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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

28/9/2016 12:43PM

FOLIO: 286/752038

First Title(s): THIS FOLIO

Prior Title(s): CROWN LAND

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
4/10/2005	AB810755	DEPARTMENTAL DEALING	LOT RECORDED FOLIO NOT CREATED
17/12/2008	CA138032	CONVERSION ACTION	FOLIO CREATED CT NOT ISSUED
7/12/2010	AF924233	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

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PRINTED ON 28/9/2016

*ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE. WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/731454

SEARCH DATE -----	TIME -----	EDITION NO -----	DATE -----
28/9/2016	12:32 PM	1	9/1/1989

LAND

LOT 1 IN DEPOSITED PLAN 731454
AT CURL CURL NORTH
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF MANLY COVE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP731454

FIRST SCHEDULE

MINISTER FOR EDUCATION AND YOUTH AFFAIRS (DD Y81052)

SECOND SCHEDULE (1 NOTIFICATION)

* 1 D725002 LAND EXCLUDES MINERALS

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 ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 286/752038

SEARCH DATE	TIME	EDITION NO	DATE
28/9/2016	12:39 PM	-	-

CERTIFICATE OF TITLE HAS NOT ISSUED

LAND

LOT 286 IN DEPOSITED PLAN 752038
AT NORTH CURL CURL
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF MANLY COVE COUNTY OF CUMBERLAND
(FORMERLY KNOWN AS PORTION 286)
TITLE DIAGRAM CROWN PLAN 2529.2030

FIRST SCHEDULE

THE STATE OF NEW SOUTH WALES (CA138032)

SECOND SCHEDULE (4 NOTIFICATIONS)

- * 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
- * 2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.
- * 3 NOTIFICATION IN GOVERNMENT GAZETTE DATED 31.5.1963 FOL.1497. EASEMENT FOR SEWERAGE AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN AS SITE OF PROPOSED EASEMENT 3.66 METRES WIDE IN DP217356.
- * 4 THE LAND IS DEDICATED FOR A PUBLIC PURPOSE

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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PRINTED ON 28/9/2016

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Section 149 Certificates

Date Printed: 27 September 2016

Certificate Number: ePLC2016/3240

Eis & Jk Group

Applicant Reference: E29816KD md

115 Wicks Road

Receipt Number: 12192

MACQUARIE PARK NSW 2113

Property Address: Por 271/ Playfair Road NORTH CURL CURL NSW 2099

Legal Description: Lot 1 DP 731454

Property ID: 129864

Note: This planning certificate pertains to land which was within the area of the former Warringah Council and is now within the area of the Northern Beaches Council pursuant to the Local Government (Council Amalgamations) Proclamation 2016.

1. Names of relevant planning instruments and DCPs.
- 1.1 The name of each environmental planning instrument that applies to the carrying out of development on the land.

Warringah Local Environmental Plan 2011

See Attachment "A" for all other environmental planning instruments that apply to the carrying out of development on the land

- 1.2 The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved).

a) Draft State Environmental Planning Policy (Competition) 2010**b) The following planning proposals may affect the land:**

Date of Council Resolution	Outline of Planning Proposal	Land to which Planning Proposal applies
22 March 2016	Minor amendments to the Warringah Local Environmental Plan 2011 and Warringah Local Environmental Plan 2000 to correct anomalies and bring up to date with current state legislation and previous Council Resolutions. Minor amendments include: rezoning certain land to reflect current landuses; amendment to the Heritage Map; amendment to the cadastre on various maps; changes to the exempt development requirements for signage and changes to requirements for the temporary use of land. For more information contact Northern Beaches Council, Strategic Planning on 99422111	Various properties not limited to • Cromer High School • Lindrum Reserve • Driveway Adjoining Pitt Road Neighbourhood Centre, North Curl Curl • Dee Why Post Office and Adjacent Pathway • No.53 Aubreen Street, Collaroy
25 March 2014 27 October 2015	Amends WLEP 2011 to rezone the identified subject sites and to reclassify one of the allotments to reflect and be compatible with the surrounding land use zones and management principles.	Darley Street and Starkey Street, Forestville (Lot 7084 in DP 93981, Lot 15 in DP 401139, Lot X & Y in DP 26598, „the Centre“ road reserve between Darley Street & Starkey Street and LOT 18 DP 30880).

- 1.3 The name of each development control plan that applies to the carrying out of development on the land.

Warringah Development Control Plan 2011

1.4 *In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument.*

2. *Zoning and land use under relevant LEPs*

2.1 *Zoning and land use under Warringah Local Environmental Plan 2011*

(a) *The land is identified by Warringah Local Environmental Plan 2011 as being within the following zone.*

LEP - Land zoned R2 Low Density Residential

(b) *The purposes for which Warringah Local Environmental Plan 2011 provides that development may be carried out within the zone without the need for development consent.*

Refer to extract of Warringah Local Environmental Plan 2011 (attached)

(c) *The purposes for which Warringah Local Environmental Plan 2011 provides that development may not be carried out within the zone except with development consent.*

Refer to extract of Warringah Local Environmental Plan 2011 (attached)

(d) *The purposes for which Warringah Local Environmental Plan 2011 provides that development is prohibited within the zone.*

Refer to extract of Warringah Local Environmental Plan 2011 (attached)

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

No

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

Reference should be made to the registers of critical habitat kept by the National Parks and Wildlife Service under the Threatened Species Conservation Act 1995 and the Department of Fisheries under the Fisheries Management Act 1994.

