Laboratory Results					
			pH			Strength of Reaction [b]	pH_{KCL}	pH_{OX}	S_{POS} (%S)	TAA (moles H+/tonne)	TPA (moles H+/tonne)	TSA (moles H+/tonne)
06	1.5	Orange brown mottled orange grey CLAY	5.23	5.09	0.14	-	-	-	-	-	-	-
	2.0	Orange brown mottled grey SANDY CLAY	5.53	4.76	0.77	-	-	-	-	-	-	-
	2.5	Orange brown mottled grey CLAY	5.57	4.75	0.82	-	-	-	-	-	-	-
07	0.5	Dark brown SILT	4.82	3.23	1.59	1	-	-	-	-	-	-
	1.0	Orange brown CLAY	5.01	3.41	1.60	1	4.2	3.8	0.009	**61**	**60**	<5
	1.5	Orange brown CLAY	4.91	3.67	1.24	1	-	-	-	-	-	-
08	1.5	Orange brown mottled grey SANDY CLAY	4.85	4.33	0.52	-	-	-	-	-	-	-
	2.0	Orange red mottled light grey CLAYEY SAND	5.16	4.42	0.74	-	-	-	-	-	-	-
09	0.3	Dark brown SILT	4.98	2.86	2.12	1C	4.1	5.1	0.020	**67**	**19**	<5
	1.0	Grey mottled orange brown SILT	5.19	4.82	0.37	-	-	-	-	-	-	-
	1.5	Grey mottled orange brown SILT	5.06	4.50	0.56	-	-	-	-	-	-	-
10	1.5	Orange brown mottled grey CLAY	4.94	3.77	1.17	1	-	-	-	-	-	-
	2.5	Orange brown mottled grey CLAYEY SAND	5.29	4.43	0.86	1	-	-	-	-	-	-
Guideline		Sands to loamy sands	<4[c]	<3.5[d]	≥1	-	-	-	0.03	18	18	18
		Sandy loams to light clays							0.06[e]/0.03[f]	36[e]/18[f]	36[e]/18[f]	36[e]/18[f]
		Medium to heavy clays							0.1[e]/0.03[f]	62[e]/18[f]	62[e]/18[f]	62[e]/18[f]

Legend to Table 4:

a *Depth below ground surface*
b *Strength of Reaction*
1 *denotes no or slight reaction*
2 *denotes moderate reaction*
3 *denotes violent reaction*
F *denotes bubbling/frothy reaction indicative of organics of material*
C *denotes colour change* *O* *denoted odour*
H *denotes heat change*

c *For actual acid sulphate soils (AASS)*
d *Indicative value only for Potential Acid Sulphate Soils (PASS)*
e *ASSMAC Action Criteria for disturbance of 1-1000 tonnes of material*
f *ASSMAC Action Criteria for disturbance of more than 1000 tonnes*
NT *Not Tested*

Table 4 – Results of Screening Tests and Laboratory Results (con't)

Pit	Sample Depth [a] (m)	Sample Description	Screening Test Results				Laboratory Results					
			pH			Strength of Reaction [b]	pH_{KCL}	pH_{OX}	S_{POS} (%S)	TAA (moles H+/tonne)	TPA (moles H+/tonne)	TSA (moles H+/tonne)
11	0.5	Orange brown mottled grey CLAY	4.72	4.11	0.61	-	-	-	-	-	-	-
	1.0	Orange brown mottled grey CLAY	4.87	4.26	0.61	-	-	-	-	-	-	-
	1.5	Orange brown mottled grey CLAY	4.70	4.33	0.37	-	-	-	-	-	-	-
12	1.5	Orange brown mottled orange grey CLAYEY SAND	4.99	4.97	0.02	2	-	-	-	-	-	-
	2.0	Orange brown mottled orange grey CLAYEY SAND	5.68	5.23	0.45	2	-	-	-	-	-	-
	2.5	Orange brown mottled orange grey CLAYEY SAND	6.00	5.05	0.95	1	-	-	-	-	-	-
13	0.5	Orange brown SANDY CLAY	5.47	4.35	1.12	-	-	-	-	-	-	-
	1.0	Orange brown SANDY CLAY	5.10	4.52	0.58	-	-	-	-	-	-	-
	1.5	Orange brown SANDY CLAY	5.09	4.51	0.58	-	-	-	-	-	-	-
14	1.5	Orange brown SANDY CLAY	5.50	4.53	0.97	-	-	-	-	-	-	-
	2.5	brown CLAYEY SAND	5.53	4.48	1.05	-	-	-	-	-	-	-
15	0.6	Orange brown mottled dark grey CLAY	5.32	4.63	0.69	3	-	-	-	-	-	-
	1.2	Orange brown mottled light grey CLAY	4.84	4.22	0.62	-	-	-	-	-	-	-
	1.5	Orange brown mottled light grey CLAY	4.93	4.24	0.69	-	-	-	-	-	-	-
Guideline		Sands to loamy sands	<4[c]	<3.5[d]	≥1	-	-	-	0.03	18	18	18
		Sandy loams to light clays							0.06[e]/0.03[f]	36[e]/18[f]	36[e]/18[f]	36[e]/18[f]
		Medium to heavy clays							0.1[e]/0.03[f]	62[e]/18[f]	62[e]/18[f]	62[e]/18[f]

Legend to Table 4:

a *Depth below ground surface*
b *Strength of Reaction*
1 *denotes no or slight reaction*
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C *denotes colour change* *O* *denoted odour*
H *denotes heat change*
c *For actual acid sulphate soils (AASS)*
d *Indicative value only for Potential Acid Sulphate Soils (PASS)*
e *ASSMAC Action Criteria for disturbance of 1-1000 tonnes of material*
f *ASSMAC Action Criteria for disturbance of more than 1000 tonnes*
NT *Not Tested*

Table 4 – Results of Screening Tests and Laboratory Results (con't)

Pit	Sample Depth [a] (m)	Sample Description	Screening Test Results				Laboratory Results					
			pH			Strength of Reaction [b]	pH_{KCL}	pH_{OX}	S_{POS} (%S)	TAA (moles H+/tonne)	TPA (moles H+/tonne)	TSA (moles H+/tonne)
16	1.2	Orange brown mottled orange grey CLAY	5.04	4.14	0.90	-	-	-	-	-	-	-
	2.0	Orange brown mottled grey CLAY	4.62	4.10	0.52	-	-	-	-	-	-	-
	2.5	Orange brown mottled grey CLAY	4.94	3.63	1.31	-	5.3	5.4	<0.005	12	10	<5
17	0.6	Orange brown SANDY CLAY	5.24	4.12	1.12	1	-	-	-	-	-	-
	1.2	Orange brown mottled orange grey CLAY	5.40	4.71	0.69	-	-	-	-	-	-	-
	1.5	Orange brown mottled orange grey CLAY	5.53	4.00	1.53	-	-	-	-	-	-	-
18	1.2	Orange brown SANDY CLAY	5.68	5.10	0.58	-	-	-	-	-	-	-
	2.0	Grey brown SAND	5.58	4.69	0.89	-	-	-	-	-	-	-
	2.5	Grey brown SAND	5.52	4.92	0.60	-	-	-	-	-	-	-
19	0.6	Orange brown mottled grey CLAY	5.63	5.03	0.60	3	-	-	-	-	-	-
	1.2	Orange brown mottled grey CLAY	5.30	4.70	0.60	-	-	-	-	-	-	-
	1.5	Orange brown mottled grey CLAY	5.26	4.42	0.84	-	-	-	-	-	-	-
20	1.2	Light brown SAND	5.61	3.80	1.81	-	5.5	6.3	0.005	10	<5	<5
	2.0	Light brown SAND	5.55	4.32	1.23	-	-	-	-	-	-	-
	2.5	Light brown CLAYEY SAND	5.54	3.61	1.93	-	-	-	-	-	-	-
Guideline		Sands to loamy sands	<4[c]	<3.5[d]	≥1		-	-	0.03	18	18	18
		Sandy loams to light clays							0.06[e]/0.03[f]	36[e]/18[f]	36[e]/18[f]	36[e]/18[f]
		Medium to heavy clays							0.1[e]/0.03[f]	62[e]/18[f]	62[e]/18[f]	62[e]/18[f]

Legend to Table 4:

a *Depth below ground surface*
b *Strength of Reaction*
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C *denotes colour change* *O* *denoted odour*
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f *ASSMAC Action Criteria for disturbance of more than 1000 tonnes*
NT *Not Tested*

Table 4 – Results of Screening Tests and Laboratory Results (con't)

Pit	Sample Depth [a] (m)	Sample Description	Screening Test Results				Laboratory Results					
			pH			Strength of Reaction [b]	pH_{KCL}	pH_{OX}	S_{POS} (%S)	TAA (moles H+/tonne)	TPA (moles H+/tonne)	TSA (moles H+/tonne)
21	0.6	Orange brown SANDY CLAY	5.69	4.52	1.17	1	-	-	-	-	-	-
	1.2	Orange brown SANDY CLAY	5.43	4.82	0.61	1	-	-	-	-	-	-
	1.5	Orange brown mottled grey CLAY	5.45	4.75	0.70	1	-	-	-	-	-	-
22	1.2	Grey mottled orange CLAY	5.15	4.46	0.69	-	-	-	-	-	-	-
	2.0	Grey mottled orange CLAY	4.98	4.14	0.84	-	-	-	-	-	-	-
	2.5	Grey mottled brown CLAYEY SAND	5.11	3.82	1.29	-	-	-	-	-	-	-
23	0.6	Orange brown SANDY CLAY	5.26	4.57	0.69	1	-	-	-	-	-	-
	1.2	Orange brown SANDY CLAY	5.62	4.63	0.99	-	-	-	-	-	-	-
	1.5	Orange brown SAND	5.60	5.18	0.42	-	-	-	-	-	-	-
24	1.2	Orange brown mottled grey SANDY CLAY	5.10	4.06	1.04	1	-	-	-	-	-	-
	2.0	Light brown mottled orange brown CLAYEY SAND	5.65	5.02	0.63	2	-	-	-	-	-	-
	2.5	Light brown mottled orange brown CLAYEY SAND	5.50	3.48	2.02	-	5.7	6.0	<0.005	6	<5	<5
Guideline		Sands to loamy sands	<4[c]	<3.5[d]	≥1	-	-	-	0.03	18	18	18
		Sandy loams to light clays							0.06[e]/0.03[f]	36[e]/18[f]	36[e]/18[f]	36[e]/18[f]
		Medium to heavy clays							0.1[e]/0.03[f]	62[e]/18[f]	62[e]/18[f]	62[e]/18[f]

Legend to Table 4:

a *Depth below ground surface*
b *Strength of Reaction*
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f *ASSMAC Action Criteria for disturbance of more than 1000 tonnes*
NT *Not Tested*

Table 3 – Results of Screening Tests and Laboratory Results (con't)

Pit	Sample Depth [a] (m)	Sample Description	Screening Test Results				Laboratory Results					
			pH			Strength of Reaction [b]	pH_{KCL}	pH_{OX}	S_{POS} (%S)	TAA (moles H+/tonne)	TPA (moles H+/tonne)	TSA (moles H+/tonne)
25	0.6	Orange brown SANDY CLAY	4.35	4.33	0.02	-	-	-	-	-	-	-
	1.2	Orange brown SAND	5.40	5.05	0.35	1	-	-	-	-	-	-
	1.5	Orange brown SAND	5.48	4.70	0.78	1	-	-	-	-	-	-
26	1.2	Orange brown SANDY CLAY	4.82	4.07	0.75	-	-	-	-	-	-	-
	2.0	Light brown CLAYEY SAND	5.30	4.67	0.63	-	-	-	-	-	-	-
	2.5	Light brown CLAYEY SAND	5.30	4.69	0.61	-	-	-	-	-	-	-
Guideline		Sands to loamy sands	<4[c]	<3.5[d]	≥1	-	-	-	0.03	18	18	18
		Sandy loams to light clays							0.06[e]/0.03[f]	36[e]/18[f]	36[e]/18[f]	36[e]/18[f]
		Medium to heavy clays							0.1[e]/0.03[f]	62[e]/18[f]	62[e]/18[f]	62[e]/18[f]

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a *Depth below ground surface*
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NT *Not Tested*

10 DISCUSSION OF RESULTS

10.1 Phase 1 Contamination Assessment

DP considers that overall the potential for contamination at the site is low based on following information:

- Historical rural (grazing) land use generally continuing to-date;
- No signs of potential contamination identified during the site walkover; and
- Test pit investigations undertaken as part of the ASSA did not encounter any filling, or other visual or olfactory signs of contamination.

