Appendix A

About this Report

Drawings

About this Report

Introduction

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

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

Copyright

Borehole and Test Pit Logs

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

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

Groundwater

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

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

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

Reports

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

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

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

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

About this Report

Site Anomalies

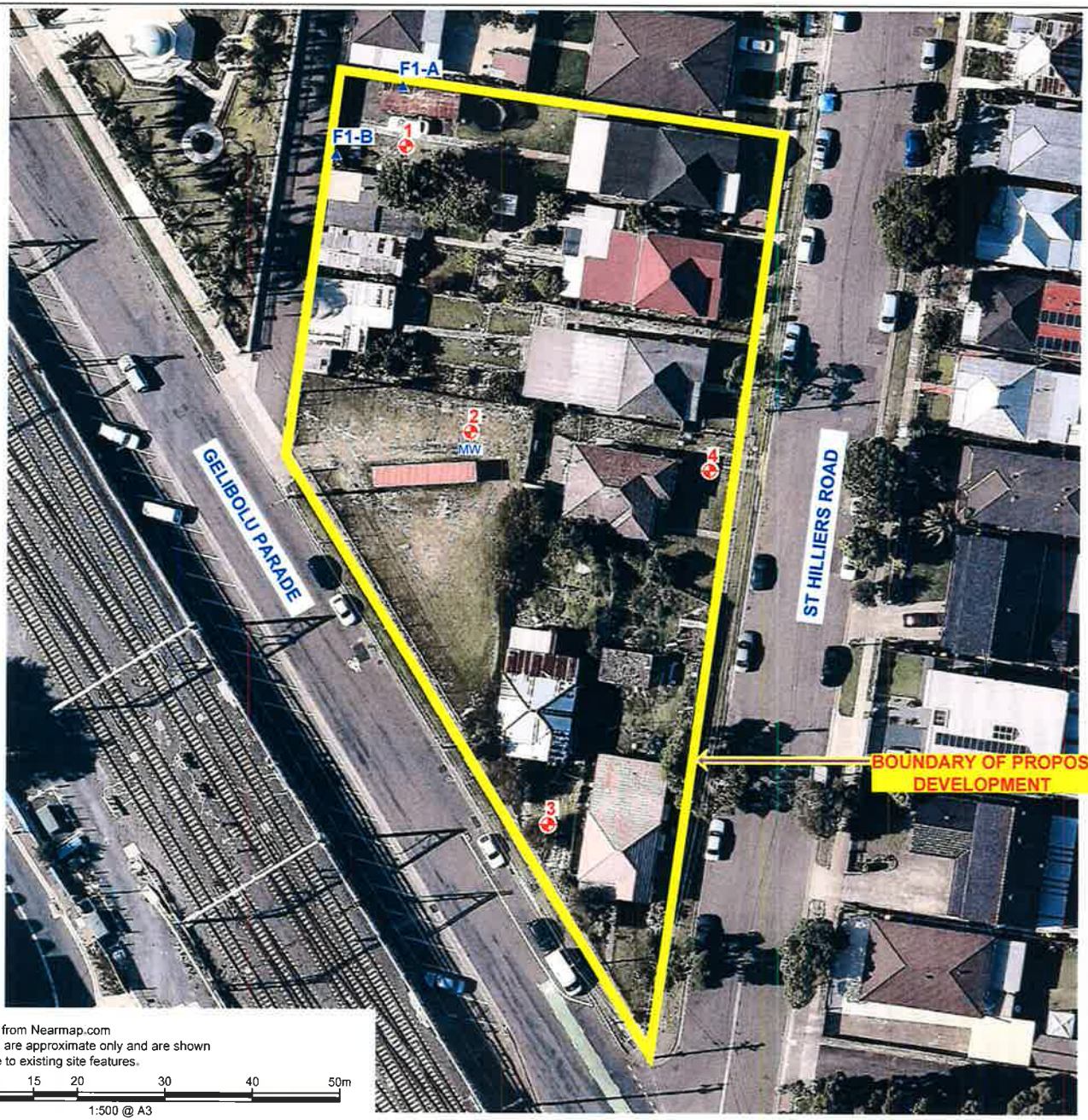
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later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

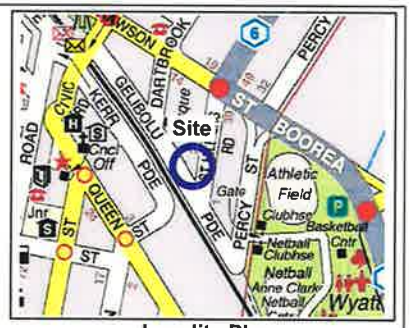
Information for Contractual Purposes

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

Site Inspection

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





Locality Plan

NOTE:
1, Base drawing from Nearmap.com
2, Test locations are approximate only and are shown with reference to existing site features.

0 5 10 15 20 30 40 50m

1:500 @ A3

LEGEND

- Borehole location
- MW Groundwater monitoring well
- ▲ Fibre cement sample (from ground surface)

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: NSW Turkish Islamic Cultural Centre Inc.		
OFFICE: Sydney	DRAWN BY: PSCH	
SCALE: 1	DATE: 24.3.2015	

TITLE: **Borehole Locations**
Gallipoli Aged Care Facility
9-13 Gelibolu Pde & 2-6 St Hilliers Road, AUBURN

PROJECT No:	84769.01
DRAWING No:	1
REVISION:	0

P:\84769.01 AUBURN Gallipoli PSI, WC, ASS\7.0 Drawings\7.2 Dwg\84769.01 1.dwg

Appendix B

Site Photographs

Photograph 1 Site from Gelibolu Pde looking north west (9 Gelibolu Pde in foreground)

Photograph 2 Site from Gelibolu Pde looking east (13 Gelibolu Pde in foreground)

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 1 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Photograph 3 Site from St Hilliers Rd looking north west (9 Gelibolu Pde in foreground)

Photograph 4 Site from laneway looking south (brown colourbond fence at rear of 6 St Hilliers Rd)

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 2 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Photograph 5 Rear of 9 Gelibolu Pde, showing shed

Photograph 6 Rear of 9 Gelibolu Pde, showing inside of shed

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 3 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Photograph 7 Rear of 2A St Hilliers Rd, showing inside of shed

Photograph 8 Rear of 2A St Hilliers Rd

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 4 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Photograph 9 Rear of 4 St Hilliers Rd

Photograph 10 Rear of 4 St Hilliers Rd

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 5 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Photograph 11 Rear of 4 St Hilliers Rd

Photograph 12 Rear of 4 St Hilliers Rd

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 6 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Photograph 13 Rear of 6 St Hilliers Rd, showing shed. Sample F1-B (non-asbestos fibre cement) collected from rear left of photograph adjacent to fence

Photograph 14 Rear of 6 St Hilliers Rd, showing shed. Sample F1-A (asbestos cement) collected from left of shed

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 7 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

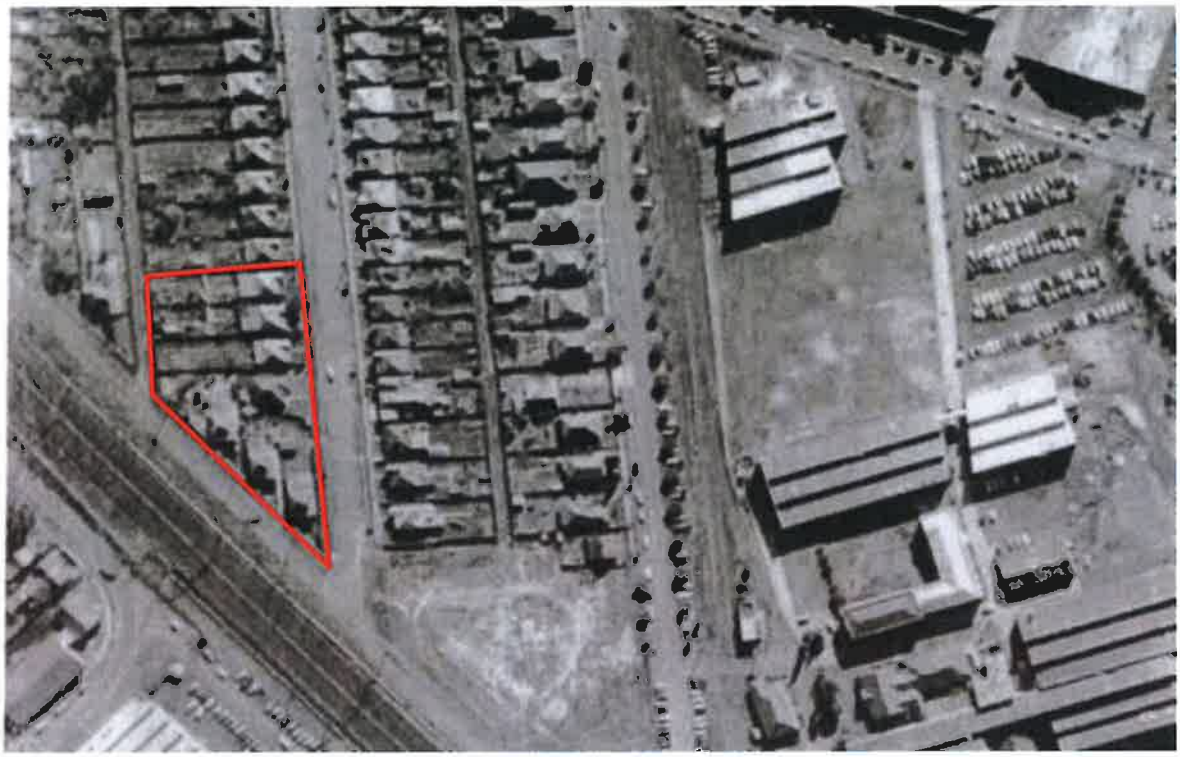
Appendix C

Extracts of Aerial Photographs

Aerial photograph from 1930

Aerial photograph from 1951

Douglas Partners Geotechnics / Environment / Groundwater	**Historical Aerial Photographs 9-13 Gelibolu Parade and 2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 1 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15



Aerial photograph from 1961

Aerial photograph from 1970

Douglas Partners Geotechnics | Environment | Groundwater	**Historical Aerial Photographs 9-13 Gelibolu Parade and 2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01
		PLATE No: 2
		REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Aerial photograph from 1978

Aerial photograph from 1982

Douglas Partners Geotechnics | Environment | Groundwater	**Historical Aerial Photographs 9-13 Gelibolu Parade and 2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01
		PLATE No: 3
		REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Aerial photograph from 1991

Aerial photograph from 1999

Douglas Partners Geotechnics | Environment | Groundwater	**Historical Aerial Photographs** **9-13 Gelibolu Parade and** **2-6 St Hilliers Road, Auburn**	PROJECT: 84769.01 PLATE No: 4 REV: 0
	CLIENT: NSW Auburn TICCI	DATE: Mar-15

Appendix D

Title Deed Search Results

Legal Liaison Searching Services

ABN: 52832569710
Ph: 02 9233 5800
Fax: 02 9221 2827

Level 4, 70 Castlereagh Street,
Sydney 2000
PO Box 2513 Sydney NSW 2000
DX 1019 Sydney

Summary of Owners Report

LPI **Sydney**

Address: - 2 to 6 St Hilliers Road and 9 to 13 Gelibolu Parade, Auburn

Description: - Lots 11 to 13 D.P. 16298 also Lots A, B & C D.P. 374304

As regards Lot 10 D.P. 16298 – 6 St Hilliers Road

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
21.08.1914 (1914 to 1927)	George Peirson (Builder)	Vol 2505 Fol 88
01.04.1927 (1927 to 1937)	Clarice Maude Peirson (Spinster) Now Clarice Maude Sharpe (Married Woman) Harriett Davies (Widow) (Transmission Application not investigated)	Vol 2505 Fol 88
22.10.1937 (1937 to 1953)	Harriett Davies (Widow)	Vol 2505 Fol 88 Now Vol 5256 Fol 249
01.12.1953 (1953 to 1986)	Daniel Charles McAllister (Car and Wagon Builder) Beryl Daphne McAllister (Married Woman)	Vol 5256 Fol 249 Now Vol 6807 Fol 54
15.08.1986 (1986 to 1998)	Beryl Daphne McAllister (Widow)	Vol 6807 Fol 54 Now 10/16298
19.01.1998 (1998 to date)	# Osman Yildirim #Hacer Yildirim	10/16298

# Denotes current registered proprietors

Easements & Leases: - NIL

As regards 11 D.P. 16298 – 4 St Hilliers Road

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
21.08.1914 (1914 to 1927)	George Peirson (Builder)	Vol 2505 Fol 88
01.04.1927 (1927 to 1937)	Clarice Maude Peirson (Spinster) Now Clarice Maude Sharpe (Married Woman) Harriett Davies (Widow) (Transmission Application not investigated)	Vol 2505 Fol 88
22.10.1937 (1937 to 1947)	Clarice Maude Sharpe (Married Woman)	Vol 2505 Fol 88 Now Vol 5256 Fol 247
20.08.1947 (1947 to 1984)	Edwin Charles Toomey (Baker) Hazel Redwood Toomey (Married Woman)	Vol 5256 Fol 247 Now Vol 5785 Fol 247

Legal Liaison Searching Services

ABN: 52832569710
Ph: 02 9233 5800
Fax: 02 9221 2827

Level 4, 70 Castlereagh Street,
Sydney 2000
PO Box 2513 Sydney NSW 2000
DX 1019 Sydney

Search continued as regards 11 D.P. 16298 – 4 St Hilliers Road

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
12.09.1984 (1984 to 1985)	Hazel Redwood Toomey (Widow)	Vol 5785 Fol 247
04.03.1985 (1985 to 2014)	Xu Lam Muoi To Lam	Vol 5785 Fol 247 Now 11/16298
27.03.2014 (2014 to date)	# NSW Auburn Turkish Islamic Cultural Centre Incorporated	11/16298