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

No

(h) *Whether an item of environmental heritage is situated on the land*

No

2.2 *Draft Local Environmental Plan – if any*

Please refer to the table in Question 1.2.

Please contact Council's Strategic Planning unit with enquiries on 9942 2111

3. *Complying development*

(1) *The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.*

(2) *The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.*

(a) *May Complying Development under the General Housing Code be carried out on the land?*

Complying development may be carried out on the whole of the land.

(b) *May Complying Development under the Rural Housing Code be carried out on the land?*

Complying development may be carried out on the whole of the land.

(c) May Complying Development under the Housing Alterations Code be carried out on the land?

Complying development may be carried out on the whole of the land.

(d) May Complying Development under the General Development Code be carried out on the land?

Complying development may be carried out on the whole of the land.

(e) May Complying Development under the Commercial and Industrial Alterations Code be carried out on the land?

Complying development may be carried out on the whole of the land.

(f) May Complying Development under the Commercial and Industrial (New Buildings and Additions) Code be carried out on the land?

Complying development may be carried out on the whole of the land.

(g) May Complying Development under the Subdivision Code be carried out on the land?

Complying development may be carried out on the whole of the land.

(h) May Complying Development under the Demolition Code be carried out on the land?

Complying development may be carried out on the whole of the land.

(i) May Complying Development under the Fire Safety Code be carried out on the land?

Complying development may be carried out on the whole of the land.

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

No. Council has not received any notification that the land is affected by the operation of Sections 38 or 39 of the Coastal Protection Act 1979.

- 4A. *Information relating to beaches and coasts*

(1) Whether an order has been made under Part 4D of the Coastal Protection Act 1979 in relation to temporary coastal protection works (within the meaning of that Act) on the land (Or on public land adjacent to that land), except if Council is satisfied that such an order has been fully complied with.

No

(2) (a) Whether Council has been notified under section 55X of the Coastal Protection Act 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land).

No

(2) (b) if works have been so placed – whether Council is satisfied that the works have been removed and the land restored in accordance with that Act.

No

- 4B. *Annual Charges for coastal protection services under Local Government Act 1993*

Whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

Note. —Existing coastal protection works” are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of section 553B of the Local Government Act 1993.

No

5. *Whether or not the land is proclaimed to be a mine subsidence district within the meaning of Section 15 of the Mines Subsidence Compensation Act 1961*

No

6. *Whether or not the land is affected by any road widening or road realignment under:-*

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

No

(b) any environmental planning instrument

No

(c) any resolution of Council.

No

7. *Whether or not the land is affected by a policy that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils, or any other risk (other than flooding):-*

(a) as adopted by Council

Acid Sulfate Soils Class 5

(b) as adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in a planning certificate issued by the Council.

No

- 7A. *Flood related development controls information*

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

Yes

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

Yes

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

8. *Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.*

No

9. *The name of each contributions plan applying to the land*

Northern Beaches Council Section 94A Plan 2016 (adopted 7 July 2016 effective 16 July 2016). Please contact Council's Customer Service Counter for more information.

- 9A. *Is this land biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995)?*

No

10. *Whether the land is land to which a biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995 relates (but only if council has been notified of the existence of the agreement by the Director –General of the Department of Environment and Climate Change and Water)?*

No

11. *Bush Fire Prone Land*

No

12. *Is the land subject to a property vegetation plan made under the Native Vegetation Act 2003?*
No
13. *Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if the Council has been notified of the order).*
No
14. *Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?*
No
15. (a) *Is there a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land?*
No
For what period is the certificate current?
Not Applicable
a copy of the site compatibility certificate may be obtained from the head office of the Department of Planning.
(b) Are there any terms of a kind referred to in clause 18(2) of the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land?
No
16. *Is there a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land?*
No
For what period is the certificate current?
Not Applicable
A copy of the site compatibility certificate may be obtained from the head office of the Department of Planning.
17. (a) *Is there a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land?*
No
For what period is the certificate current?
Not Applicable
A copy of the site compatibility certificate may be obtained from the head office of the Department of Planning.
(b) Are there any terms of a kind referred to in clause 17(1) or 37 (1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land?
No

18. Paper subdivision information

(a) *The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot*

Not applicable

(b) *The date of any subdivision order that applies to the land*

Not applicable

Words and expressions used in this clause have the same meaning as they have in Part 16C of the Environmental Planning and Assessment Regulation 2000

19. Site verification certificates

(a) *Is there a current site verification certificate of which the council is aware, in respect of the land?*

No

(b) *For what matter is certified by the site verification certificate?*

Not applicable

(c) *For what date does the site verification certificate cease to be current?*

Not applicable

A copy of the site verification certificate may be obtained from the head office of the Department of Planning and Infrastructure

20. *Whether the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division*

No

Note. *The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:*

(a) *that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,*

No

(b) *that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

No

(c) *that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,*

No

(d) *that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,*

No

(e) *that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.*

No

Council records do not have sufficient information about the uses (including previous uses) of the land which is the subject of this Section 149 Certificate. To confirm that the land hasn't been used for a purpose which would be likely to have contaminated the land, parties should make their own enquiries as to whether the land may be contaminated.