10.2 Acid Sulphate Soil Assessment

A discussion of the ASSA results (summarised in Section 9) are provided below.

POCAS testing evaluates the "sulphur trail" and the "acid trail" of a soil sample to determine if actual acid sulphate soil (AASS) or potential acid sulphate soil (PASS) is present. The "sulphur trail" measures the unoxidised sulphur compounds (S_{pos}), whereas the "acid trail" is measured by the total actual acidity (TAA), the total potential acidity (TPA) or the total sulphidic acidity (TSA).

The action criteria for the "sulphur trail" and the "acid trail" specified in the ASSM guidelines (Ref 11) are a function of the texture of the soil and quantity of soil disturbed. AASS or PASS are considered to be present if either the "sulphur trail" or the "acid trail' action criteria are exceeded (refer to Table 4 for criteria).

The action criteria were exceeded in the following samples:

- Pit 3 at 0.5 m reported a TAA of 29 moles H+ / tonne in silt with trace fine grained sand.
- Pit 7 at 1.0 m reported a TAA of 61 moles H+ / tonne and TPA of 60 moles H+ / tonne in clay with some silt.
- Pit 9 at 0.3 m reported a TAA of 67 moles H+ / tonne and TPA of 19 moles H+ / tonne in silt with trace to some fine grained sand.

The results of the SPOCAS testing were evaluated against the action criteria for excavation of greater than 1000 tonnes of soil. The results show that the acid trail is above the criteria in three of the seven samples tested. The sulphur trail, however, was below the action criteria in all samples tested.

The investigation results indicate that:

- The soils have been laid down in an alluvial environment, with inflows of stream alluvium that results in rapid lateral and vertical changes in material types;
- Remnant sulphide content is generally low as a result of prior oxidation and only isolated samples retain detectable levels of oxidisable sulphide, although the levels are below that of the ASSM Guidelines (Ref 11);
- The retained acid content of some soils are in excess of threshold guidelines for AASS and is probably the result of oxidation of a low (prior) sulphide content.
- The AASS extend from near surface silt soils (ie. Pit 9 @ 0.3 m) to the underlying clay soils (ie, Pit 9 @ 1.0 m). Further the screening results suggest that areas affected by ASSS cannot be segregated from those area not affected by AASS.

Mobilisation of the acid within these soils and resulting leachate may have an adverse effect on the surrounding environment, such as Dora Creek.

11 CONCLUSIONS AND RECOMMENDATIONS

Douglas Partners Pty Ltd (DP) conducted a non-intrusive PCA and an intrusive Acid Sulphate Soil Assessment (ASSA) at the site identified as Lot 34 in Deposited Plan 736908 and Lot 2 in Deposited Plan 517245, Freemans Drive, Cooranbong, NSW. It is noted that an unformed Babers Road reserve bisects Lots 34 and 2 and as such the unformed road reserve will form part of the final rezoning application and was therefore included in this assessment.

We understand that the PCA was required to assess the potential for contamination prior to the proposed redevelopment of the site for a recreational land use. The ASSA was required to assess for the presence or absence of acid sulphate soils that may be encountered/disturbed during redevelopment.

With regards to the PCA, on the basis of the information gathered during the site walkover/history review, DP considers that overall the potential for contamination at the site is low and that the site is compatible with the proposed recreational land uses from a contamination standpoint.

The results of the ASSA indicate that acid sulphate soils are present on site and may become an issue if the site is disturbed/excavated during the redevelopment. Therefore, if soils on site are to be disturbed/excavated as part of the proposed development, then it is recommended that redevelopment is undertaken in accordance with a site specific acid sulphate soil management plan prepared in accordance with ASSM (Ref 11). The plan should be prepared following finalisation of development plans and would not prevent the land from being rezoned to allow recreational facilities on the site.

12 LIMITATIONS OF THIS REPORT

DP have performed investigation and consulting services for this project in general accordance with current professional and industry standards for Preliminary Contamination Assessments. The scope of the work was detailed in DP's proposal (Ref 2185) dated 23 March 2007 and accepted by Johnson Property Group Pty Ltd in a written communications dated 21 and 23 March 2007.

The PCA assessment is necessarily based on the results of a desktop site historical search and site inspection only and did not include surface or subsurface sample screening and/or chemical testing. DP does not assume any liability for site conditions not observed or accessible during the time of the inspection. It is noted that this assessment does not constitute a hazardous material building assessment.

Given the site's historical land use there is the potential for isolated areas of filling to be identified prior to and during development of the site. These areas may need to be excavated and the waste materials generated disposed to landfill. If areas of filling are identified during redevelopment of the site then advice should be sought from an appropriately qualified environmental consultant.

This report and associated documentation and the information herein have been prepared solely for the use of Johnson Property Group Pty Ltd any reliance assumed by third parties on this report shall be at such parties own risk. Any ensuing liability resulting from use of the report by third parties cannot be transferred to DP.

DOUGLAS PARTNERS PTY LTD Reviewed by

Brent Kerry
Environmental Engineer / Associate

Ronnie Tong
Principal

Lindsay Rockett
Senior Associate

References:

1. Australian Standard: *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 1: Non-Volatile and Semi-Volatile Compounds* (AS 4482.1).
2. Managing Land Contamination, *Planning Guidelines SEPP 55 – Remediation of Land*, 1998.
3. NSW EPA, *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*, November 1997.
4. Morisset 1:25,000 *Topographic Map,9131-1N,* 2002.
5. NSW Department of Primary Industries: *Provisional Gosford-Lake Macquarie 1:100 000 Geological Series Sheet, 9131 and 9231,* 2006.
6. *Department of Conservation and Land Management, Soil Landscapes of the Gosford – Lake Macquarie, 1993.*
7. *Department of Land and Water Conservation, Lake Macquarie Acid Sulphate Soil Risk Map.*
8. NSW EPA, *Contaminated Sites: Guidelines for the Site Auditor Scheme*, April 2006.
9. NSW EPA, *Contaminated Sites: Guidelines for Assessing Service Station Sites*, December 1994.
10. NSW EPA, *Environmental Guidelines: Assessment, Classification & Management of Liquid & Non-liquid Wastes*, May 1999.
11. Acid Sulphate Soil Management Advisory Committee: *Acid Sulphate Soil Manual*, August 1998.

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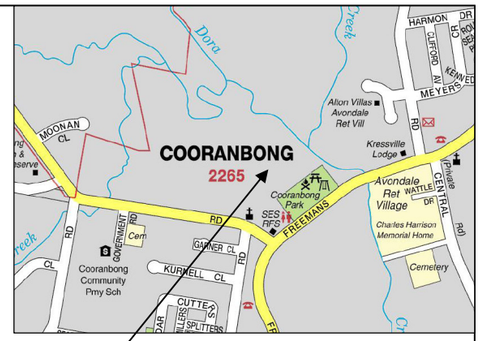
APPENDIX A

NOTES RELATING TO THIS REPORT & DRAWINGS



LOCALITY

SITE

Legend

Approximate Test Pit location and number

N

Notes:

1. Drawing adapted from site layout plan provided by client

Notes:

1. Test locations are approximate only and are were recorded using a hand held GPS unit.

Douglas Partners
Geotechnics · Environment · Groundwater

Sydney, Newcastle, Brisbane, Melbourne, Perth, Wyong, Canberra, Campbelltown, Townsville, Cairns, Darwin

TITLE: TEST LOCATION PLAN
COORANBONG TOWN COMMON
LOT 34 DP 736908 AND LOT 2 DP 517245,
FREEMANS DRIVE, COORANBONG

CLIENT: Johnson Property Group Pty Limited

DRAWN BY:ROL	SCALE: NTS	PROJECT No: 41487	OFFICE: Wyong
APPROVED BY:		DATE: May 2007	DRAWING No: 1

Douglas Partners
Geotechnics · Environment · Groundwater

APPENDIX B

DESKTOP SEARCH RESULTS

LegalStream
strategic legal outsourcing

SUMMARY AS TO OWNERS.

Property: - Martinsville Road, Cooranbong

Description: - Lot 2 D.P. 517245 & Lot 34 D.P. 736908

As regards Lot 2 D.P. 517245

27.09.1906	Margaret Smith	Book 804 No. 929
29.08.1910	Leslie Edward Taylor	Book 915 No. 83
17.01.1938	# Australasian Conference Association Limited	Book 1803 No. 526

 # Current Registered Proprietor

As regards Lot 34 D.P. 736908

26.06.1911	William Joseph Russell	Book 939 No. 29 *(Now in Vol 2950 Fol 18)*
01.03.1920	Christian Rosendahl	Vol 3086 Fol 221
23.05.1923	# Australasian Conference Association Limited	34/736908

 # Current Registered Proprietor

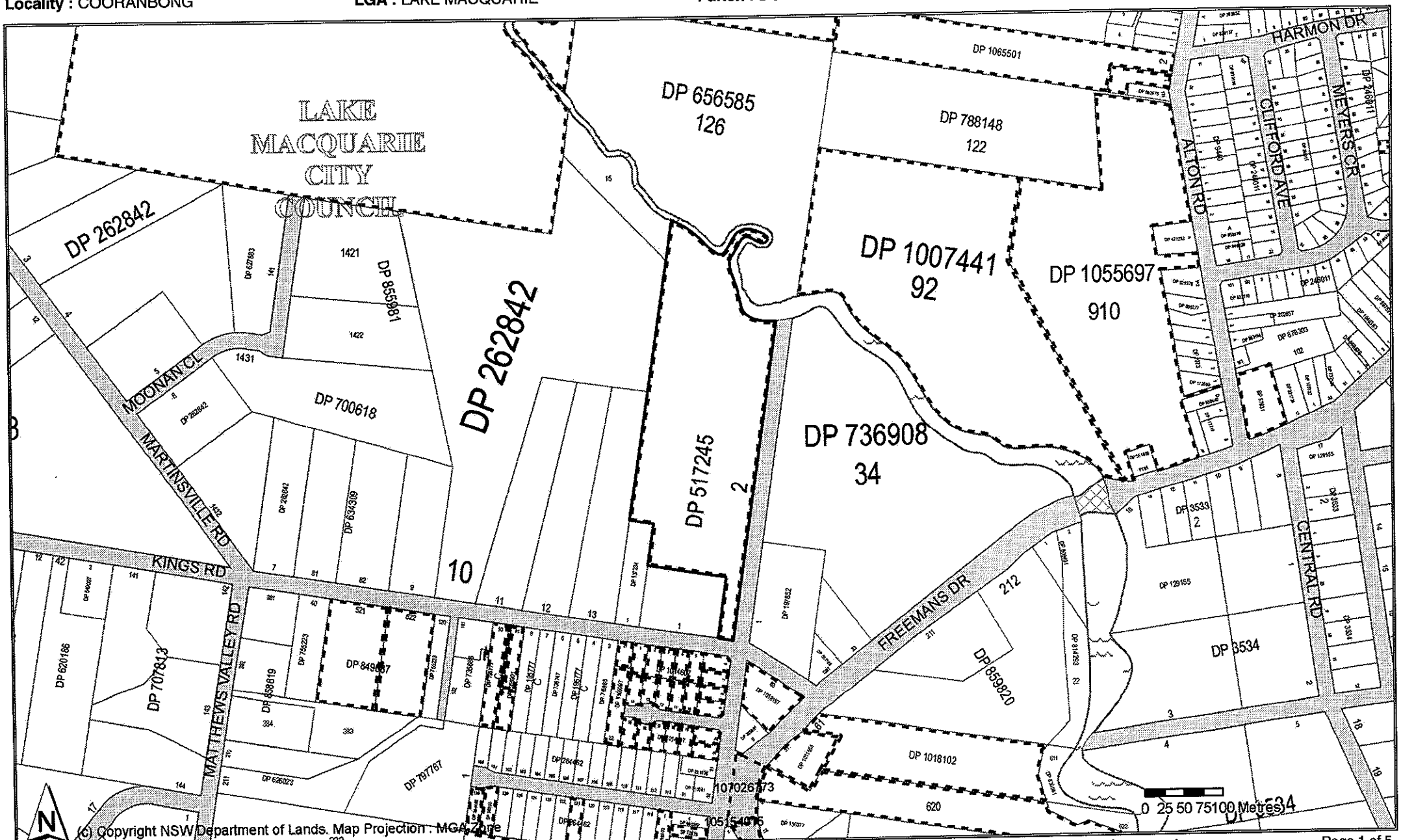
LegalStream Australia Pty Ltd – formerly Burkhart & Company Pty Ltd ACN 002 801 498 ABN 80 002 801 498 30/03/2007
Address 135 King Street Sydney NSW 2000 **DX** 654 Sydney
T 02 9231 0122 F 02 9233 6411 E mail@legalstream.com.au www.legalstream.com.au

Department of Lands
Reliable from the ground up

Cadastral Records Enquiry Report

Requested Parce ot 2 DP 517245 **Ic** **ified Parcel** : Lot 2 DP 517245

Locality : COORANBONG **LGA** : LAKE MACQUARIE **Parish** : DORA **County** : NORTHUMBERLAND



Report Generated 12:45:12 PM, 29 March, 2007

Form 1

OFFICE USE ONLY.