# Denotes current registered proprietors

Easements & Leases: - NIL

As regards 12 D.P. 16298 – 2 St Hilliers Road

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
21.08.1914 (1914 to 1927)	George Peirson (Builder)	Vol 2505 Fol 88
01.04.1927 (1927 to 1937)	Clarice Maude Peirson (Spinster) Now Clarice Maude Sharpe (Married Woman) Harriett Davies (Widow) (Transmission Application not investigated)	Vol 2505 Fol 88
22.10.1937 (1937 to 1947)	Clarice Maude Sharpe (Married Woman)	Vol 2505 Fol 88 Now Vol 5256 Fol 247
26.09.1947 (1947 to 1969)	Harold Desmond McClure (Labourer)	Vol 5256 Fol 247 Now Vol 5785 Fol 201
18.09.1969 (1969 to 1986)	Tony Loulach (Labourer)	Vol 5785 Fol 201
26.03.1986 (1986 to 2014)	Duc Tang Tu Dam	Vol 5785 Fol 201 Now 12/16298
21.01.2014 (2014 to date)	# NSW Auburn Turkish Islamic Cultural Centre Incorporated	12/16298

# Denotes current registered proprietors

Easements & Leases: - NIL

Legal Liaison Searching Services

ABN: 52832569710
Ph: 02 9233 5800
Fax: 02 9221 2827

Level 4, 70 Castlereagh Street,
Sydney 2000
PO Box 2513 Sydney NSW 2000
DX 1019 Sydney

As regards A D.P. 374394 – 2A St Hilliers Road

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
21.08.1914 (1914 to 1927)	George Peirson (Builder)	Vol 2505 Fol 88
01.04.1927 (1927 to 1937)	Clarice Maude Peirson (Spinster) Now Clarice Maude Sharpe (Married Woman) Harriett Davies (Widow) (Transmission Application not investigated)	Vol 2505 Fol 88
22.10.1937 (1937 to 1947)	Clarice Maude Sharpe (Married Woman)	Vol 2505 Fol 88 Now Vol 5256 Fol 247
22.08.1947 (1947 to 1952)	Clara Hunter Farrer (Married Woman)	Vol 5256 Fol 247 Now Vol 5800 Fol 218
28.05.1952 (1952 to 1986)	Charles Bailey Shepherd (Moulder) Beryl Merle Shepherd (Married Woman)	Vol 5800 Fol 218 Now Vol 6533 Fol 55
26.08.1986 (1986 to 2012)	Council of the Municipality of Auburn	Vol 6533 Fol 55 Now A/374394
17.02.2012 (2012 to date)	# NSW Auburn Turkish Islamic Cultural Centre Incorporated	A/374394

# Denotes current registered proprietors

Easements & Leases: - NIL

As regards B D.P. 374394 – 9 Gelibolu Parade

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
21.08.1914 (1914 to 1927)	George Peirson (Builder)	Vol 2505 Fol 88
01.04.1927 (1927 to 1937)	Clarice Maude Peirson (Spinster) Now Clarice Maude Sharpe (Married Woman) Harriett Davies (Widow) (Transmission Application not investigated)	Vol 2505 Fol 88
22.10.1937 (1937 to 1947)	Clarice Maude Sharpe (Married Woman)	Vol 2505 Fol 88 Now Vol 5256 Fol 247
22.08.1947 (1947 to 1951)	Clara Hunter Farrer (Married Woman)	Vol 5256 Fol 247 Now Vol 5800 Fol 218
03.07.1951 (1951 to 1952)	Mildred Minner (Married Woman)	Vol 5800 Fol 218 Now Vol 6424 Fol 181
06.03.1952 (1952 to 1982)	William Cho On (Café Proprietor)	Vol 6424 Fol 181
19.01.1982 (1982 to 1985)	George Makris Helen Makris	Vol 6424 Fol 181

Legal Liaison Searching Services

ABN: 52832569710
Ph: 02 9233 5800
Fax: 02 9221 2827

Level 4, 70 Castlereagh Street,
Sydney 2000
PO Box 2513 Sydney NSW 2000
DX 1019 Sydney

Search continued as regards B D.P. 374394 – 9 Gelibolu Parade

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
19.03.1985 (1985 to 1986)	Edward Ronald Nicholls	Vol 6424 Fol 181
24.11.1986 (1986 to 2012)	Council of the Municipality of Auburn	Vol 6424 Fol 181 Now B/374394
17.02.2012 (2012 to date)	# NSW Auburn Turkish Islamic Cultural Centre Incorporated	B/374394

# Denotes current registered proprietors

Easements & Leases: - NIL

As regards C D.P. 374394 – 11 Gelibolu Parade

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
21.08.1914 (1914 to 1927)	George Peirson (Builder)	Vol 2505 Fol 88
01.04.1927 (1927 to 1937)	Clarice Maude Peirson (Spinster) Now Clarice Maude Sharpe (Married Woman) Harriett Davies (Widow) (Transmission Application not investigated)	Vol 2505 Fol 88
22.10.1937 (1937 to 1947)	Clarice Maude Sharpe (Married Woman)	Vol 2505 Fol 88 Now Vol 5256 Fol 247
22.08.1947 (1947 to 1951)	Clara Hunter Farrer (Married Woman)	Vol 5256 Fol 247 Now Vol 5800 Fol 218
03.08.1951 (1951 to 1982)	John Stephen Kelly (Meat Worker)	Vol 5800 Fol 218 Now Vol 6417 Fol 93
30.04.1982 (1982 to 1986)	Susan McNee (Married Woman)	Vol 6417 Fol 93
03.09.1986 (1986 to 2012)	Council of the Municipality of Auburn	Vol 6417 Fol 93 Now C/374394
17.02.2012 (2012 to date)	# NSW Auburn Turkish Islamic Cultural Centre Incorporated	C/374394

# Denotes current registered proprietors

Easements & Leases: - NIL

Legal Liaison Searching Services

ABN: 52832569710
Ph: 02 9233 5800
Fax: 02 9221 2827

Level 4, 70 Castlereagh Street,
Sydney 2000
PO Box 2513 Sydney NSW 2000
DX 1019 Sydney

As regards 13 D.P. 16298 – 13 Gelibolu Parade

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
21.08.1914 (1914 to 1927)	George Peirson (Builder)	Vol 2505 Fol 88
01.04.1927 (1927 to 1937)	Clarice Maude Peirson (Spinster) Now Clarice Maude Sharpe (Married Woman) Harriett Davies (Widow) (Transmission Application not investigated)	Vol 2505 Fol 88
22.10.1937 (1937 to 1947)	Clarice Maude Sharpe (Married Woman)	Vol 2505 Fol 88 Now Vol 5256 Fol 247
21.11.1947 (1947 to 1970)	Lily Pearl Ward (Married Woman)	Vol 5256 Fol 247 Now Vol 5801 Fol 6
13.03.1970 (1970 to 1986)	Joseph Kezani (Labourer) Therese Kezani (Married Woman)	Vol 5801 Fol 6
26.08.1986 (1986 to 2012)	Council of the Municipality of Auburn	Vol 5801 Fol 6 Now 13/16294
17.02.2012 (2012 to date)	# NSW Auburn Turkish Islamic Cultural Centre Incorporated	13/16294

# Denotes current registered proprietors

Easements & Leases: - NIL

Yours Sincerely
Mark Groll
17 March 2015
(Ph: 0412 199 304)

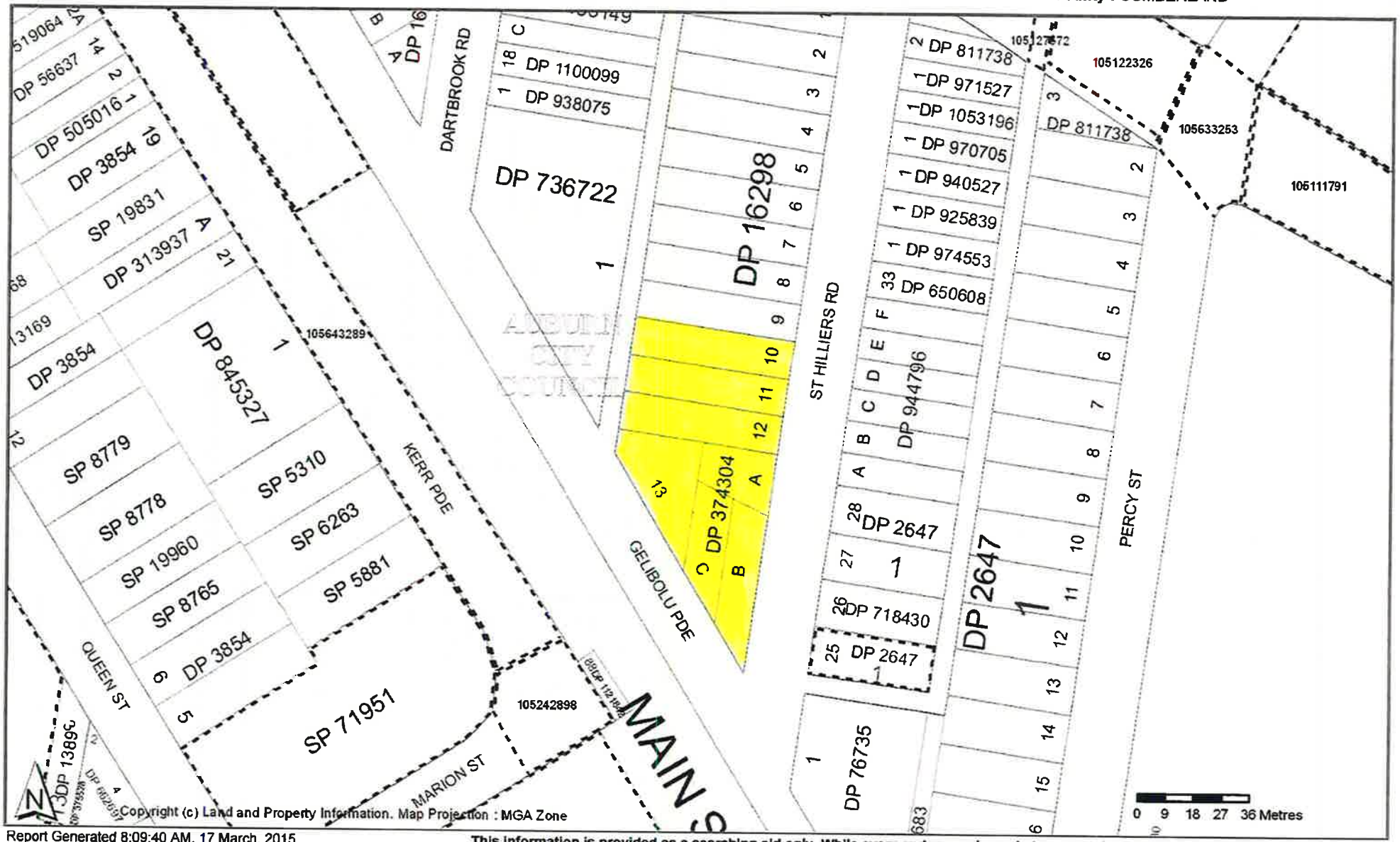
Land & Property Information

Cadastral Records Enquiry Report

Ref : surv:scim-grollm

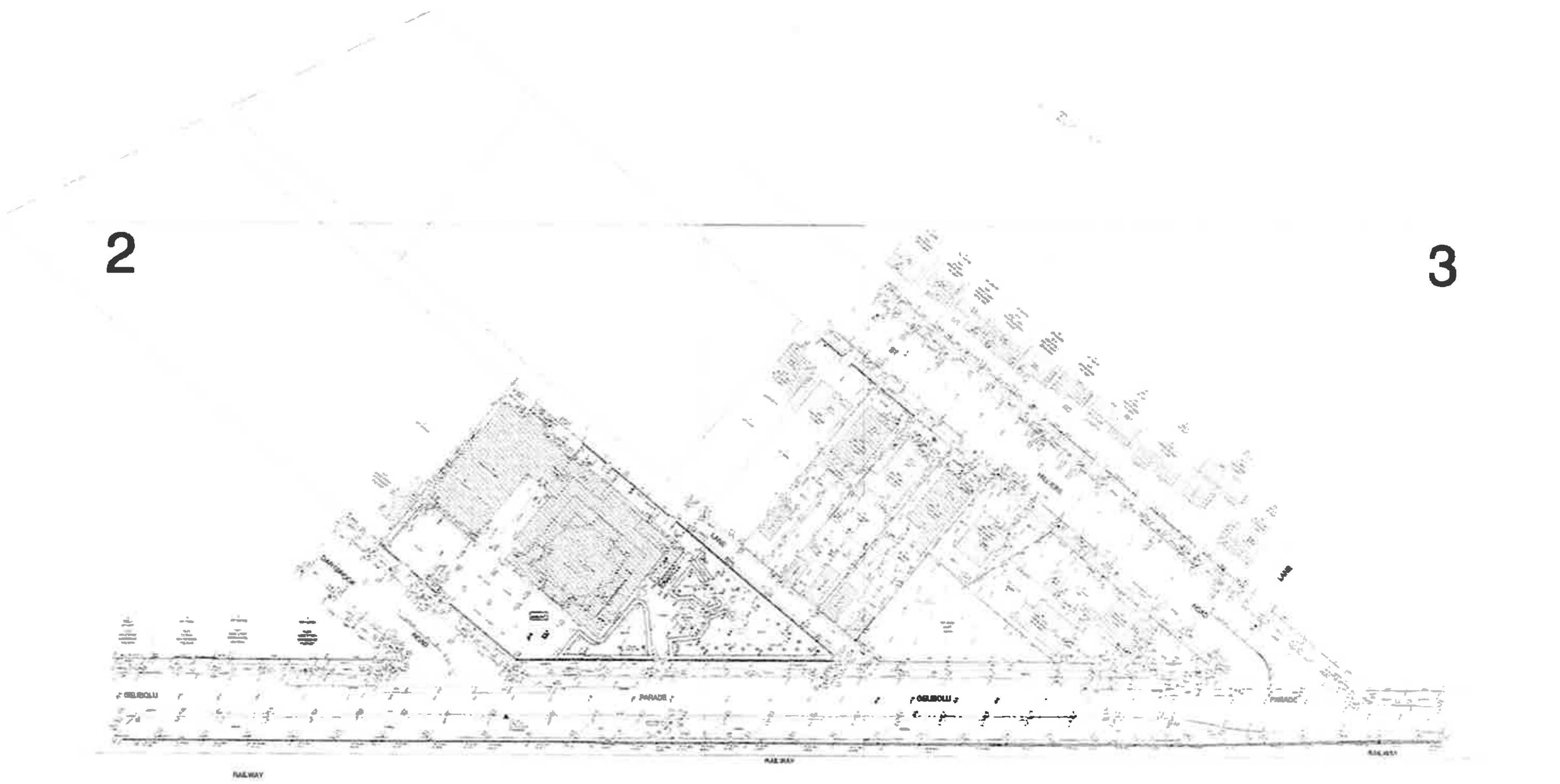
Requested Parcel : Lot 12 DP 16298 **Identified Parcel :** Lot 12 DP 16298

Locality : AUBURN **LGA :** AUBURN **Parish :** LIBERTY PLAINS **County :** CUMBERLAND



Report Generated 8:09:40 AM, 17 March, 2015

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.