Under The Provisions of Section 149(5) of the Environmental Planning and Assessment Act.

Note: This planning certificate pertains to land which was within the area of the former Warringah Council and is now within the area of the Northern Beaches Council pursuant to the Local Government (Council Amalgamations) Proclamation 2016.

1. (a) Whether any instrument or resolution of Council varies or proposes to vary the provisions of an environmental planning instrument, other than as referred to in the Certificate under section 149(2):-

Date of Council Resolution	Outline of Planning Proposal	Land to which Planning Proposal applies
23 August 2016	Amends WLEP 2011 to: Rezone part of the properties from E2 Environmental Conservation to B7 Business Park	8, 10 and 12 Narabang Way, Belrose Lots 907, 906 and 905 in DP 867091
22 March 2016	Amends Schedule 1 Additional Permitted Uses under WLEP 2011 to: - Permit the use of „service station“ - Permit the use of „neighbourhood shop“ with a floor area of less than 240sqm	632-634 Warringah Road, Forestville Lots 8 & 9, DP 250525
23 June 2015	Amends WLEP 2011 to allow development of internal and attached Secondary Dwellings in the RU4 – Primary Production Small Lot zone	RU4 – Primary Production Small Lot zone
25 November 2014	Amends WLEP 2000 and WLEP 2011 to: - Rezone land on Ralston Avenue Belrose from Locality C8 – Belrose North to part R2 Low Density Residential, part RE1 Public Recreation and part E3 Environmental Conservation. - Introduce subdivision lot size and height of building controls to land proposed to be zoned R2 Low Density Residential. - Amend the Land Application and Landslip Risk maps.	Ralston Avenue, Belrose Lot 1 DP 1139826
23 September 2014	Amends WLEP 2011 to: - Increase maximum permissible building heights - Introduce floor space ratio controls - Provide development standards in relation to car parking, building setbacks and building proportion - Identify additional “Key Sites” Implement a delivery mechanism for key infrastructure and public domain improvements	Dee Why Town Centre (Boundaries identified within the Planning Proposal)

(b) Whether the land or any item on the land is affected by an order under section 24 or section 25 of the Heritage Act 1977

No

(c) Is the land subject to Councils interim policy and interim guidelines for development and use of the land likely to be affected by 1:100 year flood – Development and subdivision applications may be subject to the floor affected controls.

No

(d) Is the land subject to Councils resolution of 26th August 1997. Assessment of Development applications will be made by reference to the Collaroy/Narrabeen Coastline Management Plan- Development Guidelines for Collaroy/Narrabeen Beach.

No

2. *Threatened Species.*

(a) Does this land have the potential to contain one or more of the following endangered or vulnerable ecological communities as described in the final determination of the scientific committee to list the ecological communities under Part 3 of Schedule 1 and Part 2 of Schedule 2 Threatened Species Conservation Act 1995(NSW)?

*Duffys Forest Ecological Community in the Sydney Basin Bioregion
Swamp Sclerophyll Forest on Coastal Floodplain
Coastal Saltmarsh of the Sydney Basin Bioregion
Swamp Oak Floodplain Forest
Bangalay Sand Forest of the Sydney Basin Bioregion
Themeda grasslands on Seacliffs and Coastal Headlands
Sydney Freshwater Wetlands in the Sydney Basin Bioregion
Coastal Upland Swamp in the Sydney Basin Bioregion*

Many threatened species identified under the Threatened Species Conservation Act 1995 (NSW) and Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) are found within the Local Government Area of Warringah. Council's Natural Environment unit can be contacted to determine whether any site specific information is available for this property. Records of threatened flora and fauna are also available from the NSW Office of Environment and Heritage's Atlas of NSW Wildlife database: <http://www.bionet.nsw.gov.au>

(b) Is this land known to contain threatened species as described in the final determination of the scientific committee to list endangered and vulnerable species under part 1 of Schedule 1 and part 1 of Schedule 2 Threatened Species Conservation Act 1995 (NSW)?

Many threatened species identified under the Threatened Species Conservation Act 1995 (NSW) and Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) are found within the Local Government Area of Warringah. Council's Natural Environment unit can be contacted to determine whether any site specific information is available for this property. Records of threatened flora and fauna are also available from the NSW Office of Environment and Heritage's Atlas of NSW Wildlife database: <http://www.bionet.nsw.gov.au>

3. *Does Council's Protection of Waterways and Riparian Land Policy apply to the land?*

Yes

4. (a) *Is this land affected by Council's geotechnical assessment of Queenscliff headland?*

No

(b) *Is the land identified as having specific potential geotechnical hazards?*

No

5. *Is the land subject to Council Resolution No. 192/15 made on 22 September 2015?*

No

Additional Information:

- a. Certain development may require further consideration under section 79BA or section 91 of the Environmental Planning and Assessment Act 1979, and section 100B of the Rural Fires Act, 1997 with respect to bushfire matters. Contact NSW Rural Fire Service.
- b. Many Aboriginal objects are found within the Local Government Area of Warringah. It is prudent for the purchaser of land within such area to make enquiry of the Director-General of National Parks and Wildlife whether he/she is aware of any Aboriginal objects on the subject land or whether the land has been declared as an Aboriginal place under the National Parks and Wildlife Act 1974 (NSW). Such Director-General has wide powers to prevent the carrying out of work on land which is likely to significantly affect an Aboriginal object or Aboriginal place.
- c. Information available to Council indicates properties within the catchments of Dee Why CBD, Manly Lagoon and Middle Creek may be flood affected. This includes the suburbs of Narrabeena, Dee Why, Cromer, Ingleside, Brookvale and Oxford Falls. Council's Natural Environment Unit can be contacted for further information.
- d. Information available to Council indicates coastal erosion may affect a greater number of properties and may present an increased risk to properties than that shown on published hazard maps of the Warringah coastline. Council's Natural Environment Unit can be contacted for further information.

The advice above is provided in good faith and the Council shall not incur any liability in respect of any such advice.

Disclaimer

The Environmental Planning and Assessment Amendment Act 1997 commenced operation on the 1 July 1998. As a consequence of this Act the information contained in this certificate needs to be read in conjunction with the provisions of the Environmental Planning and Assessment (Amendment) Regulation 1998, Environmental Planning and Assessment (Further Amendment) Regulation 1998 and Environmental Planning and Assessment (Savings and Transitional) Regulation 1998. The locality information in this certificate is based on the Lot and Deposited Plan referred to in this certificate. If the Lot and Deposited Plan is not the current description of the land then this certificate could attribute to incorrect locality. Persons relying on the certificate should satisfy themselves by reference to the Title Deed that the land to which this certificate relates is identical to the land to which they seek to know the locality.



Mark Ferguson
INTERIM GENERAL MANAGER
NORTHERN BEACHES COUNCIL

**ATTACHMENT „A“
ATTACHMENT TO CERTIFICATE UNDER SECTION 149(2)
OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT**

Clause 1.1 of the Section 149(2) Certificate

SYDNEY REGIONAL ENVIRONMENTAL PLAN (Sydney Harbour Catchment) 2005 – Gazetted: 28.09.2005

The plan aims to establish a balance between promoting a prosperous working harbour, maintaining a healthy and sustainable waterway environment and promoting recreational access to the foreshore and waterways. It establishes planning principles and controls for the catchment as a whole.

STATE ENVIRONMENTAL PLANNING POLICY NO. 30 – Intensive Agriculture – Gazetted 08.12.1989. Amended 20.08.1993, 24.02.1995, 11.06.1999 and 04.08.2000

The SEPP introduces consistency in the control of cattle feed lots and piggeries throughout the State by ensuring development consent is required for all cattle feed lots and specifying the information to accompany such applications and the range of matters the consent authority must consider before granting consent.

STATE ENVIRONMENTAL PLANNING POLICY NO.32 –Urban Consolidation (Redevelopment of Urban Land) – Gazetted 15.11.1991

States the Government's intention to ensure that urban consolidation objectives are met in all urban areas throughout the State. The policy:

- Focuses on the redevelopment of urban land that is no longer required for the purposes it is currently zoned or used.
- Encourages local Councils to pursue their own urban consolidation strategies to help implement the aims and objectives of the policy.

Councils will continue to be responsible for the majority of rezoning. The policy sets out guidelines for the Minister to follow when considering whether to initiate a regional environmental plan (REP) to make particular sites available for consolidated urban development. Where a site is rezoned by an REP, the Minister will be the consent authority.

STATE ENVIRONMENTAL PLANNING POLICY NO.50 – Canal Estates – Gazetted 10.11.1997

Bans new canal estates from the date of gazettal, to ensure coastal and aquatic environments are not affected by these developments.

STATE ENVIRONMENTAL PLANNING POLICY NO. 55 – Remediation of Land - Gazetted 28.08.1998

Aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. The policy applies to the whole state, to ensure that remediation is permissible development and is always carried out to a high standard. It specifies when consent is required for remediation and lists considerations that are relevant when rezoning land and determining development applications.

STATE ENVIRONMENTAL PLANNING POLICY NO. 62 – Sustainable Aquaculture -Gazetted: 01.10.2000.

The plan aims to encourage sustainable aquaculture throughout New South Wales by:

- Making aquaculture permissible under certain zones under the Standard Instrument,
- Setting minimum performance criteria for aquaculture development, and
- Establishing a graduated environmental assessment regime for aquaculture development.

STATE ENVIRONMENTAL PLANNING POLICY NO. 64 – ADVERTISING AND SIGNAGE - Gazetted 16.03.2001

Aims to ensure that outdoor advertising is compatible with the desired amenity and visual character of an area, provides effective communication in suitable locations and is of high quality design and finish. The SEPP was amended in August 2007 to permit and regulate outdoor advertising in transport corridors (e.g. freeways, tollways and rail corridors). The amended SEPP also aims to ensure that public benefits may be derived from advertising along and adjacent to transport corridors. Transport Corridor Outdoor Advertising and Signage Guidelines (DOP July 2007) provides information on design criteria, road safety and public benefit requirements for SEPP 64 development applications.