PLAN OF
subdivision of part of Por 18
Deed Book 1803 Nº526

Mun./Shire/City Lake Macquarie

Town or Locality Cooranbong

Parish Dora

County Northumberland Scale 200 feet to an inch

D.P.517245

Registered: 17.12.65

C.A. Nº3520 of 20.8.1965

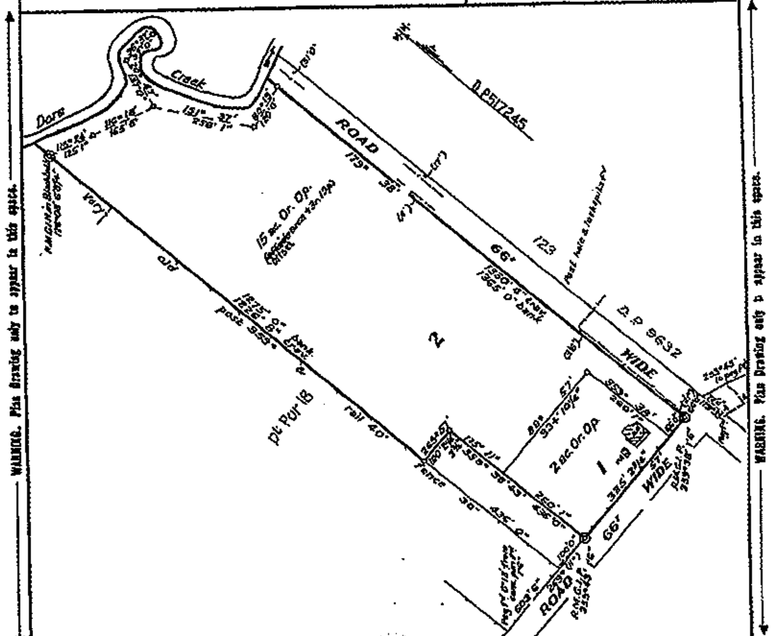
Title System: Old System

Purpose: Subdivision

Ref. Maps: ph

Last Plan: Regd Plan 1591

WARNING. Plan Drawing only to appear in this space.



Signatures, Seals and Statements of intention to dedicate public roads or public reserves or create drainage reserves, easements or restrictions as to user.

I, David Ronald Walpole of PALMER BRUYN & WALPOLE Newcastle, a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made * (1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on 24.7.65

Datum Line of A-B. Signature .... Surveyor registered under Surveyors Act, 1929, as amended

I hereby certify that—
(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and
*(b) the requirements of section 2# of the Metropolitan Water, Sewerage and Drainage Act, 1924, as amended
have been complied with by the applicant in relation to the proposed SUBDIVISION (insert "new road" or "subdivision") set out herein.

Subdivision No. 3520

(Signature) .... Council Clerk.

Date 20/8/65

*NOTE.—This part of certificate to be deleted where the application is ONLY for the opening of a new road or where the land to be subdivided is wholly outside the area of operation of the Metropolitan Water, Sewerage and Drainage Board.

‡ Insert date of survey. * Strike out either (1) or (2).

SURVEYOR'S REFERENCE, 1046

I, Jack Hoyward Watson, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 8th day of April, 1976.

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 517245

FEET	INCHES	METRES
-	11	0.279
1	6	0.457
2	1	0.635
3	6	1.067
4	-	1.219
6	7 5/8	2.016
6	8 1/4	2.038
17	-	5.182
31	-	9.449
66	-	20.117
72	4	22.047
97	-	29.566
100	-	30.480
100	3 3/4	30.575
120	6	36.728
118	-	36.100
125	1	38.125
137	-	41.758
165	8	50.495
175	11	53.619
256	1	78.054
260	1	79.273
334	10 1/4	102.064
335	2 3/4	102.178
436	-	132.893
503	6	153.467
1226	8	373.888
1275	-	388.620
1330	4	405.486
1365	-	416.052

AC RD P	SQ M
- 3 19	3516
2 - -	8094

AC RD P	HA
15 - -	6.07

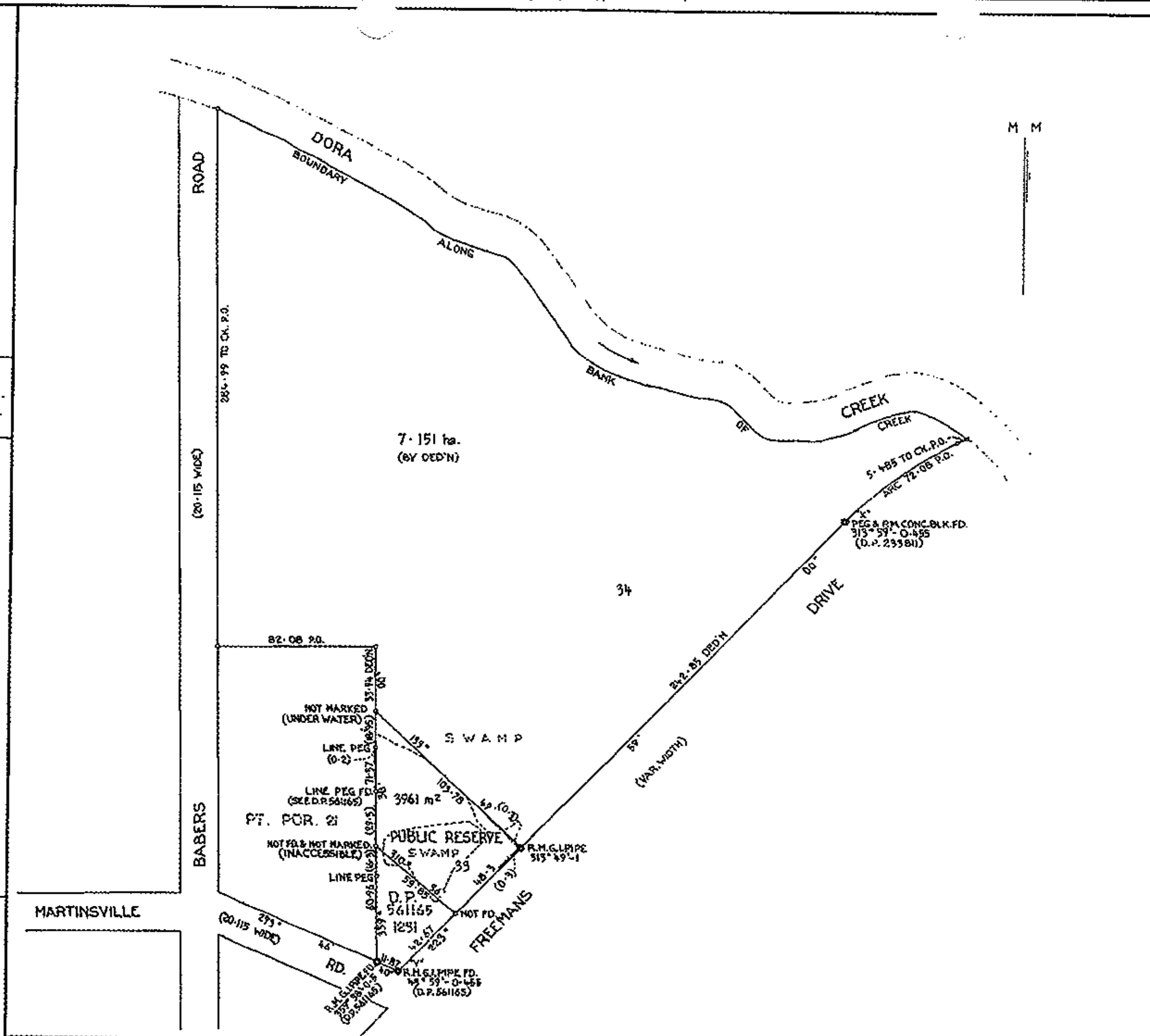
PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY S

Signatures and seals only

AMENDMENTS APPROVED BY COUNCIL.
(SIGNATURE). ...
ACTING COUNCIL CLERK.
17 TH. DECEMBER, 1985.



D.P. 736908

Registered: ... 26-9-1986

C.A. Nº. 170/2-5 OF 18-2-1985

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: U3035-5

Last Plan: D.P. 561165

PLAN
OF SUBDIVISION OF LOT 1232,
D.P. 561165

Reduction Ratio 1: 1500
Lengths are in metres.

City: LAKE MACQUARIE

Locality: COORANBONG

Parish: MANDOLONG

County: NORTHUMBERLAND

~~This is sheet 1 of my plan in ... sheets.~~
(Delete if inapplicable).

I, PETER WILLIAM THOMPSON
of P.O. BOX 21, BOOLAROO, 2284
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan
is accurate and has been made *(1) by me ~~(2) under my immediate supervision~~ in accordance with the Survey Practice Regulations, 1933, and was completed on †
11 TH. FEBRUARY, 1985.

Signature P. Thompson

Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth "X-Y"
*Strike out either (1) or (2). †Insert date of survey.

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

IT IS INTENDED TO CREATE LOT 39 AS PUBLIC RESERVE.

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT, 1919-1964 AS AMENDED, IT IS INTENDED TO CREATE:

1. RESTRICTIONS AS TO USER.

Council Clerk's Certificate

I hereby certify that –

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of section 34 of the ~~Metropolitan Water, Sewerage and Drainage Act, 1924, as amended~~ Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed SUBDIVISION
(Insert "new road", "subdivision" or "consolidated lot") set out hereon

Subdivision No. 170/2-5

Date 18 TH. FEBRUARY 1985

(Signature) ...
Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

M.P.D.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SURVEYOR'S REFERENCE 170/2-5

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day.

26th SEPTEMBER 1986

DP 736908

Certified Environmental Management

Quality Endorsed Company

Occupational Health and Safety

CITY OF Lake Macquarie

26 March 2007

JOHNSON PROPERTY GROUP PTY LIMITED
PO Box 34
COORANBONG NSW 2265

Our Ref:31146
Your Ref:
ABN 81 065 027 868

SECTION 149 PLANNING CERTIFICATE, ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

Fee Paid:	100.00
Receipt No:	5007922
Receipt Date:	26 March 2007

DESCRIPTION OF LAND

Address:	515 Freemans Drive, COORANBONG NSW 2265
Lot Details:	Lot 34 DP 736908
Parish:	Mandolong
County:	Northumberland

K Gorman For: BRIAN BELL
GENERAL MANAGER

www.lakemac.com.au
Phone: 02 4921 0333
126-138 Main Road Speers Point NSW 2284
Box 1906 Hunter Region Mail Centre NSW 2310
Fax: 02 4958 7257 council@lakemac.nsw.gov.au

ADVICE PROVIDED IN ACCORDANCE WITH SECTION 149(2)

1 Names of Relevant State Environmental Planning Policies, Regional Environmental Plans, Local Environmental Plans and Development Control Plans

(1) (a) The name of each local environmental plan and deemed environmental planning instrument applying to the land.