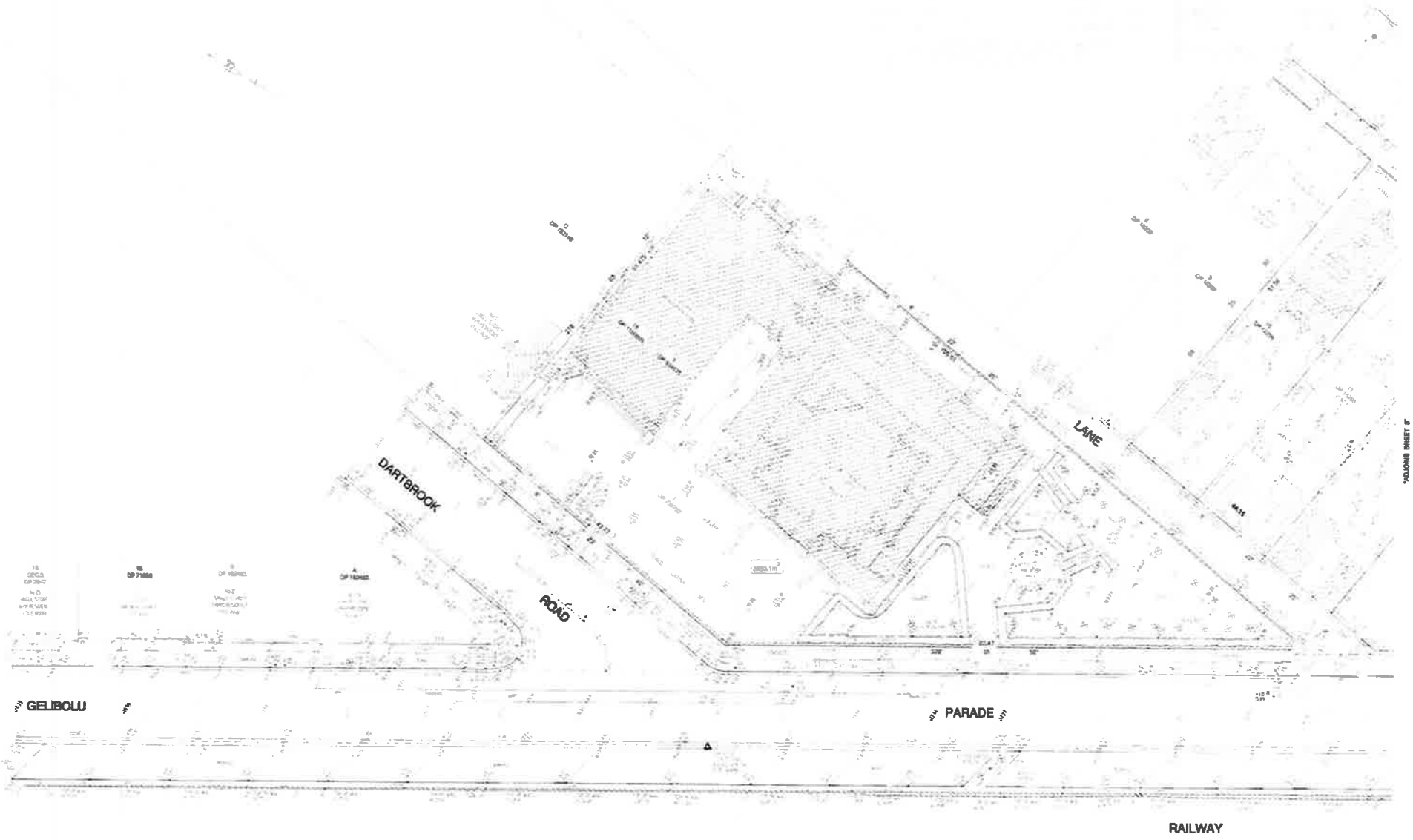
NOTES:

ISSUE	DATE	AMENDMENT

TITLE: PLAN SHOWING SELECTED DETAIL & LEVELS OVER "GALLIPOLI MOSQUE". No.1-5 DARTBROOK ROAD, No.2-6 ST HILLIERS ROAD & No.9-13 GELIBOLU PARADE, AUBURN

LGA: AUBURN		REFERENCE: 02246	
CLIENT: JACOBS		DATE: 4-2-15	SHEET
SCALE (AT A1) 1:200	DATUM AHD	SURVEYOR: MM	1

Norton Survey Partners
SURVEYORS & LAND TITLE CONSULTANTS



NOTES:

ISSUE	DATE	AMENDMENT

TITLE: PLAN SHOWING SELECTED DETAIL & LEVELS OVER "GALLIPOLI MOSQUE", No.1-5 DARTBROOK ROAD, No.2-6 ST HILLIERS ROAD & No.9-13 GELIBOLU PARADE, AUBURN

LGA: AUBURN

REFERENCE: 02249

CLIENT: JACOBS

DATE: 4-2-15

SHEET 2

SCALE (AT A1): 1:250 DATUM: AHD SURVEYOR: MH

Norton Survey Partners
SURVEYORS & LAND TITLE CONSULTANTS
A.C.N. 059 734 988
SUITE 1,
670 DARLING STREET
ROZELLE N.S.W. 2039
PH +61 2 9555 7744
FAX +61 2 9555 7266
office@nortonsurvey.com.au

NOTES:

ISSUE	DATE	AMENDMENT

TITLE: PLAN SHOWING SELECTED DETAIL & LEVELS OVER "GALLIPOLI MOSQUE" No.1-5 DARTBROOK ROAD, No.2-6 ST HILLIERS ROAD & No.5-13 GELIBOLU PARADE, AUBURN

LGA: AUBURN — REFERENCE: 02246

CLIENT: JACOBS — DATE: 4-3-15 — SHEET 3

SCALE (AT A1) 1:200 — DATUM: AHD — SURVEYOR:

Norton Survey Partners
SURVEYORS & LAND TITLE CONSULTANTS

Plan Form No. 2 (for Deposited Plan).

Municipality of Auburn
Shire of

B 862288 (8.8.28)

PLAN

of Subdivision of Lots 3 to 13A of Sec. 2 Deposited Plan 2647

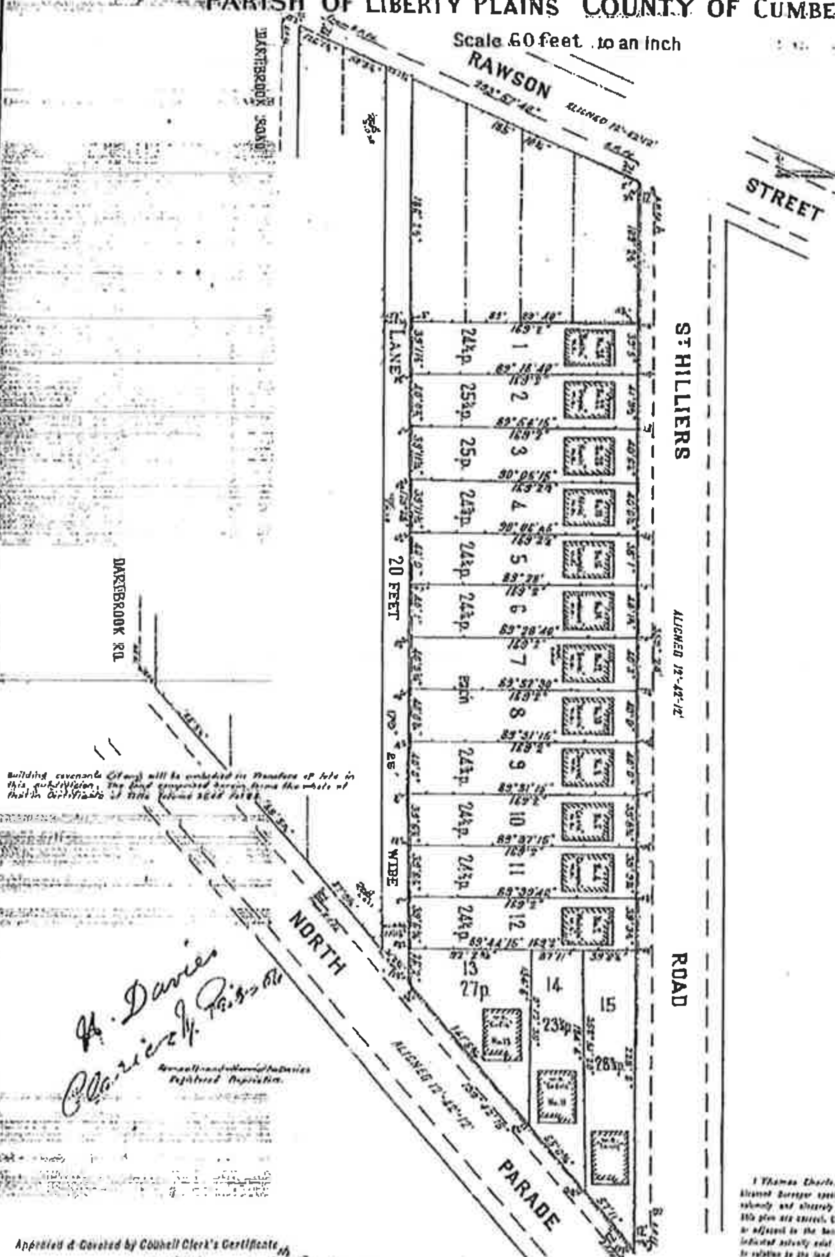
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND

Scale 60 feet to an inch

16298

19th Sept. 1929

Registrar Genl.



Building covenants (if any) will be embodied in Transfers of lots in this subdivision. The land comprised herein forms the whole of that in Certificate of Title Volume 3648 Fol. 83.

H. Davies
Clarice M. Davies

Proprietors

Approved & Covered by Council Clerk's Certificate No. 265 of 6th August 1929

Council Clerk.

Datum line of Azimuth A-B.

Subscribed and declared before me at Sydney this 11th day of July A.D. 1929

J.P.

I Thomas Charles Brown of Martin Place Sydney Licensed Surveyor specially licensed under the Real Property Act, 1900, do hereby solemnly and sincerely declare (a) that all boundaries and measurements shown on this plan are correct, (b) that all survey marks found and relevant physical objects on or adjacent to the boundaries are correctly represented, (c) that all physical objects indicated actually exist in the positions shown, (d) that the whole of the material facts in relation to the land are correctly represented, (e) that the survey has been made * by me, and I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the Oaths Act, 1900.

Thomas C Brown Licensed Surveyor

Date of Survey July 1929

*Add, here, by me or under my immediate supervision as the case may be.

I, Bruce Richard Davies, 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 5th day of November, 1979

AMENDMENTS OR ADDITIONS NOTED ON PLAN IN REGISTRAR GENERAL'S OFFICE.

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 16298

FEET	INCHES	METRES
-	0 1/4	0.005
-	0 3/4	0.02
-	1 1/4	0.03
-	2	0.05
-	2 1/4	0.055
-	2 3/4	0.07
-	3	0.075
-	3 1/2	0.09
-	3 3/4	0.095
-	4	0.1
-	4 1/4	0.11
-	5	0.125
-	5 1/4	0.135
-	5 1/2	0.14
-	6	0.15
-	6 1/4	0.16
-	6 3/4	0.17
-	7	0.18
-	7 3/4	0.195
-	8 1/2	0.215
-	8 3/4	0.22
1	2 1/2	0.37
1	4 3/4	0.425
1	9 1/2	0.545
1	11 1/2	0.595
12	-	3.66
12	2	3.71
13	2	4.015
18	4 1/2	5.6
19	8	5.995
19	11 1/2	6.085
22	1 3/4	6.75
26	2	7.975
31	2 3/4	9.52
37	11	11.555
38	1	11.61
39	0 1/4	11.895
39	5	12.015
39	5 1/4	12.02
39	6 3/4	12.06
39	8 1/4	12.095
39	8 3/4	12.11
39	9 1/2	12.13
39	9 3/4	12.135
39	11 1/2	12.18
39	11 3/4	12.185
40	-	12.19
40	0 1/2	12.205
40	0 3/4	12.21
40	1	12.215
40	1 1/2	12.23
40	1 3/4	12.235
40	3	12.27
40	6 1/4	12.35
41	9 1/2	12.74
42	-	12.8
56	0 3/4	17.09
57	11	17.655
59	3 1/2	18.07
65	0 3/4	19.83
67	9 1/2	20.74
88	3 1/2	26.91
88	5 1/2	26.96
92	2 3/4	28.11
109	2 1/2	33.265
126	1 1/2	38.435
134	6	40.395
141	5 3/4	43.125
169	2	51.56
169	2 1/8	51.57
184	4	56.18
185	10 3/4	56.66
186	2 1/2	56.76
228	8	69.7

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 16298 CONTINUED

AC	RD	P	SQ M
-	-	23 1/4	588.1
-	-	24 1/4	613.4
-	-	24 1/2	619.7
-	-	24 3/4	626
-	-	25	632.3
-	-	25 1/4	638.6
-	-	27	682.9
-	-	28 3/4	727.2

F487446 Ad... ...repared

FP374304

Municipality of Auburn

PLAN

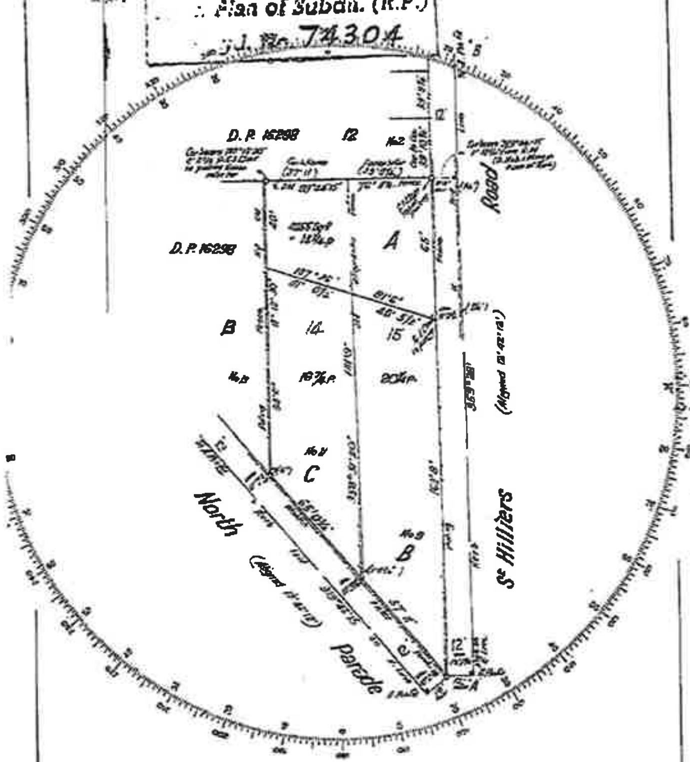
of proposed subdivision of Lots 14 & 15 in D. P. 16298

Parish of Liberty Plains County of Cumberland

Scale 40ft to an inch.