STATE ENVIRONMENTAL PLANNING POLICY NO. 65 – Design Quality of Residential Flat Development - Gazetted 26.07.2002. Aims to improve the design quality of residential flat development in New South Wales.

STATE ENVIRONMENTAL PLANNING POLICY NO. 71 - Coastal Protection - Gazetted 01.11.2002 (and in force in Warringah from 18.11.2005) Aims to protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast. The policy identifies sensitive coastal locations and sets down additional planning criteria to be considered in these areas.

STATE ENVIRONMENTAL PLANNING POLICY (Housing for Seniors or People with a Disability) 2004 - Gazetted 31.03.2004; Repealed by SEPP (Seniors Living) Housing for Seniors or People with a Disability) 2004 and effective 12.10.07.

Aims to encourage the provision of housing (including residential care facilities) that will:

- (a) Increase the supply and diversity of residences that meet the needs of seniors or people with a disability, and
- (b) Make efficient use of existing infrastructure and services, and
- (c) Be of good design.

STATE ENVIRONMENTAL PLANNING POLICY (Building Sustainability Index: BASIX) 2004 - Gazetted 25.06.2004. The aim of the policy is to encourage sustainable residential development (*the BASIX scheme*), specifically to achieve a reduction in the consumption of water and reduction in energy use leading to less green house gas emissions.

STATE ENVIRONMENTAL PLANNING POLICY (Sydney Metropolitan Water Supply) 2004 - Gazetted 24.12.2004. The aims of the policy are to facilitate development for water supply infrastructure to enable deep water extraction from dams, and to facilitate investigation into the availability of groundwater to augment water supply to the Sydney metropolitan area (including the carrying out of exploratory drilling).

STATE ENVIRONMENTAL PLANNING POLICY (Temporary Structures and Places of Public Entertainment) 2007 – Gazetted 28.09.2007, effective 26.10.07. Provides for the erection of temporary structures and the use of places of public entertainment while protecting public safety and local amenity. The SEPP supports the transfer of the regulation of places of public entertainment and temporary structures (such as tents, marquees and booths) from the Local Government Act 1993 to the Environmental Planning and Assessment Act 1979.

Aims to ensure the provision of safety measures for uses of temporary structures or POPE, to encourage the protection of the environment at these locations, and to specify circumstances under which these structures and uses can be considered exempt or complying development. Also aims to promote job creation and increase access for places of public entertainment.

STATE ENVIRONMENTAL PLANNING POLICY (MAJOR PROJECTS) 2005

Gazetted: 01.08.05. Formerly known as State Environmental Planning Policy (State Significant Development) 2005. Defines certain developments that are major projects under Part 3A of the Environmental Planning and Assessment Act 1979 and determined by the Minister for Planning. The SEPP also lists State significant sites. The policy repeals SEPP 34 and SEPP 38, as well as provisions in numerous other planning instruments, declarations and directions.

STATE ENVIRONMENTAL PLANNING POLICY (Sydney Region Growth Centres) 2006

Gazetted: 28.07.06. Abstract: Provides for the coordinated release of land for residential, employment and other urban development in the North West and South West growth centres of the Sydney Region (in conjunction with Environmental Planning and Assessment Regulation relating to precinct planning).

STATE ENVIRONMENTAL PLANNING POLICY (INFRASTRUCTURE) 2007

Gazetted: 21 December 2007; Commenced: 1 January 2008. Facilitates the delivery of public infrastructure and provision of services across the State by providing a consistent planning regime for this purpose; greater flexibility of location of infrastructure and provisions for development, redevelopment and disposal of surplus government owned land.

STATE ENVIRONMENTAL PLANNING POLICY (REPEAL OF CONCURRENCE AND REFERRAL PROVISIONS) 2008

Gazetted: 12.12.2008; Commencement: 15.12.2008. The SEPP aims to improve efficiency in the planning system by removing duplicative or unnecessary requirements in environmental planning instruments (EPIs) to consult with State agencies (government departments) on planning decisions.

STATE ENVIRONMENTAL PLANNING POLICY (EXEMPT AND COMPLYING DEVELOPMENT CODES) 2008

Gazetted: 12.12.2008 – Commenced 27.02.2009

Streamlines assessment processes for development that complies with specified development standards. The policy provides exempt and complying development codes that have State-wide application, identifying, in the General Exempt Development Code, types of development that are of minimal environmental impact that may be carried out without the need for development consent; and, types of complying development that may be carried out in accordance with a complying development certificate as defined in the Environmental Planning and Assessment Act 1979.

STATE ENVIRONMENTAL PLANNING POLICY (AFFORDABLE RENTAL HOUSING) 2009

Published: 31.07.2009; Commencement 31.07.2009. The policy aims to better encourage home owners, social housing providers and developers to invest and create new affordable rental housing to meet the needs of our growing population and existing residents.

EXTRACT FROM WARRINGAH LOCAL ENVIRONMENTAL PLAN 2011

Zone R2 Low Density Residential

1 Objectives of zone

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To ensure that low density residential environments are characterised by landscaped settings that are in harmony with the natural environment of Warringah.