Lake Macquarie Local Environmental Plan 2004

(b) The name of each draft local environmental plan applying to the land that has been placed on exhibition under section 66(1)(b) of the Act.

Lake Macquarie Local Environmental Plan 2004 (Amendment No. 5)

(c) The name of each development control plan applying to the land that has been made by the relevant planning authority under Division 6 of Part 3 of the Act (including any made by the council under section 72, or the Director-General under section 51A, before the repeal of those sections).

Development Control Plan No. 1 – Principles of Development
Development Control Plan No. 2 – Complying Development

(2) (a) The name of each regional environmental plan applying to the land.

Hunter Regional Environmental Plan 1989

(b) The name of each draft regional environmental plan applying to the land that has been placed on exhibition under section 47(b) of the Act.

Nil

(3) (a) The name of each State environmental planning policy applying to the land.

State Environmental Planning Policy - (Seniors Living) 2004 (This SEPP applies to the land to the extent provided by Clause 4 of the SEPP)

State Environmental Planning Policy (ARTC Rail Infrastructure)

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

State Environmental Planning Policy (Major Projects) 2005

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy No. 1 – Development Standards

State Environmental Planning Policy No. 4 – Development without Consent (except Clause 6-10)

State Environmental Planning Policy No. 6 – Number of Storeys in a Building

State Environmental Planning Policy No. 8 – Surplus Public Land

State Environmental Planning Policy No. 9 – Group Homes

State Environmental Planning Policy No. 10 – Retention of Low-Cost Rental Accommodation (insofar as Clause 6 of the SEPP may apply)

State Environmental Planning Policy No. 11 – Traffic Generating Developments

State Environmental Planning Policy No. 15 – Rural Landsharing Communities

State Environmental Planning Policy No. 16 – Tertiary Institutions

State Environmental Planning Policy No. 19 – Bushland in Urban Areas

State Environmental Planning Policy No. 21 – Caravan Parks

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 36 – Manufactured Homes Estates (except as maybe excluded by Clause 6 of the SEPP)

State Environmental Planning Policy No. 44 – Koala Habitat Protection

State Environmental Planning Policy No. 50 – Canal Estate Development

State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 62 - Sustainable Aquaculture

State Environmental Planning Policy No. 64 – Advertising and Signage

State Environmental Planning Policy No. 70 – Affordable Housing

State Environmental Planning Policy No. 72 – Linear Telecommunications Development – Broadband (as amended)

(b) The name of each draft State environmental planning policy applying to the land that has been publicised as referred to in section 39(2) of the Act.

Draft State Environmental Planning Policy No. 1 - Development Standards (Amendment No.1)

Draft State Environmental Planning Policy (Application of Development Standard) 2004.

Draft State Environmental Planning Policy No.66 - Integration of Land Use and Transport

Draft State Environmental Planning Policy - Subdivision

Draft State Environmental Planning Policy – Sewerage Works

2 Zoning and land use under relevant Local Environmental Plans

(1) The following answers (a) to (h) relate to the Plan (see 1(1)(a) above).

(a) The identity of the zone applying to the land.

1(2) Rural (Living)
7(1) Conservation (Primary)

(b) The purposes for which the Plan provides that development may be carried out within the zone without the need for development consent.

Specified in Attachment A

(c) The purposes for which the Plan provides that development may be carried out within the zone except with development consent.

Specified in Attachment A

(d) The purposes for which the Plan provides that development is prohibited within the zone.

Specified in Attachment A

NOTE: **The advice in sections (b), (c) and (d) above relates only to restrictions that apply by virtue of the zones indicated. The Lake Macquarie LEP 2004 includes additional provisions that require development consent for particular types of development, or in particular circumstances, irrespective of zoning.**

(e) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed.

Specified in Attachment A - Schedule 2.

(f) Whether the land includes or comprises critical habitat.

No

(g) Whether the land is in a conservation area (however described).

Yes

(h) Whether an item of environmental heritage (however described) is situated on the land.

See Attachment A - Schedules 4, 5 and 6

An item of environmental heritage, namely Aboriginal heritage, listed within the Aboriginal Heritage Information Management System, may affect the land. The applicant should contact the Department of Environment and Conservation for more information.

An Aboriginal Heritage Study is being developed for the City. Further information can be sought from Council's Heritage Officer.

(2) The following answers (a) to (h) relate to the Draft Plan (see 1(1)(b) above).

(a) The identity of the zone applying to the land.

Nil

(b) The purposes for which the Draft Plan provides that development may be carried out within the zone without the need for development consent.

Specified in Attachment A

(c) The purposes for which the Draft Plan provides that development may be carried out within the zone except with development consent.

Specified in Attachment A

(d) The purposes for which the Draft Plan provides that development is prohibited within the zone.

Specified in Attachment A

NOTE: **The advice in sections (b), (c) and (d) above relates only to restrictions that apply by virtue of the zones indicated. The Lake Macquarie LEP 2004 includes additional provisions that require development consent for particular types of development, or in particular circumstances, irrespective of zoning.**

(e) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed.

Specified in Attachment A - Schedule 2.

(f) Whether the land includes or comprises critical habitat.

No

(g) Whether the land is in a conservation area (however described).

Yes

(h) Whether an item of environmental heritage (however described) is situated on the land.

See Attachment A - Schedules 4, 5 and 6

An item of environmental heritage, namely Aboriginal heritage, listed within the Aboriginal Heritage Information Management System, may affect the land. The applicant should contact the Department of Environment and Conservation for more information.

An Aboriginal Heritage Study is being developed for the City. Further information can be sought from Council's Heritage Officer.

4 Coastal Protection

Whether or not the land is affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that the Council has been so notified by the Department of Public Works.

No

5 Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

No

6 Road widening and road realignment

Whether the land is affected by any road widening or realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993.

No

(b) any environmental planning instrument.

No

(c) any resolution of the Council.

No, other road widening proposals may affect this land and if so, will be noted on the SECTION 149(5) certificate.

7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

(i) adopted by the Council, or

(ii) adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council,

that restricts the development of the land because of the likelihood of:

(a) land slip or subsidence

Yes

All land within the Lake Macquarie City Council area is affected by the Councils Geotechnical Policy dated 19th April 1993, on land slip or subsidence. If you require any further clarification on the policy and how it may affect any possible development applications contact the Council on 02 4921 0242.

(b) bushfire

Yes

(c) tidal inundation

No

(d) acid sulfate soils

Yes if indicated on the Acid Sulfate Soils Planning Maps supplied by The Department of Land & Water Conservation marked Edition 2, dated December 1997, available at the Council.

(e) any other risk (other than flooding).

No

NOTE: **The absence of a council policy restricting development of the land by reason of a particular natural hazard does not mean that the risk from that hazard is non-existent.**

7A Flood related development controls information

(1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

(3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006.*

Yes,

ADVICE: Further information on the development restriction mentioned, may be obtained from Council upon application for a "Development Restriction Certificate – Flooding/Tidal Inundation".

8 Land reserved for acquisition

Whether or not any environmental planning instrument, deemed environmental planning instrument or draft environmental planning instrument applying to the land provides for the acquisition of the land by a public authority, as referred to in section 27 of the Act.

Yes

9 Contributions Plans

The name of each contributions plan applying to the land.

The Lake Macquarie Section 94 Contributions Plan No.1 - Citywide (2004) as amended

10 Matters arising under the Contaminated Land Management Act 1997 (s.59(2))

(a) Is the land within land declared to be an investigation area or remediation site under Part 3 of the Contaminated Land Management Act 1997.

No

(b) Is the land subject to an investigation order or remediation order within the meaning of the Contaminated Land Management Act 1997.

No

(c) Is the land the subject of a voluntary investigation proposal (or voluntary remediation proposal) the subject of the Environment Protection Authority's agreement under section 19 or 26 of the Contaminated Land Management Act 1997.

No

(d) Is the land the subject of a site audit statement within the meaning of Part 4 of the Contaminated Land Management Act 1997.

No

11 Bush Fire Prone Land

SOME of the land is bush fire prone land.

NOTE: The Lake Macquarie Bush Fire Prone Land Map can be inspected at Council's Administration Building during normal office hours or contact Council on 02 4921 0333.

12 Property Vegetation Plans

The land IS NOT subject to a property vegetation plan under the Native Vegetation Act 2003.

NOTE: The advise provided in this section is based on notification by the Hunter Central Rivers Catchment Management Authority of the approval of a plan. Further information about property vegetation plans should be obtained from that Authority.

13 Orders under Trees (Disputes Between Neighbours) Act 2006

Has an order been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

The land IS NOT subject to an order made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

ADVICE PROVIDED IN ACCORDANCE WITH SECTION 149(5)

NOTE: SECTION 149(6) OF THE ACT STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 149(5).

14 Clearing and lopping of trees

The land IS AFFECTED by Clause 34 – Trees and Native Vegetation, Lake Macquarie Local Environmental Plan 2004. Consent must be obtained to clear any tree or native vegetation in accordance with this clause. Please contact the Council for further information.

15 Easements

The land is NOT affected by a proposed easement in favour of Lake Macquarie City Council.

As to affectation by existing easements, a search of the relevant Title of the land should be undertaken.

16 Outstanding Notices

The land is NOT AFFECTED by an outstanding notice.

The information provided in this part of the certificate is not exhaustive. The recipient may seek additional information relating to the land by making a further inquiry to Council.

17 Earthquake

An earthquake was experienced throughout most of the city area on 28/12/89. Prospective purchasers should make their own enquiries as to whether buildings/structures on the land sustained any structural damage.

18 Lifestyle 2020

Council has prepared a strategy to provide direction for future land use planning, urban design and development of the City until the year 2020. A copy of "Lifestyle 2020 - A Strategy for Our Future" is available from Council.

19 New South Wales Government Coastal Policy, 1997.

The NSW Coastal Policy 1997 applies to the land and development located within the Coastal Zone as depicted on a Map signed by the Minister for Natural Resources. The Coastal Zone generally extends one kilometre inland from the Lake shore and one kilometre inland from the Coast and includes the whole Wallarah Peninsula. The Environmental Planning and Assessment Act requires Consent Authorities to take the Coastal Policy into consideration when determining Development Applications for affected land.

20 Sustainable Water Cycle Management.

The Lake Macquarie Local Environmental Plan 2004 advocates the principles and practice of Water Smart and Water Sensitive Urban Design philosophies. It includes the handling of water and water resources in a manner that considers the whole of the hydrological process. This includes the quality and quantity of the resource from its various source/s and its use and transport in the natural and built environment.

21 Natural Watercourse

The land is affected by a natural watercourse.

22 That part of the land within 20 metres of the bank of Dora Creek is "Protected Land", section 21AB Soil Conservation Act 1938. Consent of the Catchment Areas Protection Board is required to clear, lop, or remove trees and vegetation on Protected Land. Contact the Soil Conservation Service of NSW for further details.

ATTACHMENT:

A Lake Macquarie Local Environmental Plan 2004 instrument

Certified Environmental Management
Quality Endorsed Company
Occupational Health and Safety

CITY OF Lake Macquarie

26 March 2007

JOHNSON PROPERTY GROUP PTY LIMITED
PO Box 34
COORANBONG NSW 2265

Our Ref:31145
Your Ref:
ABN 81 065 027 868

SECTION 149 PLANNING CERTIFICATE, ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

Fee Paid: 100.00
Receipt No: 5007922
Receipt Date: 26 March 2007

DESCRIPTION OF LAND

Address: 12 Martinsville Road, COORANBONG NSW 2265
Lot Details: Lot 2 DP 517245
Parish: Dora
County: Northumberland

K Gorman

For: BRIAN BELL
GENERAL MANAGER

www.lakemac.com.au
Phone 02 4921 0333
126-138 Main Road Speers Point NSW 2284
Box 1906 Hunter Region Mail Centre NSW 2310
Fax 02 4958 7257 council@lakemac.nsw.gov.au

ADVICE PROVIDED IN ACCORDANCE WITH SECTION 149(2)

1 Names of Relevant State Environmental Planning Policies, Regional Environmental Plans, Local Environmental Plans and Development Control Plans

(1) (a) The name of each local environmental plan and deemed environmental planning instrument applying to the land.