Plan of Subdn. (R.P.)

...J. No. 74304



Approved by Council and severed by Council Clerks Certificate

No. 32/51 29/5/1951

Council Clerk

I HARRY GRIFFITHS of 19 Burran Ave Mosman a Surveyor registered under the Surveyor's Act, 1929, do hereby solemnly and sincerely declare (a) that all boundaries and measurements shown on this plan are correct, (b) that all survey marks found and relevant physical objects on or adjacent to the boundaries are correctly represented, (c) that all physical objects indicated actually exist in the positions shown, (d) that the whole of the material facts in relation to the land are correctly represented, (e) that the survey represented in this plan has been made in accordance with the Survey Practice Regulations, 1933 and was completed on 6th March 1951 and the reference marks have been placed as shown hereon.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the Oaths Act, 1900.

Subscribed and declared before me at Sydney this 29th day of May 1951

(Signature)

Surveyor registered under the Surveyors Act, 1929.

*Strike out either (i) or (ii).

Signatures of parties to be made in this margin.

Mildred Mildred ... Dawson

This is the plan marked "A" referred to in Transfer

Dated 5/7/51

Copy of plan filed No. 146386

CONVERSION TABLE ADDED IN DEPARTMENT OF LANDS		
DP 374304		
FEET	INCHES	METRES
-	0 3/4	0.019
-	1 1/4	0.032
-	4	0.102
1	0 1/2	0.318
3	0 1/4	0.921
10	2 3/4	3.118
10	9 1/4	3.283
11	4	3.454
11	7 3/4	3.550
11	10 3/4	3.626
11	11 1/2	3.645
12	-	3.658
12	1 1/4	3.689
37	11	11.557
39	0 1/4	11.894
39	9 1/4	12.122
39	10 3/4	12.160
40	-	12.192
40	5 1/2	12.332
41	0 1/2	12.510
42	-	12.802
57	11	17.653
65	-	19.812
65	0 3/4	19.831
76	11 1/4	23.451
81	6	24.841
94	6	28.804
131	9	40.157
163	8	49.886

AC RD P	SQ M
- - 14 3/4	373.1
- - 16 3/4	423.7
- - 20 1/4	512.2

SQ FT	SQ M
4055	376.7
4056	376.8

I, Bruce Richard Davies, 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 11th day of December, 1978

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
16/3/2015 3:12PM

FOLIO: 10/16298

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6807 FOL 54

Recorded	Number	Type of Instrument	C.T. Issue
21/11/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
3/3/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
19/1/1998	3736865	TRANSFER	
19/1/1998	3736866	MORTGAGE	EDITION 1

*** END OF SEARCH ***

SH PRINTED ON 16/3/2015

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 10/16298

SEARCH DATE	TIME	EDITION NO	DATE
16/3/2015	3:10 PM	1	19/1/1998

LAND

LOT 10 IN DEPOSITED PLAN 16298
LOCAL GOVERNMENT AREA AUBURN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP16298

FIRST SCHEDULE

OSMAN YILDIRIM
HACER YILDIRIM
AS JOINT TENANTS (T 3736865)

SECOND SCHEDULE (2 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 3736866 MORTGAGE TO WESTPAC BANKING CORPORATION

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.
UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

SH PRINTED ON 16/3/2015

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
16/3/2015 3:13PM

FOLIO: 11/16298

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 5785 FOL 247

Recorded	Number	Type of Instrument	C.T. Issue
17/12/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/8/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
27/3/2014	AI391718	TRANSFER	
27/3/2014	AI391719	MORTGAGE	EDITION 1
20/10/2014	AI972203	DISCHARGE OF MORTGAGE	EDITION 2
21/11/2014	AJ55056	MORTGAGE	EDITION 3

*** END OF SEARCH ***

SH PRINTED ON 16/3/2015

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 11/16298

SEARCH DATE	TIME	EDITION NO	DATE
16/3/2015	3:10 PM	3	21/11/2014

LAND

LOT 11 IN DEPOSITED PLAN 16298
LOCAL GOVERNMENT AREA AUBURN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP16298

FIRST SCHEDULE

NSW AUBURN TURKISH ISLAMIC CULTURAL CENTRE INCORPORATED (T AI391718)

SECOND SCHEDULE (2 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AJ55056 MORTGAGE TO WESTPAC BANKING CORPORATION

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
16/3/2015 3:13PM

FOLIO: 12/16298

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 5785 FOL 201

Recorded	Number	Type of Instrument	C.T. Issue
17/12/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
16/8/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
8/12/1989	Y738495	DISCHARGE OF MORTGAGE	EDITION 1
21/1/2014	AI317194	TRANSFER	
21/1/2014	AI317195	MORTGAGE	EDITION 2

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 12/16298

SEARCH DATE	TIME	EDITION NO	DATE
16/3/2015	3:10 PM	2	21/1/2014

LAND

LOT 12 IN DEPOSITED PLAN 16298
LOCAL GOVERNMENT AREA AUBURN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP16298

FIRST SCHEDULE

NSW AUBURN TURKISH ISLAMIC CULTURAL CENTRE INCORPORATED (T AI317194)

SECOND SCHEDULE (2 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AI317195 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
16/3/2015 3:13PM

FOLIO: A/374304

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6533 FOL 55

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
23/11/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
17/2/2012	AG819935	TRANSFER	
17/2/2012	AG819936	MORTGAGE	EDITION 1

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: A/374304

SEARCH DATE	TIME	EDITION NO	DATE
16/3/2015	3:10 PM	1	17/2/2012

LAND

LOT A IN DEPOSITED PLAN 374304
LOCAL GOVERNMENT AREA AUBURN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP374304

FIRST SCHEDULE

NSW AUBURN TURKISH ISLAMIC CULTURAL CENTRE INCORPORATED (T AG819935)

SECOND SCHEDULE (2 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AG819936 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
16/3/2015 3:14PM

FOLIO: B/374304

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6424 FOL 181

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
17/11/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
17/2/2012	AG819903	TRANSFER	
17/2/2012	AG819904	MORTGAGE	EDITION 1

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: B/374304

SEARCH DATE	TIME	EDITION NO	DATE
16/3/2015	3:10 PM	1	17/2/2012

LAND

LOT B IN DEPOSITED PLAN 374304
LOCAL GOVERNMENT AREA AUBURN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP374304

FIRST SCHEDULE

NSW AUBURN TURKISH ISLAMIC CULTURAL CENTRE INCORPORATED (T AG819903)

SECOND SCHEDULE (2 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AG819904 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
16/3/2015 3:15PM

FOLIO: C/374304

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6417 FOL 93

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
17/11/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
17/2/2012	AG819833	TRANSFER	
17/2/2012	AG819834	MORTGAGE	EDITION 1

*** END OF SEARCH ***

SH PRINTED ON 16/3/2015

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: C/374304

SEARCH DATE	TIME	EDITION NO	DATE
16/3/2015	3:10 PM	1	17/2/2012

LAND

LOT C IN DEPOSITED PLAN 374304
LOCAL GOVERNMENT AREA AUBURN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP374304

FIRST SCHEDULE

NSW AUBURN TURKISH ISLAMIC CULTURAL CENTRE INCORPORATED (T AG819833)

SECOND SCHEDULE (2 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AG819834 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
17/3/2015 7:08AM

FOLIO: 13/16298

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 5801 FOL 6

Recorded	Number	Type of Instrument	C.T. Issue
17/12/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
9/8/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
17/2/2012	AG819956	TRANSFER	
17/2/2012	AG819957	MORTGAGE	EDITION 1

*** END OF SEARCH ***

mg

PRINTED ON 17/3/2015

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 13/16298

SEARCH DATE	TIME	EDITION NO	DATE
17/3/2015	7:08 AM	1	17/2/2012

LAND

LOT 13 IN DEPOSITED PLAN 16298
LOCAL GOVERNMENT AREA AUBURN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP16298

FIRST SCHEDULE

NSW AUBURN TURKISH ISLAMIC CULTURAL CENTRE INCORPORATED (T AG819956)

SECOND SCHEDULE (2 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AG819957 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Appendix E

Field Work Results

Sampling Methods

Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Soil Descriptions

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 -5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

Soil Descriptions

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

Rock Descriptions

Rock Strength

Rock strength is defined by the Point Load Strength Index ($Is_{(50)}$) and refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects. The test procedure is described by Australian Standard 4133.4.1 - 1993. The terms used to describe rock strength are as follows:

Term	Abbreviation	Point Load Index $Is_{(50)}$ MPa	Approx Unconfined Compressive Strength MPa*
Extremely low	EL	<0.03	<0.6
Very low	VL	0.03 - 0.1	0.6 - 2
Low	L	0.1 - 0.3	2 - 6
Medium	M	0.3 - 1.0	6 - 20
High	H	1 - 3	20 - 60
Very high	VH	3 - 10	60 - 200
Extremely high	EH	>10	>200

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Extremely weathered	EW	Rock substance has soil properties, i.e. it can be remoulded and classified as a soil but the texture of the original rock is still evident.
Highly weathered	HW	Limonite staining or bleaching affects whole of rock substance and other signs of decomposition are evident. Porosity and strength may be altered as a result of iron leaching or deposition. Colour and strength of original fresh rock is not recognisable
Moderately weathered	MW	Staining and discolouration of rock substance has taken place
Slightly weathered	SW	Rock substance is slightly discoloured but shows little or no change of strength from fresh rock
Fresh stained	Fs	Rock substance unaffected by weathering but staining visible along defects
Fresh	Fr	No signs of decomposition or staining

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with some fragments
Fractured	Core lengths of 40-200 mm with some shorter and longer sections
Slightly Fractured	Core lengths of 200-1000 mm with some shorter and loner sections
Unbroken	Core lengths mostly > 1000 mm

Rock Descriptions

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or better. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core Drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

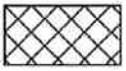
Graphic Symbols for Soil and Rock

General

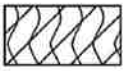

Asphalt

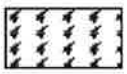

Road base


Concrete


Filling

Soils


Topsoil

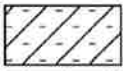

Peat


Clay

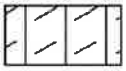

Silty clay

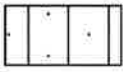

Sandy clay

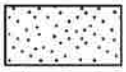

Gravelly clay

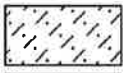

Shaly clay

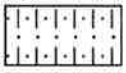

Silt


Clayey silt


Sandy silt


Sand

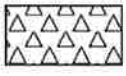

Clayey sand


Silty sand

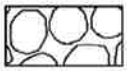

Gravel


Sandy gravel


Cobbles, boulders

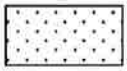

Talus

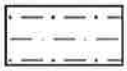
Sedimentary Rocks

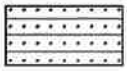

Boulder conglomerate


Conglomerate


Conglomeratic sandstone

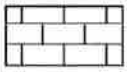

Sandstone


Siltstone


Laminite


Mudstone, claystone, shale


Coal


Limestone

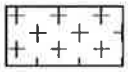
Metamorphic Rocks

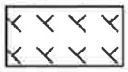

Slate, phyllite, schist

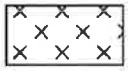

Gneiss

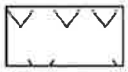

Quartzite

Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

BOREHOLE LOG

CLIENT: NSW Auburn Turkish Islamic Cultural Centre Inc
PROJECT: Gallipoli Aged Care Facility
LOCATION: 9-13 Gelibolu Parade & 2-6 St Hilliers Road, Auburn