2 Permitted without consent

Home-based child care; Home occupations

3 Permitted with consent

Bed and breakfast accommodation; Boarding houses; Boat sheds; Building identification signs; Business identification signs; Child care centres; Community facilities; Dwelling houses; Educational establishments; Emergency services facilities; Environmental protection works; Exhibition homes; Group homes; Health consulting rooms; Home businesses; Hospitals; Places of public worship; Recreation areas; Respite day care centres; Roads; Veterinary hospitals

4 Prohibited

Any development not specified in item 2 or 3

SafeWork NSW Records



12 OCT 2016
SafeWork NSW

SafeWork NSW

92-100 Donnison Street, Gosford, NSW, 2250

Locked Bag 2906, Lisarow, NSW, 2252 |

Customer Service Centre 13 10 50

licensing@safework.nsw.gov.au | www.safework.nsw.gov.au

Our Ref: D16/684910
Your ref: Mitch Delaney

17 October 2016

Attention: Mitch Delaney
Environmental Investigation Services
PO BOX 976
North Ryde BC NSW 1670

Dear Mr Delaney,

RE SITE: North Curl Curl PS Playfair Rd North Curl Curl NSW

I refer to your site search request received by SafeWork NSW on 11 October 2016 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above mentioned premises.

For further information or if you have any questions, please call our Customer Service Centre on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely,



Brent Jones
Customer Service Officer
Customer Service Centre - Operations
SafeWork NSW

Appendix B: Borehole Logs



BOREHOLE LOG

Borehole No.
1
1/1

Client:TKD ARCHITECTS

Project:PROPOSED SCHOOL BUILDING

Location:CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW

Job No. 29816ZH

Date: 4-10-16

Method: SPIRAL AUGER
JK205

Logged/Checked by: A.F/A.J.H

R.L. Surface: ≈ 10.7m

Datum: AHD

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB	DS									
AFTER 1 HR ▼ ON COMPLET- ION ▼						0			FILL: Silty sand, fine to medium grained, brown, trace of roots and root fibres.	D			GRASS COVER
					N = 14 6,8,6			SP	SAND: fine to medium grained, light grey.		MD		ALLUVIAL
						1							
					N = 7 3,3,4				as above, but fine to coarse grained, orange brown, trace of silt fines.	M	L		
						2							
					N = 17 8,9,8				as above, but trace of clay fines.		MD		
						3							
						4		SC	CLAYEY SAND: fine to coarse grained, red brown and grey.				
					N = 13 4,6,7								
						5				W			
						6							
					N = 29 6,10,19								
									END OF BOREHOLE AT 6.45m				
						7							

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BOREHOLE LOG

Borehole No.
2
1/2

Client: TKD ARCHITECTS
Project: PROPOSED SCHOOL BUILDING
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW
Job No. 29816ZH Method: SPIRAL AUGER R.L. Surface: ≈ 11.2m
Date: 4-10-16 JK205 Datum: AHD
Logged/Checked by: A.F/A.J.H

Groundwater Record	SAMPLES			Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/Weathering	Strength/Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB									
DRY ON COMPLETION					0			FILL: Silty sand, fine to medium grained, brown, trace of roots and root fibres.	D			GRASS COVER
				N = 5 2,2,3		SP	SAND: fine to medium grained, light grey brown.	D	L		ALLUVIAL	
							as above, but orange brown, trace of silt fines.					
				N = 14 3,6,8				M	MD			
				N = 17 12,9,8		SC	CLAYEY SAND: fine to coarse grained, grey brown and red brown.					
				N = 23 10,13,10								
				N = 23 8,12,11								
					7							



BOREHOLE LOG

Borehole No.

2

2/2

Client:

TKD ARCHITECTS

Project:

PROPOSED SCHOOL BUILDING

Location:

CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW

Job No. 29816ZH

Method: SPIRAL AUGER

R.L. Surface: ≈ 11.2m

Date: 4-10-16

JK205

Datum: AHD

Logged/Checked by: A.F/A.J.H

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB	DS									
								SC	CLAYEY SAND: fine to coarse grained, grey brown and red brown.	M	MD		
									END OF BOREHOLE AT 7.5m				
						8							
						9							
						10							
						11							
						12							
						13							
						14							



BOREHOLE LOG

Borehole No.
3
1/1

Client: TKD ARCHITECTS													
Project: PROPOSED SCHOOL BUILDING													
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW													
Job No. 29816ZH Method: SPIRAL AUGER R.L. Surface: ≈ 10.3m													
Date: 4-10-16 JK205 Datum: AHD													
Logged/Checked by: A.F/A.J.H													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB	DS									
▲ ▼ ON COMPLETION						0			FILL: Silty sand, fine to medium grained, brown, trace of root fibres.	D			GRASS COVER
					N = 7 2,4,3	1		SP	SAND: fine to medium grained, light grey.	M	L		ALLUVIAL
					N = 5 1,2,3	2		as above, but fine to coarse grained, orange brown, trace of silt fines.					
					N = 12 4,6,8	3	SC	CLAYEY SAND: fine to coarse grained, orange brown.		MD			
					N = 22 8,10,12	4			as above, but grey brown.				
						5							
				N = 33 7,13,20	6				W	D			
					7			END OF BOREHOLE AT 6.45m					