Lake Macquarie Local Environmental Plan 2004

(b) The name of each draft local environmental plan applying to the land that has been placed on exhibition under section 66(1)(b) of the Act.

Lake Macquarie Local Environmental Plan 2004 (Amendment No. 5)

(c) The name of each development control plan applying to the land that has been made by the relevant planning authority under Division 6 of Part 3 of the Act (including any made by the council under section 72, or the Director-General under section 51A, before the repeal of those sections).

Development Control Plan No. 1 – Principles of Development
Development Control Plan No. 2 – Complying Development

(2) (a) The name of each regional environmental plan applying to the land.

Hunter Regional Environmental Plan 1989

(b) The name of each draft regional environmental plan applying to the land that has been placed on exhibition under section 47(b) of the Act.

Nil

(3) (a) The name of each State environmental planning policy applying to the land.

State Environmental Planning Policy - (Seniors Living) 2004 (This SEPP applies to the land to the extent provided by Clause 4 of the SEPP)

State Environmental Planning Policy (ARTC Rail Infrastructure)

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

State Environmental Planning Policy (Major Projects) 2005

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy No. 1 – Development Standards

State Environmental Planning Policy No. 4 – Development without Consent (except Clause 6-10)

State Environmental Planning Policy No. 6 – Number of Storeys in a Building

State Environmental Planning Policy No. 8 – Surplus Public Land

State Environmental Planning Policy No. 9 – Group Homes

State Environmental Planning Policy No. 10 – Retention of Low-Cost Rental Accommodation (insofar as Clause 6 of the SEPP may apply)

State Environmental Planning Policy No. 11 – Traffic Generating Developments

State Environmental Planning Policy No. 15 – Rural Landsharing Communities

State Environmental Planning Policy No. 16 – Tertiary Institutions

State Environmental Planning Policy No. 19 – Bushland in Urban Areas

State Environmental Planning Policy No. 21 – Caravan Parks

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 36 – Manufactured Homes Estates (except as maybe excluded by Clause 6 of the SEPP)

State Environmental Planning Policy No. 44 – Koala Habitat Protection

State Environmental Planning Policy No. 50 – Canal Estate Development

State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 62 - Sustainable Aquaculture

State Environmental Planning Policy No. 64 – Advertising and Signage

State Environmental Planning Policy No. 70 – Affordable Housing

State Environmental Planning Policy No. 72 – Linear Telecommunications Development – Broadband (as amended)

(b) The name of each draft State environmental planning policy applying to the land that has been publicised as referred to in section 39(2) of the Act.

Draft State Environmental Planning Policy No. 1 - Development Standards (Amendment No.1)

Draft State Environmental Planning Policy (Application of Development Standard) 2004.

Draft State Environmental Planning Policy No.66 - Integration of Land Use and Transport

Draft State Environmental Planning Policy - Subdivision

Draft State Environmental Planning Policy – Sewerage Works

2 Zoning and land use under relevant Local Environmental Plans

(1) The following answers (a) to (h) relate to the Plan (see 1(1)(a) above).

(a) The identity of the zone applying to the land.

1(2) Rural (Living)
7(2) Conservation (Secondary)

(b) The purposes for which the Plan provides that development may be carried out within the zone without the need for development consent.

Specified in Attachment A

(c) The purposes for which the Plan provides that development may be carried out within the zone except with development consent.

Specified in Attachment A

(d) The purposes for which the Plan provides that development is prohibited within the zone.

Specified in Attachment A

NOTE: The advice in sections (b), (c) and (d) above relates only to restrictions that apply by virtue of the zones indicated. The Lake Macquarie LEP 2004 includes additional provisions that require development consent for particular types of development, or in particular circumstances, irrespective of zoning.

(e) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed.

Specified in Attachment A - Schedule 2.

(f) Whether the land includes or comprises critical habitat.

No

(g) Whether the land is in a conservation area (however described).

Yes

(h) Whether an item of environmental heritage (however described) is situated on the land.

See Attachment A - Schedules 4, 5 and 6

An item of environmental heritage, namely Aboriginal heritage, listed within the Aboriginal Heritage Information Management System, may affect the land. The applicant should contact the Department of Environment and Conservation for more information.

An Aboriginal Heritage Study is being developed for the City. Further information can be sought from Council's Heritage Officer.

(2) The following answers (a) to (h) relate to the Draft Plan (see 1(1)(b) above).

(a) The identity of the zone applying to the land.

Nil

(b) The purposes for which the Draft Plan provides that development may be carried out within the zone without the need for development consent.

Specified in Attachment A

(c) The purposes for which the Draft Plan provides that development may be carried out within the zone except with development consent.

Specified in Attachment A

(d) The purposes for which the Draft Plan provides that development is prohibited within the zone.

Specified in Attachment A

NOTE: **The advice in sections (b), (c) and (d) above relates only to restrictions that apply by virtue of the zones indicated. The Lake Macquarie LEP 2004 includes additional provisions that require development consent for particular types of development, or in particular circumstances, irrespective of zoning.**

(e) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed.

Specified in Attachment A - Schedule 2.

(f) Whether the land includes or comprises critical habitat.

No

(g) Whether the land is in a conservation area (however described).

Yes

(h) Whether an item of environmental heritage (however described) is situated on the land.

See Attachment A - Schedules 4, 5 and 6

An item of environmental heritage, namely Aboriginal heritage, listed within the Aboriginal Heritage Information Management System, may affect the land. The applicant should contact the Department of Environment and Conservation for more information.

An Aboriginal Heritage Study is being developed for the City. Further information can be sought from Council's Heritage Officer.

4 Coastal Protection

Whether or not the land is affected by the operation of section 38 or 39 of the Coastal Protection Act 1979, but only to the extent that the Council has been so notified by the Department of Public Works.

No

5 Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

No

6 Road widening and road realignment

Whether the land is affected by any road widening or realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993.

No

(b) any environmental planning instrument.

No

(c) any resolution of the Council.

No, other road widening proposals may affect this land and if so, will be noted on the SECTION 149(5) certificate.

7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

(i) adopted by the Council, or

(ii) adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council,

that restricts the development of the land because of the likelihood of:

(a) land slip or subsidence

Yes

All land within the Lake Macquarie City Council area is affected by the Councils Geotechnical Policy dated 19th April 1993, on land slip or subsidence. If you require any further clarification on the policy and how it may affect any possible development applications contact the Council on 02 4921 0242.

(b) bushfire

Yes

(c) tidal inundation

No

(d) acid sulfate soils

Yes if indicated on the Acid Sulfate Soils Planning Maps supplied by The Department of Land & Water Conservation marked Edition 2, dated December 1997, available at the Council.

(e) any other risk (other than flooding).

No

NOTE: **The absence of a council policy restricting development of the land by reason of a particular natural hazard does not mean that the risk from that hazard is non-existent.**

7A Flood related development controls information

(1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

(3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006.*

Yes,

ADVICE: Further information on the development restriction mentioned, may be obtained from Council upon application for a "Development Restriction Certificate – Flooding/Tidal Inundation".

8 Land reserved for acquisition

Whether or not any environmental planning instrument, deemed environmental planning instrument or draft environmental planning instrument applying to the land provides for the acquisition of the land by a public authority, as referred to in section 27 of the Act.

Yes

9 Contributions Plans

The name of each contributions plan applying to the land.

The Lake Macquarie Section 94 Contributions Plan No.1 - Citywide (2004) as amended

10 Matters arising under the Contaminated Land Management Act 1997 (s.59(2))

(a) Is the land within land declared to be an investigation area or remediation site under Part 3 of the Contaminated Land Management Act 1997.

No

(b) Is the land subject to an investigation order or remediation order within the meaning of the Contaminated Land Management Act 1997.

No

(c) Is the land the subject of a voluntary investigation proposal (or voluntary remediation proposal) the subject of the Environment Protection Authority's agreement under section 19 or 26 of the Contaminated Land Management Act 1997.

No

(d) Is the land the subject of a site audit statement within the meaning of Part 4 of the Contaminated Land Management Act 1997.

No

11 Bush Fire Prone Land

SOME of the land is bush fire prone land.

NOTE: The Lake Macquarie Bush Fire Prone Land Map can be inspected at Council's Administration Building during normal office hours or contact Council on 02 4921 0333.

12 Property Vegetation Plans

The land IS NOT subject to a property vegetation plan under the Native Vegetation Act 2003.

NOTE: The advise provided in this section is based on notification by the Hunter Central Rivers Catchment Management Authority of the approval of a plan. Further information about property vegetation plans should be obtained from that Authority.

13 Orders under Trees (Disputes Between Neighbours) Act 2006

Has an order been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

The land IS NOT subject to an order made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

ADVICE PROVIDED IN ACCORDANCE WITH SECTION 149(5)

NOTE: SECTION 149(6) OF THE ACT STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 149(5).

14 Clearing and lopping of trees

The land IS AFFECTED by Clause 34 – Trees and Native Vegetation, Lake Macquarie Local Environmental Plan 2004. Consent must be obtained to clear any tree or native vegetation in accordance with this clause. Please contact the Council for further information.

15 Easements

The land is NOT affected by a proposed easement in favour of Lake Macquarie City Council.

As to affectation by existing easements, a search of the relevant Title of the land should be undertaken.

16 Outstanding Notices

The land is NOT AFFECTED by an outstanding notice.

The information provided in this part of the certificate is not exhaustive. The recipient may seek additional information relating to the land by making a further inquiry to Council.

17 Earthquake

An earthquake was experienced throughout most of the city area on 28/12/89. Prospective purchasers should make their own enquiries as to whether buildings/structures on the land sustained any structural damage.

18 Lifestyle 2020

Council has prepared a strategy to provide direction for future land use planning, urban design and development of the City until the year 2020. A copy of "Lifestyle 2020 - A Strategy for Our Future" is available from Council.

19 New South Wales Government Coastal Policy, 1997.

The NSW Coastal Policy 1997 applies to the land and development located within the Coastal Zone as depicted on a Map signed by the Minister for Natural Resources. The Coastal Zone generally extends one kilometre inland from the Lake shore and one kilometre inland from the Coast and includes the whole Wallarah Peninsula. The Environmental Planning and Assessment Act requires Consent Authorities to take the Coastal Policy into consideration when determining Development Applications for affected land.

20 Sustainable Water Cycle Management.

The Lake Macquarie Local Environmental Plan 2004 advocates the principles and practice of Water Smart and Water Sensitive Urban Design philosophies. It includes the handling of water and water resources in a manner that considers the whole of the hydrological process. This includes the quality and quantity of the resource from its various source/s and its use and transport in the natural and built environment.

21 Natural Watercourse

The land is affected by a natural watercourse.

22 That part of the land within 20 metres of the bank of Dora Creek is "Protected Land", section 21AB Soil Conservation Act 1938. Consent of the Catchment Areas Protection Board is required to clear, lop, or remove trees and vegetation on Protected Land. Contact the Soil Conservation Service of NSW for further details.