SURFACE LEVEL: 15.6 AHD
EASTING: 318333
NORTHING: 6252446
DIP/AZIMUTH: 90°/–

BORE No: 1
PROJECT No: 84769
DATE: 19/3/2015
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
15	0.3	FILLING - brown, slightly clayey, silty, fine to medium sand filling (topsoil) with some fine to medium gravel (concrete, slag, ironstone and igneous) and rootlets, humid							A/E			PID<1
									A/E			PID<1
1		SILTY CLAY - stiff to hard, orange-brown and red-brown mottled, silty clay with a trace to some fine gravel (ironstone), rootlets and charcoal, humid							S/E			2,4,13 N = 17 PID<1
14								Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°	A			PID<1
2									A			PID<1
	2.25	SANDSTONE - medium and high strength, moderately to slightly weathered, fractured, brown-grey and orange, fine grained sandstone						2.25-2.47m: J90°, ir, ro, fe stn				PL(A) = 0.7
13								2.87-3.24m: J90°, pl, ro, fe stn	C	100	79	
3		3.23m: Crushed zone, 50mm						3.23-3.29m: Cz 3.33 & 3.4m: B5°, fe, cly				PL(A) = 1.8
12								3.6-3.78m: J70°- 90°, ir, ro, cly vn, Bo°, fe stn 3.73-3.78m: Cz				
4								4.15m: B0°, fe stn				PL(A) = 0.4
11								4.42-4.44m: J45°, fe stn 4.44m: B0°, fe stn 4.5m: B0°, cly, 10mm 4.63 & 4.84m: B0°, fe stn				PL(A) = 1.6
5	4.94	SANDSTONE - very high strength, slightly weathered then fresh stained, slightly fractured, fine grained sandstone							C	100	99	
10								5.84-5.9m: B0°, cly, 5mm				PL(A) = 3.9
6	6.0	Bore discontinued at 6.0m - target depth reached										
9												
7												
8												
8												
7												
9												
6												

RIG: DT 100 **DRILLER:** SM **LOGGED:** KM/MP **CASING:** HW to 2.05m

TYPE OF BORING: Solid flight auger to 2.0m; Rotary drilling to 2.25m; NMLC-Coring to 6.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD1-190315 = Duplicate sample collected at 0.0-0.1m

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: NSW Auburn Turkish Islamic Cultural Centre Inc
PROJECT: Gallipoli Aged Care Facility
LOCATION: 9-13 Gelibolu Parade & 2-6 St Hilliers Road, Auburn

SURFACE LEVEL: 14.7 AHD
EASTING: 318335
NORTHING: 6252410
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 84769
DATE: 19/3/2015
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
14	0.3	FILLING - brown, slightly clayey, sandy silt filling (topsoil) with some fine to coarse gravel (concrete and ironstone) and a trace of rootlets, humid							A/E			PID=5.6
13	1	SILTY CLAY - very stiff to stiff, brown then red-brown and yellow-brown, silty clay with a trace of fine to medium gravel (ironstone) and charcoal, humid 1.0m: stiff, grey and orange-brown mottled with a trace of organic material, rootlets and coarse gravel (ironstone)							A/E			PID<1
									S/E			2,5,6 N = 11 PID=5.7
12	2	2.5m: becoming slightly sandy (fine grained) grey and orange-brown mottled						Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°	A/E			PID=1.8
11	2.9 3.0	SILTSTONE - very low strength, brown, siltstone with a trace of carbonaceous material				20-03-15		3.02-3.05m: cly 3.08-3.10m: cly	C	100	80	PL(A) = 0.5
		SANDSTONE/LAMINITE - medium strength, highly to moderately weathered, fragmented to fractured and slightly fractured, grey-brown, fine grained sandstone with approximately 15-20% siltstone lamination						3.35m: B0°, cly, 5mm 3.37-3.42m: J70°, un, ro, cln 3.6m: B0°, cly vn				
10	4.38							4.02-4.08m: cly 4.14 & 4.16m: J's 30°-35°, pl, ro, cln 4.28m: CORE LOSS: 100mm 4.38-4.5m: fg 4.5-4.7m: B's 0°, fe				PL(A) = 0.4
	4.7	SILTSTONE - high strength, fresh stained and fresh, fractured and slightly fractured, grey siltstone with some fine grained sandstone laminations							C	95	50	PL(A) = 2.2
9	6.0	Bore discontinued at 6.0m						5.1-5.18m: fg 5.18-5.3m: B's 0°, cly 5.6m: B0°, ca				PL(A) = 2.9
8												
7												
6												
5												

RIG: DT 100 **DRILLER:** SM **LOGGED:** KM/SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary drilling to 3.0m; NMLC-Coring to 6.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering. Measured at 3.0m on 20/03/15

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: NSW Auburn Turkish Islamic Cultural Centre Inc
PROJECT: Gallipoli Aged Care Facility
LOCATION: 9-13 Gelibolu Parade & 2-6 St Hilliers Road, Auburn

SURFACE LEVEL: 14.3 AHD
EASTING: 318351
NORTHING: 6252363
DIP/AZIMUTH: 90°/–

BORE No: 3
PROJECT No: 84769
DATE: 20/3/2015
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
14	0.03	FILLING - grey-brown, slightly clayey, silty, sand filling with some silt and a trace of gravel, rootlets and plastic, humid							A			PID<1
	0.08	CONCRETE (DRIVEWAY)							A/E			PID<1
		SILTY CLAY - firm and stiff, brown, grey and red-brown mottled, silty clay with a trace of fine to medium gravel (ironstone) and rootlets moist							A/E			PID<1
13	1								A/E			PID<1
									S/E			3,4,7 N = 11
	2											PID<1
12	2.3	SHALE - extremely low to very low strength, grey shale with a trace of medium gravel (ironstone)						Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°	A			PID<1
									S			13,25/140mm refusal
11	2.9	LAMINITE - extremely low and very low strength, extremely and highly weathered, slightly fractured, grey and red-brown, laminite with approximately 20% fine sandstone laminations and some low strength bands from 3.4m						3.16m: J30°, pl, ro, fe 3.36m: B0°, cly, 12mm 3.53m: J60°, ir, ro, fe 3.76-3.8m: J90°, pl, ro, he	C	100	40	PL(A) = 0.2
10	4.1	LAMINITE - medium strength, moderately then slightly weathered, slightly fractured, light grey to grey, laminite with approximately 20% fine sandstone lamination						4.26m: B5°, cly, 2mm 4.38-4.58m: J70°- 90°, ir, ro, fe				PL(A) = 0.7
9	5											PL(A) = 0.6
								5.15m: B0°, cly, 3mm 5.31m: J90°- 20°, ir, ro, he	C	100	100	PL(A) = 0.7
8	5.8	SHALE - high to very high strength, fresh, slightly fractured, grey shale										PL(A) = 3
	6.4	Bore discontinued at 6.4m - target depth reached										
7	7											
6	8											
5	9											

RIG: DT 100 **DRILLER:** SM **LOGGED:** KM/MB/SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary (water) to 2.9m; NMLC-Coring to 6.39m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: NSW Auburn Turkish Islamic Cultural Centre Inc
PROJECT: Gallipoli Aged Care Facility
LOCATION: 9-13 Gelibolu Parade & 2-6 St Hilliers Road, Auburn

SURFACE LEVEL: 14.0 AHD
EASTING: 318369
NORTHING: 6252403
DIP/AZIMUTH: 90°/--

BORE No: 4
PROJECT No: 84769
DATE: 20/3/2015
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
14	0.2	FILLING - dark grey-brown, slightly clayey, silty sand filling (topsoil) with some rootlets and a trace of fine gravel (ironstone and concrete), humid							A/E			PID=1.1
									A/E			PID<1
13	1	SILTY CLAY - firm to stiff, orange-brown mottled grey and brown, silty clay with some fine to medium gravel (ironstone) and a trace of rootlets, moist							A/E			PID<1
									S/E			2,2,3 N = 5 PID<1
12	2							Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°	A			PID<1
	2.5	SHALE - extremely low strength, extremely weathered, grey shale							S			5,25/130mm refusal PID<1
11	2.95	LAMINITE - medium strength, moderately weathered, fractured and slightly fractured, grey-brown, laminite with approximately 20% siltstone laminations						3.0-3.04m: J90°, ir, ro, fe 3.11-3.14m: fg 3.24m: B5°, cly, 5mm 3.41m: J60°, pl, ro, cln 3.47-3.51m: J90°, ir, ro, cln	C	100	66	PL(A) = 0.5
10	4.07							4m: CORE LOSS: 70mm 4.07-4.19m: fg				
	4.4	SHALE/SILTSTONE - high strength, fresh stained then fresh, slightly fractured then unbroken, grey to grey-brown, shale/siltstone						4.68m: B0°, cly, 2mm	C	97	80	PL(A) = 2.6 PL(A) = 1.2
8	6.0	Bore discontinued at 6.0m										

RIG: DT 100 **DRILLER:** SM **LOGGED:** KM/MB/SI **CASING:** HW to 2.5m
TYPE OF BORING: Solid flight auger (T-bit) to 2.5m; Rotary (water) to 2.95m; NMLC-Coring to 6.0m
WATER OBSERVATIONS: No free groundwater observed whilst augering
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

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

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Appendix F

Summary of Laboratory Results

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Table F1: Summary of Laboratory Results for Soil Analysis

Sample	Soil Type	Representative Overlying Soil Type[b]	Fill/ Natural	Date Sampled	Heavy Metals									PAH						TRH/TPH [i]		TRH (NEPM 2013)[i]						BTEX				phenol [h]	PCB [g]	OCP			OPP [g]	asbestos
					As	Cd	Cr [c]	Cu	Pb		Hg	Ni	Zn	total		BaP TEQ [d]	BaP			Naphthalene	$C_6 - C_9$	$C_{10} - C_{36}$ [e]	C6-C10	>C10-C16	F1 - C6 – C10 less BTEX	F2 - >C10-C16 less naphthalene	>C16-C34	>C34-C40	Benzene	Toluene	Ethylbenzene	xylene [e]			Aldrin	Dieldrin	Other [f]		
					Total	Total	Total	Total	Total	TCLP	Total	Total	Total	Total	TCLP	Total	Total	TCLP	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Soil Assessment Criteria (SAC) - NEPM (as amended 2013) (refer to report body for details)																																					0.1g/kg
Residential with Minimal Access to Soil																																					
HIL B					500	150	500 [c]	30,000	1,200		120/30	1,200	60,000	400		4																	100	1	10				
ER/ ESL					100		410	210	1,100			170	480				0.7		170					120	180		1,300	5,600	65	105	125	45					180		
Management Limit	fine																						800	1,000			3,500	10,000										
Management Limit	coarse																						700	1,000			2,500	10,000										
HSLs - Vapour Intrusion																																					
HSL A&B	0-<1m	sand																	3					45	110				0.5	100	55	40						
HSL B - direct contact																			2,200					5,600	4,200	5,800	8,100		140	21,000	5,900	17,000						
Waste Classification Thresholds																																					
General Solid	CT1				100	20	100	-	100		4	40		200			0.8			650	10,000								10	288	600	1,000	288	<50	<50 [j]			4 [g]	nil
	SCC1/TCLP1								1,500	5				200			10	0.04																				
Published Background Ranges																																					
NEPC (1999)					1-50	1	5-1000	2-100	2-200		0.03	5-500	10-300																0.05 - 1	0.1 - 1			0.03 – 0.5	0.02 – 0.1	<0.001 - <0.05	<0.005 - <0.05	<0.001 - <0.07		
ANZECC (1992)					0.2-30	0.04-2	0.5-110	1-190	<2-200		0.001-0.1	2-400	2-180	0.85-5																								
ANZECC (2000)					1-53	0.016-0.78	2.5-873	0.4-412	3-81			1-517	1-263																										
Laboratory Results																																					
1	/	0-0.1	coarse	sand	F	19/03/15	11	2	20	120	1,200	0.41	<0.1	15	840	NIL (+)VE		<0.5	<0.05		<0.1	<25	530	<25	<50	<25	<50	300	500	<0.2	<0.5	<1	<3	<5	<0.1	<0.1	0.1	<0.1	<0.1	NAD
BD1/19031S [a]			coarse	sand	F	19/03/15	8	2	14	81	850		<0.1	12	660	NIL (+)VE		<0.5	<0.05		<0.1																		
1	/	1-1.45	fine	clay	N	19/03/15	10	<0.4	8	18	11		<0.1	11	40	NIL (+)VE		<0.5	<0.05		<0.1	<25	<250	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<5	<0.1	<0.1	<0.1	<0.1	<0.1	
F1	-A	0	-	-	Fibro	19/03/15																																	Chrysotile
F1	-B	0	-	-	Fibro	19/03/15																																	NAD
2	/	0-0.1	coarse	sand	F	19/03/15	6	<0.4	31	74	96		<0.1	33	140	24	NIL (+)VE	1.9	1.1	<0.001	<0.1	<25	110	<25	<50	<25	<50	130	100	<0.2	<0.5	<1	<3	<5	<0.5	<0.1	<0.1	<0.1	<0.1	NAD
3	/	0-0.03	coarse	sand	F	20/03/15																																	NAD
3	/	0.1-0.2	fine	sand	N	20/03/15	10	<0.4	19	17	53		<0.1	7	47	8.4		0.6	0.3		<0.1	<25	<250	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
3	/	0.4-0.5	fine	sand	N	20/03/15	12	<0.4	22	10	22		<0.1	4	14	NIL (+)VE		<0.5	<0.05		<0.1	<25	<250	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3						
4	/	0-0.1	coarse	sand	F	20/03/15	10	0.8	15	75	160	0.06	0.1	8	430	4.1		0.6	0.4		<0.1	<25	<250	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD

Notes

a Replicate sample of sample listed directly above
b Overlying material applying for HSL. Soil type adopted on conservative basis
c Analysis result for total Cr, SAC and waste classification guidelines for Cr(VI), background ranges for Cr(III)
d Where results of one or more component compound are above PQL sum of all results above PQL given, when all results are below PQL results quoted as less than the sum of PQLs of the individual analytes
e Where results of one or more component compound are above PQL sum of all results above PQL given when all results are below PQL results quoted as <PQL of majority of individual analytes
f Guideline for scheduled chemicals, including OCP
g Guideline for chlorpyrifos, the most stringent OPP guideline
h Analysis result for total phenol, SAC for pentachlorophenol and waste classification guidelines for phenol (non-halogenated)
i Analysis result for TRH, guidelines for TPH

Italic Exceedance of EIL/ESL
Bold Exceedance of SAC

Acronyms

As arsenic
BaP benzo(a)pyrene
BaP TEQ benzo(a)pyrene toxic equivalent
BTEX benzene, toluene, ethyl benzene, total xylenes
Cd cadmium
Cr chromium (total)
Cu copper
EIL ecological investigation level
ESL ecological screening level
GIL groundwater investigation level
Hg mercury
HIL health investigation level
HSL health screening level
NAD no asbestos detected at the limit of reporting
Ni nickel
NL "Not limiting" to human health for the proposed land use for vapour intrusion from petroleum hydrocarbons
OCP organochlorine pesticides
OPP organophosphorus pesticides
PAH polycyclic aromatic hydrocarbons
Pb lead
PCB polychlorinated biphenyls
PQL practical quantitation limit
TCLP toxicity characteristic leaching procedure
TPH total petroleum hydrocarbons
TRH total recoverable hydrocarbons, including total petroleum hydrocarbons (TPH)
VOC volatile organic compounds
Zn zinc

Appendix G

NATA Laboratory Certificates of Analysis

and Chain of Custody Documentation

waste

Douglas Partners
Geotechnics · Environment · Groundwater

COPY OF SAMPLE LIST

CHAIN OF CUSTODY

Project Name: Auburn
Project No: 84769.01 Sampler: KM/MB
Project Mgr: NLE Mob. Phone: 0414 769 011
Email: nerilee.edwards@douglaspartners.com.au
Date Required: STD; ESdat Format Lab Quote No.