BOREHOLE LOG

Borehole No.
4
1/1

Client: TKD ARCHITECTS												
Project: PROPOSED SCHOOL BUILDING												
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW												
Job No. 29816ZH Method: SPIRAL AUGER R.L. Surface: ≈ 8.6m												
Date: 4-10-16 JK205 Datum: AHD												
Logged/Checked by: A.F/A.J.H												
Groundwater Record	SAMPLES			Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB									
DRY ON COMPLETION					0			FILL: Silty sand, fine to medium grained, brown, trace of root fibres.	D			GRASS COVER
				N = 6 2,3,3	1		SP	SAND: fine to medium grained, light grey.	M	L		ALLUVIAL
				N = 4 3,2,2	2			as above, but fine to coarse grained, yellow brown, trace of silt fines.				
				N = 13 4,6,7	3		SC	CLAYEY SAND: fine to coarse grained, orange brown, red brown and grey, trace of silt fines.	MD			
				N = 20 5,8,12	4							
				N = 16 6,7,9	5							
				6								
				7				END OF BOREHOLE AT 6.45m				



BOREHOLE LOG

Borehole No.
5
1/1

Client: TKD ARCHITECTS												
Project: PROPOSED SCHOOL BUILDING												
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW												
Job No. 29816ZH Method: SPIRAL AUGER R.L. Surface: ≈ 8.14m												
Date: 4-10-16 JK205 Datum: ahd												
Logged/Checked by: A.F/A.J.H												
Groundwater Record	SAMPLES			Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB									
ON COMPLETION					0		-	ASPHALTIC CONCRETE: 50mm.t FILL: Gravel, fine to medium grained igneous, dark grey.	M			
				N = 12 4,6,6			SP	FILL: Silty sand, fine to medium grained, brown. SAND: fine to medium grained, light grey.	M	MD		ALLUVIAL
					1							
				N = 8 3,4,4						L		
					2							
				N = 7 2,2,5			SC	as above, but fine to coarse grained, orange brown, trace of silt fines. CLAYEY SAND: fine to coarse grained, light grey and orange brown, trace of silt fines.				
					3							
			N = 13 5,6,7						MD			
				4								
				5								
			N = 7 3,3,4						W			
				6						L		
								END OF BOREHOLE AT 6.45m				
				7								



BOREHOLE LOG

Borehole No.
6
1/1

Client: TKD ARCHITECTS												
Project: PROPOSED SCHOOL BUILDING												
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW												
Job No. 29816ZH Method: SPIRAL AUGER R.L. Surface: ≈ 8.9m												
Date: 4-10-16 JK205 Datum: AHD												
Logged/Checked by: A.F/A.J.H												
Groundwater Record	SAMPLES			Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB									
ON COMPLETION ▼					0			FILL: Silty sand, fine to medium grained, brown, trace of root fibres.	D			GRASS COVER
				N = 4 3,2,2	1		SP	SAND: fine to medium grained, light grey and brown.	M	VL		ALLUVIAL
							as above, but orange brown, trace of silt fines.			L		
				N = 7 3,3,4	2	SC	CLAYEY SAND: fine to coarse grained, orange brown.					
				N = 8 4,5,3	3							
				N = 16 10,8,8	4							
			N = 11 6,5,6	6								
					7			END OF BOREHOLE AT 6.45m				



BOREHOLE LOG

Borehole No.
7
1/1

Client: TKD ARCHITECTS												
Project: PROPOSED SCHOOL BUILDING												
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW												
Job No. 29816ZH Method: SPIRAL AUGER R.L. Surface: ≈ 7.3m												
Date: 11-12-16 JK305 Datum: AHD												
Logged/Checked by: A.F/A.J.H												
Groundwater Record	SAMPLES			Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB									
ON COMPLETION					0	XXXX	SM	FILL: Silty sand, fine to medium grained, brown and light grey. SILTY SAND: fine to medium grained, light grey and brown.	M M	MD		GRASS COVER ALLUVIAL
				N = 11 4,6,5	1							
				N = 13 4,6,7	2		SC	CLAYEY SAND: fine to coarse grained, light brown, with silt fines.				
				N = 15 7,8,7	3			as above, but light grey and orange brown.				
				N = 16 7,8,8	4			CLAYEY SAND: fine to coarse grained, light grey and light orange brown.				
					5							
					6		SP	SAND: fine to coarse grained, light grey, trace of silt.	W			
				N = 18 9,9,9								NO SPT SAMPLE RECOVERED
								END OF BOREHOLE AT 6.45m				
					7							

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BOREHOLE LOG

Borehole No.
9
1/1

Client: TKD ARCHITECTS													
Project: PROPOSED SCHOOL BUILDING													
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW													
Job No. 29816ZH Method: SPIRAL AUGER JK305 R.L. Surface: ≈ 6.5m													
Date: 11-12-16 Logged/Checked by: A.F/A.J.H Datum: AHD													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB	DS									
ON COMPLET- ION ▼ ▶						0			FILL: Silty sand, fine to medium grained, dark brown and light grey.	M			
					N = 13 6,7,6			SP	SAND: fine to medium grained, light grey and light brown.	M	MD		ALLUVIAL
						1		SM	SILTY SAND: fine to medium grained, light brown and brown.				
					N = 9 4,4,5			SC	CLAYEY SAND: fine to coarse grained, light grey and light brown.		L		
						2							
					N = 18 8,9,9						MD		
						3							
					N = 18 8,9,9								
						4							
					N = 12 10,8,4								
						5							
						6							NO SPT SAMPLE RECOVERED
						7			END OF BOREHOLE AT 6.45m				