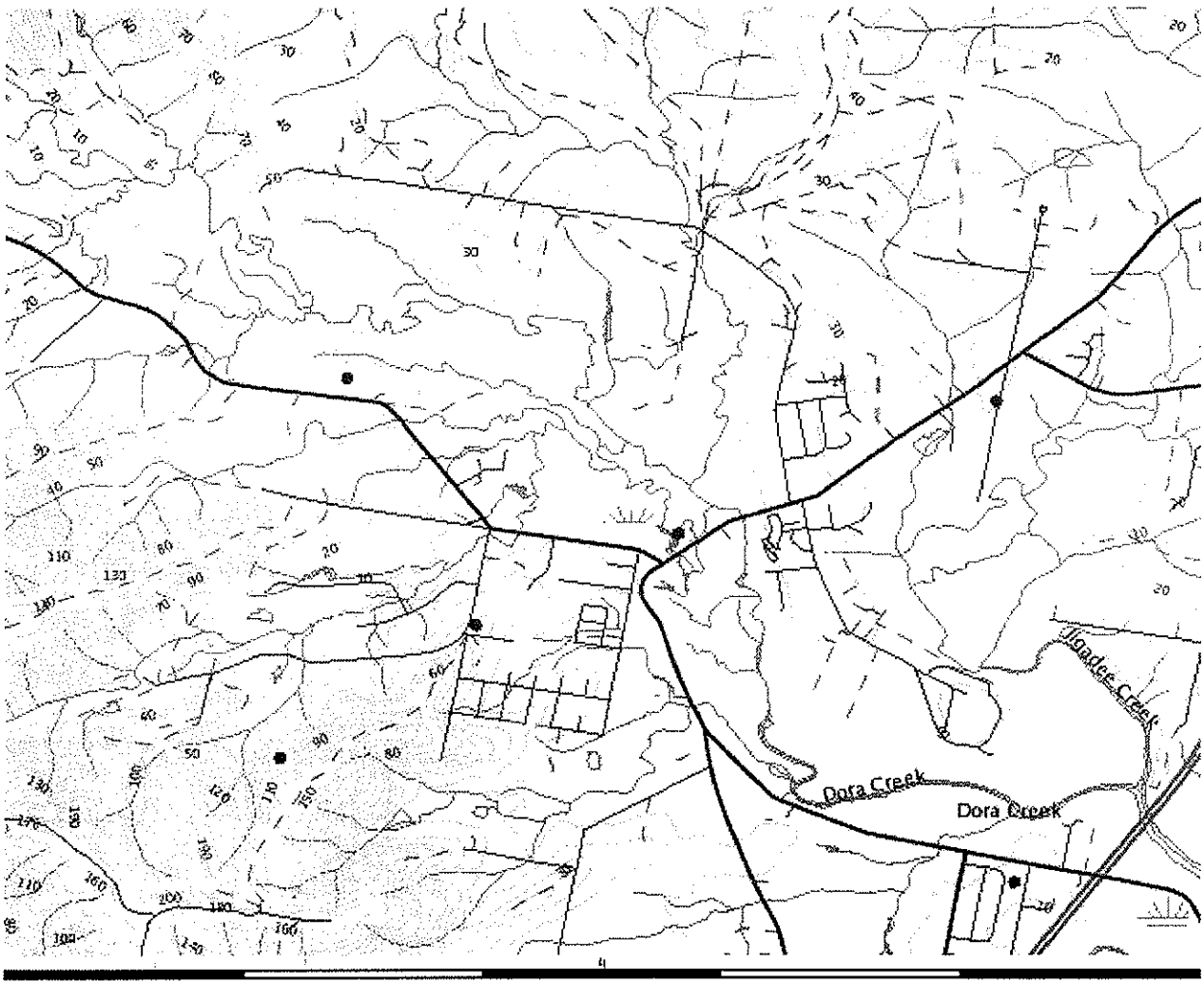
ATTACHMENT:

A Lake Macquarie Local Environmental Plan 2004 instrument

Cooranbong - 41487

Map created with NSW Groundwater Works - http://test.nratlas.nsw.gov.au

Thursday, May 17, 2007



0 4 Km

Legend

Symbol	Layer	Custodian
●	Groundwater bores	
	Catchment Management Authority boundaries	
	Major rivers renderImage: Cannot build image from features	
	Topographic base map (Test Topoweb-GDA94)	

- Town
- Primary/arterial road
- Motorway/freeway
- Railway
- Runway
- Contour
- Background

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Thursday, May 17, 2007

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW067263

Works Details (top)

GROUNDWATER NUMBER	GW067263
LIC-NUM	20BL139411
AUTHORISED-PURPOSES	DOMESTIC STOCK
INTENDED-PURPOSES	
WORK-TYPE	
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	
FINAL-DEPTH (metres)	
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- HUNTER
GW-ZONE	- COOPERS GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	20 - HUNTER
RIVER-BASIN	210 - HUNTER RIVER
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	Est. Contour 8-15M.
NORTHING	6338780.00
EASTING	355036.00
LATITUDE	33 4' 47"
LONGITUDE	151 26' 49"
GS-MAP	0055B1

AMG-ZONE	56
COORD-SOURCE	GD.,ACC.MAP
REMARK	

Form-A (top)

COUNTY	NORTHUMBERLAND
PARISH	MANDOLONG
PORTION-LOT-DP	123

Licensed (top)

COUNTY	NORTHUMBERLAND
PARISH	MANDOLONG
PORTION-LOT-DP	LT1

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter; ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	P.V.C.	0.00	6.00	150			Driven into Hole

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
9.00	10.00	1.00	Fractured	3.00		0.15			Good

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Thursday, May 17, 2007

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW060965

Works Details (top)

GROUNDWATER NUMBER	GW060965
LIC-NUM	20BL132492
AUTHORISED-PURPOSES	DOMESTIC STOCK
INTENDED-PURPOSES	DOMESTIC STOCK
WORK-TYPE	Bore open thru rock
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Rotary Air
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	1985-03-01
FINAL-DEPTH (metres)	33.60
DRILLED-DEPTH (metres)	33.60
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- HUNTER
GW-ZONE	- COOPERS GROUNDWATER SOURCE
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	20 - HUNTER
RIVER-BASIN	211 - MACQUARIE - TUGGERAH LAKES
AREA-DISTRICT	
CMA-MAP	9131-1N
GRID-ZONE	56/1
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6338305.00
EASTING	354195.00
LATITUDE	33 5' 2"
LONGITUDE	151 26' 16"
GS-MAP	0055B1

AMG-ZONE	56
COORD-SOURCE	GD.,ACC.MAP
REMARK	

Form-A (top)

COUNTY	NORTHUMBERLAND
PARISH	DORA
PORTION-LOT-DP	25

Licensed (top)

COUNTY	NORTHUMBERLAND
PARISH	DORA
PORTION-LOT-DP	PT25

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	P.V.C.	0.00	6.00	168			Driven into Hole

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
32.00	32.20	0.20	Fractured	29.00		0.38			Salty

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.50	0.50	Topsoil		
0.50	1.75	1.25	Clay Red		
1.75	3.25	1.50	Shale Hard		
3.25	6.00	2.75	Clay Red Yellow		
6.00	20.00	14.00	Shale Hard		
20.00	32.00	12.00	Sandstone		
32.00	33.60	1.60	Shale Water Supply		

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APPENDIX C

TEST PIT LOGS

TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 1
PROJECT No: 41487
DATE: 26 Mar 97
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
		SILT: Dark brown silt with some fine grained sand, moist							
		- rootlets to 0.5m		D	0.5				
	0.6	SANDY CLAY: Firm orange brown fine grained sandy clay with some silt, M>Wp							
	1			D,PP	1.0		pp = 100kPa		1
				D	1.5				
		- grey mottled orange brown with trace silt from 1.7m							
	2			D,PP	2.0		pp = 400kPa		2
				D,PP	2.5		PP = 70-100 kPa		
	2.7	Pit discontinued at 2.7m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 2
PROJECT No: 41487
DATE: 26 Mar 97
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
		SILT: Dark brown silt with trace some fine grained sand, moist							
	0.5	SANDY CLAY: Firm orange brown sandy clay with some silt, damp							
	1			pp	1.0		pp = 100kPa		1
				pp	1.5		pp = 100kPa		
		- orange brown mottled grey from 1.6m							
	2			D	2.0				2
	2.8	Pit discontinued at 2.8m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BM
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 3
PROJECT No: 41487
DATE: 26 Mar 97
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
		SILT: Dark brown silt with trace to fine grained sand, moist		D	0.5				
	0.6	SANDY CLAY: Orange brown mottled grey silty clay with trace to some silt		D	1.0				1
				D	1.5				
	1.7	SANDY CLAY: Orange brown sandy clay with some silt		D	2.0				2
				D	2.5				
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 4
PROJECT No: 41487
DATE: 26 Mar 07
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)
		SILT: Dark brown silt with trace to some fine grained sand, moist		D	0.5				
	0.55	SANDY CLAY: Firm orange brown mottled grey sandy clay with trace to some silt							
	1			D,PP	1.0		pp = 100kPa		1
				D,PP	1.5		PP = 100-200 kPa		
		- dark grey mottled orange brown from 1.7m							
	2			D,PP	2.0		PP = 100-140 kPa		2
		- dark grey from 2.5m		D,PP	2.5		PP = 140-200 kPa		
	2.7	Pit discontinued at 2.7m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: Slow seepage at 1.90 m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 5
PROJECT No: 41487
DATE: 26 Mar 07
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)
		SILT: Dark brown silt with trace to some fine grained sand, moist							
	0.5	CLAY: Orange brown mottled orange grey clay with some silt and trace sand, M>Wp		D	0.5				
	1			D,PP	1.0		PP = 100-140 kPa		1
				D,PP	1.5		PP = 100-140 kPa		
		- orange brown mottled grey with trace silt from 1.6m							
	2			D,PP	2.0		pp = 200kPa		2
	2.1	SANDY CLAY/CLAYEY SAND: Red mottled light grey fine grained sandy clay.clayey sand, moist/M>Wp							
	2.5	Pit discontinued at 2.5m. Limit of investigation		D,PP	2.5		pp = 100kPa		

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: RK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 6
PROJECT No: 41487
DATE: 26 Mar 97
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
		SILT: Dark brown silt with trace to some fine grained sand, moist (containing charcoal)		D	0.5				
	0.6	CLAY: Orange brown mottled orange grey clay with some silt and trace sand		D,PP	1.0		pp = 200kPa		1
				D,PP	1.5		PP = 200-300 kPa		
		- orange brown mottled grey medium to coarse grained sandy clay from 1.6m							
	2			D,PP	2.0		PP = 100-200 kPa		2
		- some sand from 2.2m							
				D,PP	2.5		PP = 200-250 kPa		
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/97

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 7
PROJECT No: 41487
DATE: 26 Mar 97
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
		SILT: Dark brown silt with trace to some fine grained sand, moist		D	0.5				
	0.6	CLAY: Orange brown mottled light grey clay with trace to some silt, M>Wp							
	1			D,PP	1.0		PP = 100-200 kPa		1
		- with some fine grained sand from 1.2m		D,PP	1.5		pp = 100kPa		
	2			D,PP	2.0		PP = 100-150 kPa		2
	2.05	SAND: Grey fine grained sand with trace clay, saturated							
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: Free Groundwater Observed at 2.2m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: RK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 8
PROJECT No: 41487
DATE: 26 Mar 97
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
		SILT: Dark brown silt with trace to some fine grained sand, moist							
	0.5	CLAY: Firm orange brown mottled light grey clay with some silt, M>Wp		D	0.5				
	1			D,PP	1.0		PP = 100-150 kPa		1
		- orange brown mottled grey sandy clay from 1.2m							
				D,PP	1.5		pp = 100kPa		
	1.8	CLAYEY SAND: Light grey mottled orange red clayey sand							
	2			D	2.0				2
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: Free Groundwater Observed at 2.3m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BH
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 9
PROJECT No: 41487
DATE: 26 Mar 07
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
		SILT: Dark brown silt with trace to some fine grained sand, moist		D	0.3				
	0.4	SILT: Stiff grey mottled orange brown clay with trace silt							
	1			D,PP	1.0		PP = 100-150 kPa		1
				D,PP	1.5		PP = 150-200 kPa		
		- red orange mottled grey silt, with some sand from 1.6m							
	2			D	2.0				2
	2.6	CLAYEY SAND: Grey mottled orange red fine grained clayey sand, wet							
	2.8	Pit discontinued at 2.8m. Limit of investigation		D	2.8				

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: Free Groundwater Observed at 2.7m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

Douglas Partners
Geotechnics · Environment · Groundwater

TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 10
PROJECT No: 41487
DATE: 26 Mar 97
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)
		SILT: Dark brown silt with trace to some fine grained sand, moist							
	0.4	CLAY: Stiff orange brown mottled grey clay with trace silt and sand, M>Wp		D	0.5				
	1			D,PP	1.0		pp = 200kPa		1
				D,PP	1.5		PP = 100-150 kPa		
	1.6	CLAYEY SAND: Orange brown mottled grey fine grained clayey sand, wet							
	2			D	2.0				2
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

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

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: Free Groundwater Observed at 2.3m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: RL
Date: 24/5/07