To: Envirolab Services
12 Ashley St Chatswood 2067
Attn: Tania Notaras
Phone: (02) 9910 6200 Fax: (02) 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Lab ID 125570	Sampling Date	Sample Type S - soil W - water	Container type G – glass P - plastic	HM8	~~As Cd Cr Cu Pb Hg Ni Zn~~ Full Suite	TRH/ BTEX MTBE	PAH	phenol/ OCP/OP P PCB	~~VOC~~ Combo 3	asbestos	Combo 8a	Combo 8	Notes/preservation
1/0-0.1	1	19/3	S	G, P								✓		Combo
1/0.4-0.5	2	↓	↓	↓										Combo
1/1-1.45	3	↓	↓	↓									✓	Combo
1/1.6-1.7	4	↓	↓	P										Combo
1/1.9-2.0	5	↓	↓	P										Combo
2/0-0.1	6	↓	↓	G, P								✓		Combo
2/0.5-1	7	↓	↓	↓										Combo
2/1-1.45	8	↓	↓	↓		✓								Combo
2/1.9-2.0	9	↓	↓	↓										Combo
2/2.5-2.9	10	↓	↓	P										Combo
3/0-0.03	11	20/3	↓	P							✓			Combo
3/0.1-0.2	12	↓	↓	G, P								✓		Combo
3/0.4-0.5	13	↓	↓	G, P						✓				Combo

Lab Report No. ....
Send Results to: Douglas Partners Address: 96 Hermitage Road West Ryde NSW 2114 Phone: (02) 4271 1836 Fax: (02) 4271 1897

Relinquished by: KMcPhee Signed: [signature] Date & Time: 23/3 930am Transported to laboratory by: Hunter Express

Received By: [signature] Date & Time: 23/3/15 1200

Form COC

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Auburn
Project No: 84769.01 ....Sampler: ...KM/MB.....
Project Mgr: NLE..... Mob. Phone: 0414 769 011 .....
Email: nerilee.edwards@douglaspartners.com.au .....
Date Required: STD; ESdat Format.....Lab Quote No. .....

To: Envirolab Services
12 Ashley St Chatswood 2067
Attn: Tania Notaras
Phone: (02) 9910 6200 Fax: (02) 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Lab ID 125570	Sampling Date	Sample Type S - soil W - water	Container type G - glass P - plastic	Analytes: HM8	As Cd Cr Pb Hg Ni	TRH/ BTEX MTBE	PAH	phenol/ OCP/OP P PCB	VOC combo 3	asbestos	PAH combo 8a	combo 8	Notes/preservation
3/0.9-1.0	14	20/3	S	G,P										Combo
3/1-1.45	15	"	"	↓										Combo
3/1.9-2.0	16			P										Combo
3/2.5-2.9	17			P										Combo
4/0-0.1	18			G,P								✓		Combo
4/0.4-0.5	19			↓										Combo
4/0.9-1.0	20													Combo
4/1-1.45	21													Combo
4/1.8-2.0	22			P										Combo
4/2.5-2.78	23	↓		P										Combo
BD1/190315	24		↓	G	✓			✓						Combo
F1	25	19/3	Above	P							✓			Combo
														Combo

Lab Report No. .....
Send Results to: Douglas Partners Address: 96 Hermitage Road West Ryde NSW 2114
Phone: (02) 4271 1836
Fax: (02) 4271 1897

Relinquished by: Signed: Date & Time: Transported to laboratory by: Hunter Express
Received By: Date & Time: 23/3/15 1200

Salinity

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Auburn
Project No: 84769.01 Sampler: KM/MB
Project Mgr: NLE Mob. Phone: 0414 769 011
Email: nerilee.edwards@douglaspartners.com.au
Date Required: STD; ESdat Format Lab Quote No.

To: Envirolab Services
12 Ashley St Chatswood 2067
Attn: Tania Notaras
Phone: (02) 9910 6200 Fax: (02) 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Lab ID	Sampling Date	Sample Type S - soil W – water	Container type G – glass P - plastic	HM8	As Cd Cr Pb Hg Ni	TRH/ BTEX MTBE	PAH	phenol/ OCP/OP P PCB	VOC	asbestos	pH	EC 1:5	Notes/preservation
1/0-0.1	1	19/3	S	G, P								↓	↓	Combo
1/0.4-0.5	2	↓	↓	↓								↓	↓	Combo
1/1-1.45	3	↓	↓	↓								↓	↓	Combo
1/1.6-1.7	4	↓	↓	P								↓	↓	Combo
1/1.9-2.0	5	↓	↓	P								↓	↓	Combo
2/0-0.1	6	↓	↓	G, P								↓	↓	Combo
2/0.5-1	7	↓	↓	↓								↓	↓	Combo
2/1-1.45	8	↓	↓	↓								↓	↓	Combo
2/1.9-2.0	9	↓	↓	↓								↓	↓	Combo
2/2.5-2.9	10	↓	↓	P								↓	↓	Combo
3/0-0.03	11	20/3	↓	P								↓	↓	Combo
3/0.1-0.2	12	↓	↓	G, P								↓	↓	Combo
3/0.4-0.5	13	↓	↓	G, P								↓	↓	Combo

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 125570
Date Received: 23/3/15
Time Received: 1200
Received by: JYH
Temp: Cool/Ambient 19.1
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road West Ryde NSW 2114 Phone: (02) 4271 1836 Fax: (02) 4271 1897

Relinquished by: Signed: Date & Time: Transported to laboratory by: Hunter Express
Received By: [signature] Date & Time: 23/3/15 1200

Form COC

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Auburn
Project No: 84769.01 Sampler: KM/MB
Project Mgr: NLE Mob. Phone: 0414 769 011
Email: nerilee.edwards@douglaspartners.com.au
Date Required: STD; ESdat Format Lab Quote No.

To: Envirolab Services
12 Ashley St Chatswood 2067
Attn: Tania Notaras
Phone: (02) 9910 6200 Fax: (02) 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Lab ID (125570)	Sampling Date	Sample Type S - soil W – water	Container type G – glass P - plastic	Analytes: HM8	As Cd Cr Pb Hg Ni	TRH/ BTEX MTBE	PAH	phenol/ OCP/OP P PCB	VOC	asbestos	pH	EC 1:5	Notes/preservation
3/0.9-1.0	14	20/3	S	G, P										Combo
3/1-1.45	15	"	"	P										Combo
3/1.9-2.0	16			P										Combo
3/2.5-2.79	17			P										Combo
4/0-0.1	18			G, P										Combo
4/0.4-0.5	19													Combo
4/0.9-1.0	20													Combo
4/1-1.45	21													Combo
4/1.8-2.0	22			P										Combo
4/2.5-2.78	23			P										Combo
BD1/	24			G										Combo
E1	25	19/3	Labora	P										Combo
														Combo

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road West Ryde NSW 2114
Phone: (02) 4271 1836
Fax: (02) 4271 1897

Relinquished by: K Murphy Signed: Date & Time: 23/3 9.30am Transported to laboratory by: Hunter Express
Received By: Date & Time: 23/3/15 1200

Form COC

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 125570

Client:
Douglas Partners Pty Ltd
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Nerilee Edwards

Sample log in details:

Your Reference:	**84769.01, Auburn**
No. of samples:	24 Soils, 1 Materials
Date samples received / completed instructions received	23/3/2015 / 23/3/2015

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	30/03/15 / 30/03/15
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	125570-1	125570-3	125570-6	125570-12	125570-13
Your Reference	----------	1	1	2	3	3
Depth	----------	0-0.1	1-1.45	0-0.1	0.1-0.2	0.4-0.5
Date Sampled		19/03/2015	19/03/2015	19/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	119	116	121	113	115

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	125570-18
Your Reference	----------	4
Depth	----------	0-0.1
Date Sampled		20/03/2015
Type of sample		Soil
Date extracted	-	24/03/2015
Date analysed	-	25/03/2015
TRHC6 - C9	mg/kg	<25
TRHC6 - C10	mg/kg	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	115

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	125570-1	125570-3	125570-6	125570-12	125570-13
Your Reference	----------	1	1	2	3	3
Depth	----------	0-0.1	1-1.45	0-0.1	0.1-0.2	0.4-0.5
Date Sampled		19/03/2015	19/03/2015	19/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	130	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	390	<100	110	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	300	<100	130	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	500	<100	100	<100	<100
Surrogate o-Terphenyl	%	91	83	84	87	85

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	125570-18
Your Reference	----------	4
Depth	----------	0-0.1
Date Sampled		20/03/2015
Type of sample		Soil
Date extracted	-	24/03/2015
Date analysed	-	25/03/2015
TRHC$_{10}$ - C$_{14}$	mg/kg	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100
Surrogate o-Terphenyl	%	86

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	125570-1 1 0-0.1 19/03/2015 Soil	125570-3 1 1-1.45 19/03/2015 Soil	125570-6 2 0-0.1 19/03/2015 Soil	125570-12 3 0.1-0.2 20/03/2015 Soil	125570-13 3 0.4-0.5 20/03/2015 Soil
Date extracted	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	4.2	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1	1.0	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	5.3	1	<0.1
Pyrene	mg/kg	<0.1	<0.1	4.2	0.8	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	2.0	0.5	<0.1
Chrysene	mg/kg	<0.1	<0.1	1.3	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	2.1	0.6	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	1.1	0.3	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	1.0	0.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	1.0	0.2	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	1.9	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	1.9	0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	1.9	0.6	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	24	4.4	NIL (+)VE
Surrogate p-Terphenyl-d14	%	111	101	100	100	102

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	125570-18 4 0-0.1 20/03/2015 Soil	125570-24 BD1/190315 - 20/03/2015 Soil
Date extracted	-	24/03/2015	24/03/2015
Date analysed	-	24/03/2015	24/03/2015
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	0.8	<0.1
Pyrene	mg/kg	0.8	<0.1
Benzo(a)anthracene	mg/kg	0.3	<0.1
Chrysene	mg/kg	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.7	<0.2
Benzo(a)pyrene	mg/kg	0.4	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.3	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.3	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.6	<0.5
Total Positive PAHs	mg/kg	4.1	NIL(+)VE
Surrogate p-Terphenyl-d14	%	97	104

Organochlorine Pesticides in soil						
Our Reference:	UNITS	125570-1	125570-3	125570-6	125570-12	125570-18
Your Reference	----------	1	1	2	3	4
Depth	----------	0-0.1	1-1.45	0-0.1	0.1-0.2	0-0.1
Date Sampled		19/03/2015	19/03/2015	19/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	26/03/2015	26/03/2015	26/03/2015	26/03/2015	26/03/2015
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	93	92	95	101

Organophosphorus Pesticides Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	125570-1 1 0-0.1 19/03/2015 Soil	125570-3 1 1-1.45 19/03/2015 Soil	125570-6 2 0-0.1 19/03/2015 Soil	125570-12 3 0.1-0.2 20/03/2015 Soil	125570-18 4 0-0.1 20/03/2015 Soil
Date extracted	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	26/03/2015	26/03/2015	26/03/2015	26/03/2015	26/03/2015
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	93	92	95	101

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	125570-1 1 0-0.1 19/03/2015 Soil	125570-3 1 1-1.45 19/03/2015 Soil	125570-6 2 0-0.1 19/03/2015 Soil	125570-12 3 0.1-0.2 20/03/2015 Soil	125570-18 4 0-0.1 20/03/2015 Soil
Date extracted	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Arochlor 1016	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Surrogate TCLMX	%	92	93	92	95	101

Acid Extractable metals in soil						
Our Reference:	UNITS	125570-1	125570-3	125570-6	125570-12	125570-13
Your Reference	----------	1	1	2	3	3
Depth	----------	0-0.1	1-1.45	0-0.1	0.1-0.2	0.4-0.5
Date Sampled		19/03/2015	19/03/2015	19/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Arsenic	mg/kg	11	10	6	10	12
Cadmium	mg/kg	2	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	8	31	19	22
Copper	mg/kg	120	18	74	17	10
Lead	mg/kg	1,200	11	96	53	22
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	11	33	7	4
Zinc	mg/kg	840	40	140	47	14

Acid Extractable metals in soil			
Our Reference:	UNITS	125570-18	125570-24
Your Reference	----------	4	BD1/190315
Depth	----------	0-0.1	-
Date Sampled		20/03/2015	20/03/2015
Type of sample		Soil	Soil
Date digested	-	24/03/2015	24/03/2015
Date analysed	-	24/03/2015	24/03/2015
Arsenic	mg/kg	10	8
Cadmium	mg/kg	0.8	2
Chromium	mg/kg	15	14
Copper	mg/kg	75	81
Lead	mg/kg	160	850
Mercury	mg/kg	0.1	<0.1
Nickel	mg/kg	8	12
Zinc	mg/kg	430	660