Douglas Partners
Geotechnics · Environment · Groundwater

TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 11
PROJECT No: 41487
DATE: 26 Mar 97
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
		SILT: Dark brown silt with trace to some fine grained sand, moist							
	0.3	CLAY: Stiff orange brown mottled grey with trace sand		D	0.5				
	1			D,PP	1.0		pp = 100kPa		1
		- with some sand from 1.5m		D,PP	1.5		PP = 100-150 kPa		
	2			D	2.0				2
	2.2	SAND: Grey fine grained sand, wet							
				D	2.5				
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: Free Groundwater Observed at 2.4m

REMARKS: Seepage at 0.6m

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo Ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

Douglas Partners
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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 12
PROJECT No: 41487
DATE: 26 Mar 07
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
		SILT: Dark brown silt with trace to some fine grained sand, moist		D	0.2				
	0.5	CLAYEY SAND: Orange brown mottled orange grey fine grained clayey sand with trace silt, humid		D	0.8				
	1	- trace clay from 0.9m		D	1.5				1
	2			D	2.0				2
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: Free Groundwater Observed at 2.3m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 13
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.3	SANDY CLAY: Stiff orange brown fine grained sandy clay, M<Wp		D,PP	0.5		PP = 200-250 kPa		
	1			D,PP	1.0		pp = 400kPa		1
		- orange brown mottled grey, M<Wp from 1.6m		D,PP	1.5		pp = 400kPa		
	2								2
	2.4	SAND: Brown mottled grey fine grained sand		D	2.5				
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 16
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.3	CLAY: Stiff orange brown clay with some silt and trace fine grained sand, M<Wp		D,PP	0.6		pp = 150kPa		
	1	- orange brown mottled orange grey, M<Wp from 0.8m		D,PP	1.2		pp = 200kPa		1
	2	- orange brown mottled grey with trace medium grained sand from 1.6m		D,PP	2.0		PP = 100-200 kPa		2
	2.3	SAND: Grey mottled orange brown fine grained sand with trace silt and clay, wet		D	2.5				
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BL
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 17
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.4	CLAY: Stiff orange brown clay with some silt and trace fine to medium grained sand		D,PP	0.6		PP = 100-120 kPa		
	1	- orange brown mottled orange grey from 0.9m		D,PP	1.2		pp = 100kPa		1
	2	- light grey mottled ornage brown sandy clay from 1.6m		D,PP	2.0		pp = 100kPa		2
		- grey mottled orange brown clay with trace sand from 2.4m		D,PP	2.5		PP = 180-250 kPa		
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 18
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.4	SANDY CLAY: Orange brown fine grained sandy clay with some silt with interbedded or sandy silt, M<Wp		D	0.6				
	1			D	1.2				1
	1.8	SAND: Grey brown fine grained sand, humid		D	2.0				2
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: RR
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 14
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.4	SANDY CLAY: Stiff orange brown fine grained sandy clay, M<Wp		D,PP	0.7		PP = 100-125 kPa		
	1	- orange brown mottled grey, M<Wp from 1.1m		D,PP	1.5		pp = 100kPa		1
	1.8	CLAYEY SAND: Brown grey fine grained clayey sand		D	2.0				2
	2.3	SANDY CLAY: Orange brown mottled grey fine grained sandy clay							
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⋿ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 15
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.4	CLAY: Stiff orange brown mottled dark grey clay with trace medium grained sand and some silt, M>Wp		D,PP	0.6		PP = 100-120 kPa		
	1								1
		- orange brown mottled light grey with trace silt from 1.2m		D,PP	1.2		PP = 200-300 kPa		
	2			D,PP	2.0		pp = 300kPa		2
	2.5	Pit discontinued at 2.5m. Limit of investigation		D,PP	2.5		PP = 220-250 kPa		

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 19
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.4	CLAY: Stiff grey mottled orange brown clay with some silt and trace medium grained sand, M>Wp		D,PP	0.6		pp = 100kPa		
	1								1
				D,PP	1.5		pp = 100kPa		
	2			D,PP	2.0		PP = 180-200 kPa		2
	2.5	Pit discontinued at 2.5m. Limit of investigation		D,PP	2.5		PP = 150-200 kPa		

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 20
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.5	SANDY SILTY CLAY: Stiff brown sandy silty clay, M>Wp		D,PP	0.6		pp = 120kPa		
	1.4	SAND: Light brown fine grained sand, humid		D	1.5				
				D	2.0				
		- clayey sand from 2.3m		D	2.5				
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⋿ Water level

CHECKED
Initials: BK
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 21
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.5	SANDY CLAY: Orange brown fine grained sandy clay with some silt, M<Wp		D,PP	0.6		PP = 120-150 kPa		
	1			D,PP	1.2		pp = 400kPa		1
		- grey mottled orange brown clay with trace to some sand from 1.4m							
	2			D,PP	2.0		pp = 350kPa		2
		- grey mottled brown with some fine grained sand and silt from 2.2m							
				D,PP	2.5		PP = 180-250 kPa		
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 22
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.4	CLAY: Stiff grey mottled orange red clay with some silt and fine grained sand, M<Wp		D,PP	0.6		PP = 200-300 kPa		
	1	- grey mottled orange from 0.9m		D,PP	1.2		pp = 400kPa		1
	2	- M>Wp from 1.7m		D	1.9				2
	2.3	CLAYEY SAND: Grey mottled brown clayey sand, wet		D	2.5				
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 23
PROJECT No: 41487
DATE: 26 Mar 07
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)
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.4	SANDY CLAY: Stiff orange brown fine grained sandy clay with some silt, M<Wp		D,PP	0.6		pp = 200kPa		
	1			D,PP	1.2		PP = 150-200 kPa		1
	1.5	SAND: Orange brown fine grained sand with trace clay and silt							
	2			D	2.0				2
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

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

RIG: Case Backhoe with 450mm bucket

LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 24
PROJECT No: 41487
DATE: 26 Mar 07
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)
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.3	CLAY: Stiff orange brown mottled grey brown clay with some silt and trace sand		D,PP	0.6		PP = 100-150 kPa		
	1	- orange brown mottled grey sandy clay from 1.1m		D,PP	1.2		PP = 100-150 kPa		1
	2 2.0	CLAYEY SAND: Light brown mottled orange brown fine grained clayey sand, moist		D	2.0				2
		- light grey mottled light brown sand, wet from 2.3m							
	2.5	Pit discontinued at 2.5m. Limit of investigation		D	2.5				

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▽ Water level

CHECKED
Initials: BK
Date: 29/5/07

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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 25
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.5	SANDY CLAY: Orange brown fine grained sandy clay with some silt, M<Wp		D,PP	0.6		pp = 200kPa		
	0.9	SAND: Orange brown fine grained sand with some clay and silt		D	1.2				1
	1								
	2			D	2.0				2
				D	2.5				
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials: BK
Date: 24/5/07

Douglas Partners
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TEST PIT LOG

CLIENT: Johnson Property Group Pty Ltd
PROJECT: Acid Sulphate Soil Assessment
LOCATION: Cnr Martinsville Road/Freemans Drive, Cooranbong

SURFACE LEVEL: --
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

PIT No: 26
PROJECT No: 41487
DATE: 26 Mar 07
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
		SANDY SILT: Dark brown fine grained sandy silt		D	0.2				
	0.35	SANDY CLAY: Stiff orange brown fine grained sandy clay with some silt, M<Wp		D,PP	0.6		PP = 100-120 kPa		
	1								1
				D,PP	1.5		PP = 220-280 kPa		
	1.9	CLAYEY SAND: Light brown fine grained clayey sand, damp		D	2.0				
	2								2
	2.4	SANDY CLAY: Orange brown fine graiend sandy clay, M<Wp		D,PP	2.5		PP = 200-300 kPa		
	2.6	Pit discontinued at 2.6m. Limit of investigation							

RIG: Case Backhoe with 450mm bucket
LOGGED: Lorenz

WATER OBSERVATIONS: No Free Groundwater Observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U,	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ⧗ Water level

CHECKED
Initials:
Date: 24/5/07

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APPENDIX D

LABORATORY REPORT SHEETS

SGS

23 April 2007 **TEST REPORT**

Douglas Partners Pty Ltd
Unit D, 7 Donaldson Street
WYONG NORTH
NSW 2259

Your Reference: 41487, Cooranbong Acid Sulphate Ass.
Report Number: 51841

Attention: Michael Gawn

Dear Michael
The following samples were analysed as received.

Samples:	Qty.	7 Soils
Date of Receipt of Samples:		05/04/07
Date of Receipt of Instructions:		05/04/07
Date Preliminary Report Faxed:		Not Issued

Should you have any queries regarding this report please contact the undersigned.

SPOCAS analysed by SGS Cairns, report No. 55391 (Report attached).

For and behalf of
SGS Environmental Services
Terms and conditions are available from www.au.sgs.com

James McMahon
Business Manager Sydney
Approved Signatory

Edward Ibrahim
Laboratory Services Manager

NATA
WORLD RECOGNISED ACCREDITATION

This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562 (4354). This report must not be reproduced except in full.

CLIENT: Douglas Partners Pty Ltd **Laboratory Report No:** 55391
PROJECT: 41487 Cooranbong 51841

LABORATORY REPORT

SPOCAS Our Reference Your Reference	Units	55391-1 PIT 3 0.5	55391-2 PIT 3 1.0	55391-3 PIT 7 1.0
Moisture *	% w/w	15	12	26
pH KCl	pH Units	4.5	5.4	4.2
TAA pH 6.5	moles H^+/tonne	29	6	61
s-TAA pH 6.5	% w/w S	0.05	0.01	0.10
pH Ox	pH Units	7.2	6.5	3.8
TPA pH 6.5	moles H^+/tonne	<5	<5	60
s-TPA pH 6.5	% w/w S	<0.01	<0.01	0.10
TSA pH 6.5	moles H^+/tonne	<5	<5	<5
s-TSA pH 6.5	% w/w S	<0.01	<0.01	<0.01
ANCE	% $CaCO_3$	<0.05	<0.05	<0.05
a-ANCE	moles H^+/tonne	<5	<5	<5
s-ANCE	% w/w S	<0.05	<0.05	<0.05
S KCl ^	% w/w	0.006	<0.005	0.010
S P ^	% w/w	0.020	0.006	0.018
S POS ^	% w/w	0.014	<0.005	0.009
a-S POS ^	moles H^+/tonne	8	<5	5
Ca KCl ^	% w/w	0.013	0.017	0.005
Ca P ^	% w/w	0.019	0.019	0.008
Ca A ^	% w/w	0.006	<0.005	<0.005
Mg KCl ^	% w/w	<0.005	<0.005	0.029
Mg P ^	% w/w	0.007	0.006	0.032
Mg A ^	% w/w	<0.005	<0.005	<0.005
SHCl ^	% w/w	NA	NA	0.012
S NAS ^	% w/w	NA	NA	<0.005
a-S NAS ^	moles H^+/tonne	NA	NA	<5
s-S NAS ^	% w/w S	NA	NA	<0.01
s-Net Acidity	% w/w S	0.06	<0.02	0.11
a-Net Acidity	moles H^+/tonne	37	<10	67
Liming Rate	kg $CaCO_3$/tonne	2.8	NA	5.0
Verification s-Net Acidity	% w/w S	NA	NA	NA
a-Net Acidity without ANCE	moles H^+/tonne	37	<10	67
Liming Rate without ANCE	kg $CaCO_3$/tonne	2.8	NA	5.0