Misc Soil - Inorg						
Our Reference:	UNITS	125570-1	125570-3	125570-6	125570-12	125570-18
Your Reference	----------	1	1	2	3	4
Depth	----------	0-0.1	1-1.45	0-0.1	0.1-0.2	0-0.1
Date Sampled		19/03/2015	19/03/2015	19/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Inorg - Soil						
Our Reference:	UNITS	125570-1	125570-2	125570-3	125570-4	125570-5
Your Reference	----------	1	1	1	1	1
Depth	----------	0-0.1	0.4-0.5	1-1.45	1.6-1.7	1.9-2.0
Date Sampled		19/03/2015	19/03/2015	19/03/2015	19/03/2015	19/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
pH 1:5 soil:water	pH Units	6.9	5.6	5.9	7.1	7.5
Electrical Conductivity 1:5 soil:water	µS/cm	62	76	66	78	92

Misc Inorg - Soil						
Our Reference:	UNITS	125570-6	125570-7	125570-8	125570-9	125570-10
Your Reference	----------	2	2	2	2	2
Depth	----------	0-0.1	0.5-1	1-1.45	1.9-2.0	2.5-2.9
Date Sampled		19/03/2015	19/03/2015	19/03/2015	19/03/2015	19/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
pH 1:5 soil:water	pH Units	8.4	5.8	5.4	7.5	8.9
Electrical Conductivity 1:5 soil:water	µS/cm	130	260	740	490	440

Misc Inorg - Soil						
Our Reference:	UNITS	125570-11	125570-12	125570-13	125570-14	125570-15
Your Reference	----------	3	3	3	3	3
Depth	----------	0-0.03	0.1-0.2	0.4-0.5	0.9-1.0	1-1.45
Date Sampled		20/03/2015	20/03/2015	20/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
pH 1:5 soil:water	pH Units	7.8	8.6	7.8	5.2	5.2
Electrical Conductivity 1:5 soil:water	µS/cm	110	160	32	91	100

Misc Inorg - Soil						
Our Reference:	UNITS	125570-16	125570-17	125570-18	125570-19	125570-20
Your Reference	----------	3	3	4	4	4
Depth	----------	1.9-2.0	2.5-2.9	0-0.1	0.4-0.5	0.9-1.0
Date Sampled		20/03/2015	20/03/2015	20/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
pH 1:5 soil:water	pH Units	5.3	6.4	6.2	7.3	5.0
Electrical Conductivity 1:5 soil:water	µS/cm	78	45	43	52	280

Misc Inorg - Soil				
Our Reference:	UNITS	125570-21	125570-22	125570-23
Your Reference	----------	4	4	4
Depth	----------	1-1.45	1.8-2.0	2.5-2.78
Date Sampled		20/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil
Date prepared	-	25/03/2015	25/03/2015	25/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015
pH 1:5 soil:water	pH Units	4.9	5.1	8.2
Electrical Conductivity 1:5 soil:water	µS/cm	380	380	170

Chromium Suite		
Our Reference:	UNITS	125570-8
Your Reference	----------	2
Depth	----------	1-1.45
Date Sampled		19/03/2015
Type of sample		Soil
pH kcl	pH units	4.5
s-TAA pH 6.5	%w/w S	0.01
TAA pH 6.5	moles H^+/t	7
Chromium Reducible Sulfur	% w/w	<0.005
a-Chromium Reducible Sulfur	moles H^+/t	<3
S_{KCl}	%w/w S	0.017
ANC_{BT}	% $CaCO_3$	<0.05
s-ANC_{BT}	%w/w S	<0.05
s-Net Acidity	%w/w S	0.01
a-Net Acidity	moles H^+/t	<10
Liming rate	kg $CaCO_3$/t	<0.75
a-Net Acidity without ANCE	moles H^+/t	<10
Liming rate without ANCE	kg $CaCO_3$/t	<0.75

Moisture						
Our Reference:	UNITS	125570-1	125570-3	125570-6	125570-12	125570-13
Your Reference	----------	1	1	2	3	3
Depth	----------	0-0.1	1-1.45	0-0.1	0.1-0.2	0.4-0.5
Date Sampled		19/03/2015	19/03/2015	19/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/03/2015	24/03/2015	24/03/2015	24/03/2015	24/03/2015
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
Moisture	%	4.9	15	9.5	2.8	14

Moisture			
Our Reference:	UNITS	125570-18	125570-24
Your Reference	----------	4	BD1/190315
Depth	----------	0-0.1	-
Date Sampled		20/03/2015	20/03/2015
Type of sample		Soil	Soil
Date prepared	-	24/03/2015	24/03/2015
Date analysed	-	25/03/2015	25/03/2015
Moisture	%	18	4.0

Asbestos ID - soils Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	125570-1 1 0-0.1 19/03/2015 Soil	125570-6 2 0-0.1 19/03/2015 Soil	125570-11 3 0-0.03 20/03/2015 Soil	125570-12 3 0.1-0.2 20/03/2015 Soil	125570-18 4 0-0.1 20/03/2015 Soil
Date analysed	-	25/03/2015	25/03/2015	25/03/2015	25/03/2015	25/03/2015
Sample mass tested	g	Approx. 65g	Approx. 75g	Approx. 60g	Approx. 50g	Approx. 50g
Sample Description	-	Brown sandy soil & debris	Brown coarse-grain soil & rocks	Brown sandy soil & debris	Brown coarse-grain soil	Brown coarse-grain soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - materials		
Our Reference:	UNITS	125570-25
Your Reference	----------	F1
Depth	----------	-
Date Sampled		19/03/2015
Type of sample		Material
Date analysed	-	30/03/2015
Mass / Dimension of Sample	-	51x28x5mm
Sample Description	-	A)Beige B) Cream fibre cement material
Asbestos ID in materials	-	A)Chrysotile asbestos detected B)No asbestos detected Organic fibres detected

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2015	125570-13	24/03/2015 || 24/03/2015	LCS-2	24/03/2015
Date analysed	-			25/03/2015	125570-13	25/03/2015 || 25/03/2015	LCS-2	25/03/2015
$TRHC_6$ - C_9	mg/kg	25	Org-016	<25	125570-13	<25 || <25	LCS-2	127%
$TRHC_6$ - C_{10}	mg/kg	25	Org-016	<25	125570-13	<25 || <25	LCS-2	127%
Benzene	mg/kg	0.2	Org-016	<0.2	125570-13	<0.2 || <0.2	LCS-2	123%
Toluene	mg/kg	0.5	Org-016	<0.5	125570-13	<0.5 || <0.5	LCS-2	128%
Ethylbenzene	mg/kg	1	Org-016	<1	125570-13	<1 || <1	LCS-2	123%
m+p-xylene	mg/kg	2	Org-016	<2	125570-13	<2 || <2	LCS-2	130%
o-Xylene	mg/kg	1	Org-016	<1	125570-13	<1 || <1	LCS-2	127%
naphthalene	mg/kg	1	Org-014	<1	125570-13	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	125	125570-13	115 || 112 || RPD: 3	LCS-2	119%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2015	125570-13	24/03/2015 || 24/03/2015	LCS-2	24/03/2015
Date analysed	-			24/03/2015	125570-13	25/03/2015 || 25/03/2015	LCS-2	24/03/2015
$TRHC_{10}$ - C_{14}	mg/kg	50	Org-003	<50	125570-13	<50 || <50	LCS-2	101%
$TRHC_{15}$ - C_{28}	mg/kg	100	Org-003	<100	125570-13	<100 || <100	LCS-2	101%
$TRHC_{29}$ - C_{36}	mg/kg	100	Org-003	<100	125570-13	<100 || <100	LCS-2	109%
$TRH>C_{10}$-C_{16}	mg/kg	50	Org-003	<50	125570-13	<50 || <50	LCS-2	101%
$TRH>C_{16}$-C_{34}	mg/kg	100	Org-003	<100	125570-13	<100 || <100	LCS-2	101%
$TRH>C_{34}$-C_{40}	mg/kg	100	Org-003	<100	125570-13	<100 || <100	LCS-2	109%
Surrogate o-Terphenyl	%		Org-003	89	125570-13	85 || 86 || RPD: 1	LCS-2	100%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2015	125570-13	24/03/2015 || 24/03/2015	LCS-1	24/03/2015
Date analysed	-			24/03/2015	125570-13	24/03/2015 || 24/03/2015	LCS-1	24/03/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	LCS-1	98%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	LCS-1	99%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	LCS-1	125%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	LCS-1	124%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	LCS-1	118%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	LCS-1	107%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	125570-13	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	125570-13	<0.05 || <0.05	LCS-1	130%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	125570-13	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	100	125570-13	102 || 112 || RPD: 9	LCS-1	120%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2015	[NT]	[NT]	LCS-1	24/03/2015
Date analysed	-			26/03/2015	[NT]	[NT]	LCS-1	26/03/2015
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	100%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	98%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	92%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	98%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	102%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	109%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	100%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	104%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	112%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	104%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	94	[NT]	[NT]	LCS-1	100%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2015	[NT]	[NT]	LCS-1	24/03/2015
Date analysed	-			26/03/2015	[NT]	[NT]	LCS-1	26/03/2015
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	101%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	105%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	90%
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	109%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	93%
Malathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	91%
Parathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-1	96%
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-008	94	[NT]	[NT]	LCS-1	104%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2015	[NT]	[NT]	LCS-1	24/03/2015
Date analysed	-			26/03/2015	[NT]	[NT]	LCS-1	26/03/2015
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-1	101%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	94	[NT]	[NT]	LCS-1	106%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			24/03/2015	125570-13	24/03/2015 II 24/03/2015	LCS-4	24/03/2015
Date analysed	-			24/03/2015	125570-13	24/03/2015 II 24/03/2015	LCS-4	24/03/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	125570-13	12 II 11 II RPD: 9	LCS-4	109%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	125570-13	<0.4 II <0.4	LCS-4	102%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	125570-13	22 II 20 II RPD: 10	LCS-4	105%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	125570-13	10 II 10 II RPD: 0	LCS-4	107%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	125570-13	22 II 20 II RPD: 10	LCS-4	100%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	125570-13	<0.1 II <0.1	LCS-4	97%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	125570-13	4 II 4 II RPD: 0	LCS-4	101%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	125570-13	14 II 13 II RPD: 7	LCS-4	100%
QUALITY CONTROL Misc Soil - Inorg	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			22/03/2015	125570-1	24/03/2015 II 24/03/2015	LCS-1	22/03/2015
Date analysed	-			22/03/2015	125570-1	24/03/2015 II 24/03/2015	LCS-1	22/03/2015
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	125570-1	<5 II <5	LCS-1	104%
QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			25/03/2015	125570-1	25/03/2015 II 25/03/2015	LCS-1	25/03/2015
Date analysed	-			25/03/2015	125570-1	25/03/2015 II 25/03/2015	LCS-1	25/03/2015
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	125570-1	6.9 II 6.7 II RPD: 3	LCS-1	102%
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	125570-1	62 II 63 II RPD: 2	LCS-1	104%
QUALITY CONTROL Chromium Suite	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
pH kcl	pH units		Inorg-068	[NT]	[NT]	[NT]	LCS-1	89%
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	[NT]	[NT]	[NR]	[NR]
TAA pH 6.5	moles H^+/t	5	Inorg-068	<5	[NT]	[NT]	LCS-1	120%
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	[NT]	[NT]	LCS-1	93%
a-Chromium Reducible Sulfur	moles H^+/t	3	Inorg-068	<3	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL Chromium Suite	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NR]	[NR]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	LCS-1	95%
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NR]	[NR]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	[NT]	[NT]	[NR]	[NR]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	[NT]	[NT]	[NR]	[NR]
s-Net Acidity	%w/w S	0.01	Inorg-068	<0.01	[NT]	[NT]	[NR]	[NR]
a-Net Acidity	moles H^+/t	10	Inorg-068	<10	[NT]	[NT]	[NR]	[NR]
Liming rate	kg $CaCO_3$/t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NR]	[NR]
a-Net Acidity without ANCE	moles H^+/t	10	Inorg-068	<10	[NT]	[NT]	[NR]	[NR]
Liming rate without ANCE	kg $CaCO_3$/t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	125570-1	24/03/2015 || 25/03/2015
Date analysed	-	125570-1	25/03/2015 || 26/03/2015
$TRHC_{10}$ - C_{14}	mg/kg	125570-1	<50 || <50
$TRHC_{15}$ - C_{28}	mg/kg	125570-1	130 || 200 || RPD: 42
$TRHC_{29}$ - C_{36}	mg/kg	125570-1	390 || 430 || RPD: 10
TRH>C_{10}-C_{16}	mg/kg	125570-1	<50 || <50
TRH>C_{16}-C_{34}	mg/kg	125570-1	300 || 440 || RPD: 38
TRH>C_{34}-C_{40}	mg/kg	125570-1	500 || 620 || RPD: 21
Surrogate o-Terphenyl	%	125570-1	91 || 93 || RPD: 2

QUALITY CONTROL Misc Soil - Inorg	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	125570-3	22/03/2015
Date analysed	-	[NT]	[NT]	125570-3	22/03/2015
Total Phenolics (as Phenol)	mg/kg	[NT]	[NT]	125570-3	103%
QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	125570-14	25/03/2015 || 25/03/2015	LCS-2	25/03/2015
Date analysed	-	125570-14	25/03/2015 || 25/03/2015	LCS-2	25/03/2015
pH 1:5 soil:water	pH Units	125570-14	5.2 || 5.1 || RPD: 2	LCS-2	101%
Electrical Conductivity 1:5 soil:water	µS/cm	125570-14	91 || 84 || RPD: 8	LCS-2	102%

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	125570-21	25/03/2015 || 25/03/2015
Date analysed	-	125570-21	25/03/2015 || 25/03/2015
pH 1:5 soil:water	pH Units	125570-21	4.9 || 4.9 || RPD: 0
Electrical Conductivity 1:5 soil:water	µS/cm	125570-21	380 || 390 || RPD: 3

Report Comments:

Asbestos-ID in soil: Excessive sample volumes were provided for asbestos analysis. A portion of the supplied samples were sub-sampled according to Envirolab procedures. We cannot guarantee that these sub-samples are indicative of the entire samples. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.

Asbestos_ID in Material:
Sample 125570-25; The supplied sample was sub-sampled (125570-25A: Beige compressed fibre cement material & 125570-25B:Cream/Pale beige compressed fibre cement material) in order to accurately report the analytical results representative of the entire sample, as per AS4964-2004.

PCB'S (IN SOIL) PQL has been raised due to interference from analytes(other than those being tested) in the sample/s.

Asbestos ID was analysed by Approved Identifier:	Lulu Guo, Paul Ching
Asbestos ID was authorised by Approved Signatory:	Lulu Guo

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

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

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

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Douglas Partners Pty Ltd
96 Hermitage Rd
West Ryde NSW 2114

ph: 02 9809 0666
Fax: 02 9809 4095

Attention: Nerilee Edwards

Sample log in details:

Your reference:	**84769.01, Auburn**
Envirolab Reference:	**125570**
Date received:	23/3/2015
Date results expected to be reported:	**30/03/15**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	24 Soils, 1 Materials
Turnaround time requested:	Standard
Temperature on receipt (°C)	19.1
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

Comments:

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:
Water samples - 1 month
Soil and other solid samples - 2 months
Samples collected in canisters - 1 week. Canisters will then be cleaned.
All other samples are not retained after analysis
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Aileen Hie

From: Nerilee Edwards <Nerilee.Edwards@douglaspartners.com.au>
Sent: Monday, 30 March 2015 5:18 PM
To: Aileen Hie
Subject: FW: Results for registration '125570 - 84769.01, Auburn'

Hi Aileen,

Can you pls do the following additional analysis:

2 8 16 17 21
Chlorides and sulphates (1:5 water soluble): 1/0.4-0.5, 2/1-1.45, 3/1.9-2, 3/2.5-2.9, 4/1-1.45
ESP (incl CEC): 1/0.4-0.5, 2/0-0.1, 2/1-1.45, 3/2.5-2.9, 4/1-1.45
2 6 8 17 21

Thanks,

Nerilee Edwards | Associate / Environmental Scientist Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 9809 0666 | F: 02 9809 4095 | M: 0414 769 011 | E: Nerilee.Edwards@douglaspartners.com.au

-----Original Message-----
From: Nancy Zhang [mailto:NZhang@envirolab.com.au]
Sent: Monday, 30 March 2015 4:07 PM
To: Nerilee Edwards
Subject: Results for registration '125570 - 84769.01, Auburn'

125570A
S6|T1A
due 8|4

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC
an excel file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
Jacinta Hurst on jhurst@envirolabservices.com.au or David Springer on dspringer@envirolabservices.com.au
or
Tania Notaras on tnotaras@envirolabservices.com.au

Regards

Envirolab Services
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
www.envirolabservices.com.au

Nancy Zhang | Operations Manager | Envirolab Services Pty Ltd

Aileen Hie

From: Nerilee Edwards <Nerilee.Edwards@douglaspartners.com.au>
Sent: Monday, 30 March 2015 4:25 PM
To: Aileen Hie
Subject: RE: Results for registration '125570 - 84769.01, Auburn'

Hi Aileen,

Can we do the below additional testing:

TCLP PAH: Sample 2/0-0.1 6
TCLP lead: Samples 1/0-0.1 and 4/0-0.1
1 18

Ta

Nerilee Edwards | Associate / Environmental Scientist Douglas Partners Pty Ltd | ABN 75 053 980 117 |
www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 9809 0666 | F: 02 9809 4095 | M: 0414 769 011 | E: Nerilee.Edwards@douglaspartners.com.au

-----Original Message-----
From: Nancy Zhang [mailto:NZhang@envirolab.com.au]
Sent: Monday, 30 March 2015 4:07 PM
To: Nerilee Edwards
Subject: Results for registration '125570 - 84769.01, Auburn'

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC
an excel file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
Jacinta Hurst on jhurst@envirolabservices.com.au or David Springer on dspringer@envirolabservices.com.au
or
Tania Notaras on tnotaras@envirolabservices.com.au

Regards

Envirolab Services
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
www.envirolabservices.com.au

Nancy Zhang | Operations Manager | Envirolab Services Pty Ltd

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 125570-A

Client:
Douglas Partners Pty Ltd
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Nerilee Edwards

Sample log in details:

Your Reference:	**84769.01, Auburn**
No. of samples:	Additional testing on soils
Date samples received / completed instructions received	23/3/2015 / 30/03/15

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	8/04/15 / 8/04/15
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

Misc Inorg - Soil						
Our Reference:	UNITS	125570-A-2	125570-A-8	125570-A-16	125570-A-17	125570-A-21
Your Reference	----------	1	2	3	3	4
Depth	----------	0.4-0.5	1-1.45	1.9-2.0	2.5-2.9	1-1.45
Date Sampled		19/03/2015	19/03/2015	20/03/2015	20/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Date analysed	-	01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Chloride, Cl 1:5 soil:water	mg/kg	<10	520	10	26	280
Sulphate, SO4 1:5 soil:water	mg/kg	110	330	110	21	350

ESP/CEC Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	125570-A-2 1 0.4-0.5 19/03/2015 Soil	125570-A-6 2 0-0.1 19/03/2015 Soil	125570-A-8 2 1-1.45 19/03/2015 Soil	125570-A-17 3 2.5-2.9 20/03/2015 Soil	125570-A-21 4 1-1.45 20/03/2015 Soil
Date extracted	-	01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Date analysed	-	01/04/2015	01/04/2015	01/04/2015	01/04/2015	01/04/2015
Exchangeable Ca	meq/100g	7.6	23	0.5	0.2	<0.1
Exchangeable K	meq/100g	0.6	0.9	0.3	0.4	<0.1
Exchangeable Mg	meq/100g	3.3	1.5	8.5	5.3	3.8
Exchangeable Na	meq/100g	0.28	<0.1	3.0	3.4	1.8
Cation Exchange Capacity	meq/100g	12	25	12	9.2	5.8
ESP	%	2	<1	24	37	31

PAHs in TCLP (USEPA 1311)		
Our Reference:	UNITS	125570-A-6
Your Reference	----------	2
Depth	----------	0-0.1
Date Sampled		19/03/2015
Type of sample		Soil
Date extracted	-	01/04/2015
Date analysed	-	01/04/2015
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	95

Metals in TCLP USEPA1311				
Our Reference:	UNITS	125570-A-1	125570-A-6	125570-A-18
Your Reference	----------	1	2	4
Depth	----------	0-0.1	0-0.1	0-0.1
Date Sampled		19/03/2015	19/03/2015	20/03/2015
Type of sample		Soil	Soil	Soil
Date extracted	-	31/03/2015	30/03/2015	31/03/2015
Date analysed	-	31/03/2015	31/03/2015	31/03/2015
pH of soil for fluid# determ.	pH units	6.7	8.7	8.2
pH of soil for fluid # determ. (acid)	pH units	1.9	1.7	1.6
Extraction fluid used	-	1	1	1
pH of final Leachate	pH units	4.9	5.1	5.0
Lead in TCLP	mg/L	0.41	[NA]	0.06

Method ID	Methodology Summary
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soil based on Rayment and Lyons 2011.
Org-012 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311 and in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			01/04/2015	125570-A-8	01/04/2015 || 01/04/2015	LCS-1	01/04/2015
Date analysed	-			01/04/2015	125570-A-8	01/04/2015 || 01/04/2015	LCS-1	01/04/2015
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	125570-A-8	520 || 530 || RPD: 2	LCS-1	97%
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	125570-A-8	330 || 340 || RPD: 3	LCS-1	94%
QUALITY CONTROL ESP/CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/04/2015	[NT]	[NT]	LCS-1	01/04/2015
Date analysed	-			01/04/2015	[NT]	[NT]	LCS-1	01/04/2015
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	109%
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	113%
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	102%
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	110%
Cation Exchange Capacity	meq/100g	1	Metals-009	<1.0	[NT]	[NT]	[NR]	[NR]
ESP	%	1	Metals-009	<1	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/04/2015	[NT]	[NT]	LCS-W1	01/04/2015
Date analysed	-			01/04/2015	[NT]	[NT]	LCS-W1	01/04/2015
Naphthalene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	80%
Acenaphthylene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	80%
Phenanthrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	81%
Anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	83%
Pyrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	86%
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chrysene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	74%
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	LCS-W1	104%
Indeno(1,2,3-c,d)pyrene -TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	78	[NT]	[NT]	LCS-W1	86%
QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			31/03/2015	125570-A-18	31/03/2015 || 31/03/2015	LCS-1	31/03/2015
Date analysed	-			31/03/2015	125570-A-18	31/03/2015 || 31/03/2015	LCS-1	31/03/2015
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	125570-A-18	0.06 || 0.05 || RPD: 18	LCS-1	100%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

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

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

Appendix H

QA/QC Assessment

DATA QUALITY ASSESSMENT

Q1. Data Quality Objectives

The Preliminary Site Investigation with Limited Sampling was prepared with reference to the seven step data quality objective (DQO) process which is provided in Appendix B, Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure* 1999 as amended 2013 (NEPC, 2013). The DQO process is outlined as follows:

- Stating the Problem;
- Identifying the Decision;
- Identifying Inputs to the Decision;
- Defining the Boundary of the Assessment;
- Developing a Decision Rule;
- Specifying Acceptable Limits on Decision Errors; and
- Optimising the Design for Obtaining Data.

The DQOs have been addressed within the report as shown in Table Q1.

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S1 Introduction (objective) S12 Conclusions and Recommendations
Identify Inputs to the Decision	S1 Introduction S2 Scope of Works S3 Site Information S4 Regional Topography, Geology and Hydrogeology S5 Site History S5 Preliminary Conceptual Site Model S8 Site Assessment Criteria S9 Results of Investigation
Define the Boundary of the Assessment	S3.1 Identification Site Drawings – Appendix A
Develop a Decision Rule	S8 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S7 Sampling Methodology and Rationale S8 Site Assessment Criteria QA/QC Procedures and Results – Sections Q2, Q3
Optimise the Design for Obtaining Data	S2 Scope of Works S7 Sampling Methodology and Rationale QA/QC Procedures and Results – Sections Q2, Q3

Q2. FIELD AND LABORATORY QUALITY CONTROL

The field and laboratory quality control (QC) procedures and results are summarised in Tables Q2 and Q3. Reference should be made to the fieldwork and analysis procedures in Section 7 of the report body and the laboratory Certificates of Analysis in Appendix G for further details.

Table Q2: Field QC

Item	Frequency	Acceptance Criteria	Achievement
Intra-laboratory replicates	10% primary samples	RPD <30% (inorganics), <50% (organics)	yes[1]

NOTES: 1 qualitative assessment of RPD results overall; refer Section Q2.1

Table Q3: Laboratory QC

Item	Frequency	Acceptance Criteria	Achievement
Analytical laboratories used		NATA accreditation	yes
Holding times		In accordance with NEPC (2013) which references various Australian and international standards	yes
Laboratory / Reagent Blanks	1 per lab batch	<PQL	yes
Laboratory duplicates	10% primary samples	Laboratory specific [1]	
Matrix Spikes	1 per lab batch	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC)	yes
Surrogate Spikes	organics by GC	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC)	yes
Control Samples	1 per lab batch	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC)	yes

NOTES: 1 ELS: <5xPQL – any RPD; >5xPQL – 0-50%RPD

In summary, the QC data is considered to be of sufficient quality to be acceptable for the assessment.

Q2.1 Intra-Laboratory Replicates

Intra-laboratory replicates were analysed as an internal check of the reproducibility within the primary laboratory ELS and as a measure of consistency of sampling techniques. The comparative results of analysis between original and intra-laboratory replicate samples are summarised in Table Q4.

Note that, where both samples are below LOR/PQL the difference and RPD has been given as zero. Where one sample is reported below LOR/PQL, but a concentration is reported for the other, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample.

Table Q4: Relative Percentage Difference Results – Intra-laboratory Replicates

Lab	Sample ID	Date Sampled	Media	Units	Metals								PAH
					As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Total
ELS	1/0-0.1	19/03/15	filling	mg/kg	11	2	20	120	1,200	<0.1	15	840	NIL (+)VE
ELS	BD1/190315	19/03/15	filling	mg/kg	8	2	14	81	850	<0.1	12	660	NIL (+)VE
Difference				mg/kg	**3**	0	**6**	**39**	**350**	0	3	180	0
RPD				%	**32**	0	**35**	**39**	**34**	0	22	24	0

The calculated RPD values were within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics with the with the exception of those in bold. However, this is not considered to be significant because:

- The replicate pair being collected from fill soils which were heterogeneous in nature;
- Soil replicates, rather than homogenised soil duplicates, were used to minimise the risk of possible volatile loss, hence greater variability can be expected;
- The highest result has been used in assessing the significance of the results; and
- All other QA/QC parameters met the DQIs.

Overall, the intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

Q3. Data Quality Indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQIs):

- Completeness – a measure of the amount of usable data from a data collection activity;
- Comparability – the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness – the confidence (qualitative) of data representativeness of media present on-site;
- Precision – a measure of variability or reproducibility of data; and
- Accuracy – a measure of closeness of the data to the 'true' value.

The DQIs were assessed as outlined in the following Table Q5.

Table Q5: Data Quality Indicators

Data Quality Indicator	Method(s) of Achievement
Completeness	Planned systematic locations sampled; Preparation of field logs, sample location plan and chain of custody (COC) records; Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody; Samples analysed for contaminants of potential concern (COPC) identified in the Conceptual Site Model (CSM); Completion of COC documentation; NATA endorsed laboratory certificates provided by the laboratory; Satisfactory frequency and results for field and laboratory QC samples as discussed in Section Q2.
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project; Works undertaken by appropriately experienced and trained DP engineer; Use of a NATA registered laboratory; Satisfactory results for field and laboratory QC samples.
Representativeness	Target media sampled; Spatial and temporal distribution of sample locations; Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQOs; Samples were extracted and analysed within holding times; Samples were analysed in accordance with the analysis request.
Precision	Acceptable RPD between original samples and replicates; Satisfactory results for all other field and laboratory QC samples.
Accuracy	Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQIs have been complied with. As such, it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.