CLIENT: Douglas Partners Pty Ltd
PROJECT: 41487 Cooranbong 51841

Laboratory Report No: 55391

LABORATORY REPORT

SPOCAS Our Reference Your Reference	Units	55391-4 PIT 9 0.3	55391-5 PIT 16 2.5	55391-6 PIT 20 1.5
Moisture *	% w/w	26	20	7
pH KCl	pH Units	4.1	5.3	5.5
TAA pH 6.5	moles H^+/tonne	67	12	10
s-TAA pH 6.5	% w/w S	0.11	0.02	0.02
pH Ox	pH Units	5.1	5.4	6.3
TPA pH 6.5	moles H^+/tonne	19	10	<5
s-TPA pH 6.5	% w/w S	0.03	0.02	<0.01
TSA pH 6.5	moles H^+/tonne	<5	<5	<5
s-TSA pH 6.5	% w/w S	<0.01	<0.01	<0.01
ANCE	% $CaCO_3$	<0.05	<0.05	<0.05
a-ANCE	moles H^+/tonne	<5	<5	<5
s-ANCE	% w/w S	<0.05	<0.05	<0.05
S KCl ^	% w/w	<0.005	<0.005	<0.005
S P ^	% w/w	0.022	<0.005	0.008
S POS ^	% w/w	0.020	<0.005	0.005
a-S POS ^	moles H^+/tonne	12	<5	<5
Ca KCl ^	% w/w	0.021	<0.005	0.009
Ca P ^	% w/w	0.027	<0.005	0.012
Ca A ^	% w/w	0.006	<0.005	<0.005
Mg KCl ^	% w/w	0.018	0.016	0.007
Mg P ^	% w/w	0.022	0.019	0.009
Mg A ^	% w/w	<0.005	<0.005	<0.005
SHCl ^	% w/w	0.011	NA	NA
S NAS ^	% w/w	0.008	NA	NA
a-S NAS ^	moles H^+/tonne	<5	NA	NA
s-S NAS ^	% w/w S	<0.01	NA	NA
s-Net Acidity	% w/w S	0.13	0.02	0.02
a-Net Acidity	moles H^+/tonne	83	13	13
Liming Rate	kg $CaCO_3$/tonne	6.3	1.0	1.0
Verification s-Net Acidity	% w/w S	NA	NA	NA
a-Net Acidity without ANCE	moles H^+/tonne	83	13	13
Liming Rate without ANCE	kg $CaCO_3$/tonne	6.3	1.0	1.0

CLIENT: Douglas Partners Pty Ltd **Laboratory Report No:** 55391
PROJECT: 41487 Cooranbong 51841

LABORATORY REPORT

SPOCAS Our Reference Your Reference	Units	55391-7 PIT 24 2.5
Moisture *	% w/w	19
pH KCl	pH Units	5.7
TAA pH 6.5	moles H^+/tonne	6
s-TAA pH 6.5	% w/w S	0.01
pH Ox	pH Units	6.0
TPA pH 6.5	moles H^+/tonne	<5
s-TPA pH 6.5	% w/w S	<0.01
TSA pH 6.5	moles H^+/tonne	<5
s-TSA pH 6.5	% w/w S	<0.01
ANCE	% $CaCO_3$	<0.05
a-ANCE	moles H^+/tonne	<5
s-ANCE	% w/w S	<0.05
S KCl ^	% w/w	<0.005
S P ^	% w/w	0.006
S POS ^	% w/w	<0.005
a-S POS ^	moles H^+/tonne	<5
Ca KCl ^	% w/w	<0.005
Ca P ^	% w/w	<0.005
Ca A ^	% w/w	<0.005
Mg KCl ^	% w/w	<0.005
Mg P ^	% w/w	0.006
Mg A ^	% w/w	<0.005
SHCl ^	% w/w	NA
S NAS ^	% w/w	NA
a-S NAS ^	moles H^+/tonne	NA
s-S NAS ^	% w/w S	NA
s-Net Acidity	% w/w S	<0.02
a-Net Acidity	moles H^+/tonne	<10
Liming Rate	kg $CaCO_3$/tonne	NA
Verification s-Net Acidity	% w/w S	NA
a-Net Acidity without ANCE	moles H^+/tonne	<10
Liming Rate without ANCE	kg $CaCO_3$/tonne	NA

CLIENT: Douglas Partners Pty Ltd **Laboratory Report No:** 55391
PROJECT: 41487 Cooranbong 51841

LABORATORY REPORT

TEST PARAMETERS	UNITS	LOR	METHOD
SPOCAS			
Moisture *	% w/w	1	CEP-003
pH KCl	pH Units	0.1	ASSMAC_23A / CEI-401
TAA pH 6.5	moles H^+/tonne	5	ASSMAC_23F / CEI-401
s-TAA pH 6.5	% w/w S	0.01	ASSMAC_S_23F/CEI-401
pH Ox	pH Units	0.1	ASSMAC_23B / CEI-406
TPA pH 6.5	moles H^+/tonne	5	ASSMAC_23G / CEI-406
s-TPA pH 6.5	% w/w S	0.01	ASSMAC_S_23G/CEI-406
TSA pH 6.5	moles H^+/tonne	5	ASSMAC_23H
s-TSA pH 6.5	% w/w S	0.01	ASSMAC_S_23H
ANCE	% $CaCO_3$	0.05	ASSMAC_23Q
a-ANCE	moles H^+/tonne	5	ASSMAC_A_23Q
s-ANCE	% w/w S	0.05	ASSMAC_S_23Q
S KCl ^	% w/w	0.005	ASSMAC_23Ce
S P ^	% w/w	0.005	ASSMAC_23De
S POS ^	% w/w	0.005	ASSMAC_23Ee
a-S POS ^	moles H^+/tonne	5	ASSMAC_A_23Ee
Ca KCl ^	% w/w	0.005	ASSMAC_23Vh
Ca P ^	% w/w	0.005	ASSMAC_23Wh
Ca A ^	% w/w	0.005	ASSMAC_23Xh
Mg KCl ^	% w/w	0.005	ASSMAC_23Sm
Mg P ^	% w/w	0.005	ASSMAC_23Tm
Mg A ^	% w/w	0.005	ASSMAC_23Um
SHCl ^	% w/w	0.005	ASSMAC_20B
S NAS ^	% w/w	0.005	ASSMAC_20J
a-S NAS ^	moles H^+/tonne	5	ASSMAC_A_20J
s-S NAS ^	% w/w S	0.01	ASSMAC_S_20J
s-Net Acidity	% w/w S	0.02	Calculation
a-Net Acidity	moles H^+/tonne	10	Calculation
Liming Rate	kg $CaCO_3$/tonne	0.1	ASSMAC_23H
Verification s-Net Acidity	% w/w S		Calculation
a-Net Acidity without ANCE	moles H^+/tonne	10	Calculation
Liming Rate without ANCE	kg $CaCO_3$/tonne	0.1	ASSMAC_23H

CLIENT: Douglas Partners Pty Ltd **Laboratory Report No:** 55391
PROJECT: 41487 Cooranbong 51841

LABORATORY REPORT

QUALITY CONTROL	UNITS	Blank	Replicate Sm#	Replicate Sample‖Replicate
Moisture *	% w/w	[NT]	55391-1	15 ‖ [N/T]
pH KCl	pH Units	5.6	55391-1	4.5 ‖ 4.5 ‖ RPD: 0
TAA pH 6.5	moles H^+/tonne	[NT]	55391-1	29 ‖ 44 ‖ RPD: 41
s-TAA pH 6.5	% w/w S	[NT]	55391-1	0.05 ‖ 0.07 ‖ RPD: 33
pH Ox	pH Units	6.2	55391-1	7.2 ‖ 7.1 ‖ RPD: 1
TPA pH 6.5	moles H^+/tonne	[NT]	55391-1	<5 ‖ <5
s-TPA pH 6.5	% w/w S	[NT]	55391-1	<0.01 ‖ <0.01
TSA pH 6.5	moles H^+/tonne	[NT]	55391-1	<5 ‖ <5
s-TSA pH 6.5	% w/w S	[NT]	55391-1	<0.01 ‖ <0.01
ANCE	% $CaCO_3$	[NT]	55391-1	<0.05 ‖ <0.05
a-ANCE	moles H^+/tonne	[NT]	55391-1	<5 ‖ <5
s-ANCE	% w/w S	[NT]	55391-1	<0.05 ‖ <0.05
S KCl ^	% w/w	[NT]	55391-1	0.006 ‖ <0.005
S P ^	% w/w	[NT]	55391-1	0.020 ‖ 0.016 ‖ RPD: 22
S POS ^	% w/w	[NT]	55391-1	0.014 ‖ 0.011 ‖ RPD: 24
a-S POS ^	moles H^+/tonne	[NT]	55391-1	8 ‖ 7 ‖ RPD: 13
Ca KCl ^	% w/w	[NT]	55391-1	0.013 ‖ 0.012 ‖ RPD: 8
Ca P ^	% w/w	[NT]	55391-1	0.019 ‖ 0.017 ‖ RPD: 11
Ca A ^	% w/w	[NT]	55391-1	0.006 ‖ <0.005
Mg KCl ^	% w/w	[NT]	55391-1	<0.005 ‖ <0.005
Mg P ^	% w/w	[NT]	55391-1	0.007 ‖ 0.005 ‖ RPD: 33
Mg A ^	% w/w	[NT]	55391-1	<0.005 ‖ <0.005
SHCl ^	% w/w	[NT]	55391-1	NA ‖ NA
S NAS ^	% w/w	[NT]	55391-1	NA ‖ NA
a-S NAS ^	moles H^+/tonne	[NT]	55391-1	NA ‖ NA
s-S NAS ^	% w/w S	[NT]	55391-1	NA ‖ NA
s-Net Acidity	% w/w S	[NT]	55391-1	0.06 ‖ 0.08 ‖ RPD: 29
a-Net Acidity	moles H^+/tonne	[NT]	55391-1	37 ‖ 51 ‖ RPD: 32
Liming Rate	kg $CaCO_3$/tonne	[NT]	55391-1	2.8 ‖ 3.8 ‖ RPD: 30
Verification s-Net Acidity	% w/w S	[NT]	55391-1	NA ‖ NA
a-Net Acidity without ANCE	moles H^+/tonne	[NT]	55391-1	37 ‖ 51 ‖ RPD: 32
Liming Rate without ANCE	kg $CaCO_3$/tonne	[NT]	55391-1	2.8 ‖ 3.8 ‖ RPD: 30

CLIENT: Douglas Partners Pty Ltd **Laboratory Report No:** 55391
PROJECT: 41487 Cooranbong 51841

LABORATORY REPORT

NOTES:
LOR - Limit of Reporting.
* This test is not covered by our current NATA accreditation.
^ Sulphur, Calcium and Magnesium results are determined at our Toowoomba Laboratory, (214 McDougal St, Toowoomba, QLD) who have NATA accreditation for these parameters.

Liming rate calculated using a Fineness factor of 1.5 (which is equivalent to finely divided Ag Lime <0.5mm) and Neutralising Value (NV) of 100%
If using Liming Material <100% NV, then Liming Rate can be adusted as follows:
Actual Liming Rate equals Calculated Liming Rate times 100 divided by NV of actual Liming Material

Bulk Density of Material of 1g/cm3 assumed.
If Bulk Density differs from 1g/cm3 then Liming rate can be adjusted as follows:
Actual Liming Rate equals Calculated Liming Rate times Actual Bulk Density

Analysis Date: **Between** 10/04/07 **and** 23/04/07

Douglas Partners
Geotechnics • Environment • Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project Name: COORANBONG ACID SULPHATE ASSESSMENT
Project No: 41487
DP Contact Person: MICHAEL CAWS
Prior Storage: esky / fridge / shelved (circle)

To: SGS Environmental Services
Unit 16, 33 Maddox Street
ALEXANDRIA NSW 2015

Attention: Alex Stenta 8594 0400

Attn:

Sample ID	Sample Type S-soil W-water	Lab ID	Analytes															Notes
			Moisture															
Pit 3/0.5	S	1	•															
Pit 3/1.0	S	2	•															
Pit 7/1.0	S	3	•															
Pit 9/0.3	S	4	•															
Pit 16/2.5	S	5	•															
Pit 20/1.5	S	6	•															
Pit 24/2.5	S	7	•															
PQL (S)	mg/kg																	
PQL (W)	mg/L																	

SGS
Received: 5/4/07
By:
Time: ... am/pm
Samples intact ... yes/no
Ice/Cooler Pack ... yes/no
Comments: 51841

PQL = practical quantitation limit, *As per Laboratory Method Detection Limit

Date relinquished: 4/4/07
Total number of samples in container: 7
Results required by: STANDARD TURNAROUND

SAMPLES RECEIVED
Please sign and date to acknowledge receipt of samples and return by fax

Signature:
Date: 5/4/07 Lab Ref: 51841

Send results to:
Douglas Partners Pty Ltd
Address: Unit D 7 Donaldson Street
Wyong North NSW 2259

Fax: 4351 1410