BOREHOLE LOG

Borehole No.
10
1/1

Client: TKD ARCHITECTS												
Project: PROPOSED SCHOOL BUILDING												
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW												
Job No. 29816ZH Method: SPIRAL AUGER JK305 R.L. Surface: ≈ 6.3m												
Date: 11-12-16 Logged/Checked by: A.F/A.J.H Datum: AHD												
Groundwater Record	SAMPLES			Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB									
ON COMPLET- ION ▼ ▲					0			FILL: Silty sand, fine to medium grained, brown.	M			MULCH COVER
							SM	SILTY SAND: fine to medium grained, brown and light grey.	M	MD		ALLUVIAL
				N = 14 5,7,7				as above, but dark brown and brown, trace of clay fines.				
					1							
				N = 13 6,6,7			SC	CLAYEY SAND: fine to coarse grained, brown and orange brown, with sandy clay bands.				
					2							
								as above, but light grey and brown.				
				N = 16 4,6,10		3						
				N = 16 7,8,8		4				W		
					5		SM	SILTY SAND: fine to coarse grained, light grey.				
							CL	SANDY CLAY: low to medium plasticity, light grey and grey.	MC>PL	VSt		
					6						310 300 280	
			N = 20 6,8,12									
								END OF BOREHOLE AT 6.45m				
					7							



BOREHOLE LOG

Borehole No.
11
1/1

Client: TKD ARCHITECTS
Project: PROPOSED SCHOOL BUILDING
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW
Job No. 29816ZH
Date: 11-12-16
Method: SPIRAL AUGER JK305
R.L. Surface: ≈ 5.1m
Datum: AHD
Logged/Checked by: A.F/A.J.H

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB	DS									
 ON COMPLETION						0			FILL: Silty sand, fine to medium grained, brown and dark brown.	M			MULCH COVER
					N = 17 6,7,10			SP	SAND: fine to medium grained, light grey and light brown.	M	MD		ALLUVIAL
						1		SM	SILTY SAND: fine to medium grained, light brown and brown.				
					N = 11 4,5,6			SP	SAND: fine to medium grained, light grey and light orange brown, with silt fines.				
						2							
					N = 24 7,12,12								
						3							
					N = 19 5,8,11								
						4							
						5							
					N = 25 6,13,12								
						6							
						7			END OF BOREHOLE AT 6.45m				



BOREHOLE LOG

Borehole No.
12
1/1

Client: TKD ARCHITECTS													
Project: PROPOSED SCHOOL BUILDING													
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW													
Job No. 29816ZH Method: SPIRAL AUGER R.L. Surface: ≈ 4.7m													
Date: 11-12-16 JK305 Datum: AHD													
Logged/Checked by: A.F/A.J.H													
Groundwater Record	SAMPLES			Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks	
	ES	U50	DB										
ON COMPLET- ION					0		SM	FILL: Silty sand, fine to medium grained, brown and light grey.	M			ALLUVIAL	
								SILTY SAND: fine to medium grained, brown and light brown, trace of clay fines.	M	MD			
				N = 12 5,6,6	1								
								SILTY SAND: fine to coarse grained, light grey and light brown, trace of clay fines.	W	L			
				N = 8 5,5,3	2								
					3					MD			
			N = 25 12,11,14										
					4								
							SC	CLAYEY SAND: fine to coarse grained, light grey and light orange brown.					
			N = 22 5,8,14		5								
					6		CL	SILTY CLAY: medium plasticity, grey.	MC>PL	VSt	280 240		
			N = 8 7,4,4					END OF BOREHOLE AT 6.45m					
					7								



BOREHOLE LOG

Borehole No.
13
1/1

Client: TKD ARCHITECTS
Project: PROPOSED SCHOOL BUILDING
Location: CURL CURL NORTH PUBLIC SCHOOL, PLAYFAIR ROAD, CURL CURL, NSW
Job No. 29816ZH
Date: 11-12-16
Method: SPIRAL AUGER JK305
R.L. Surface: ≈ 4.6m
Datum: AHD
Logged/Checked by: A.F/A.J.H

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	U50	DB	DS									
ON COMPLETION					N = 15 6,7,8	0	SM	FILL: Silty sand, fine to medium grained, brown and light brown. SILTY SAND: fine to medium grained, dark brown. SILTY SAND: fine to medium grained, light grey and grey.	M M	MD		ALLUVIAL	
					N = 6 4,3,3	1	CL	SANDY CLAY: low to medium plasticity, light grey and grey.	MC>PL	(St)			
					N > 20 12,20/ 150mm REFUSAL	2	SP	SAND: fine to coarse grained, light grey and grey, trace of silt fines.	W	D			
					N = 18 10,10,8	3	SC	CLAYEY SAND: fine to coarse grained, light grey and grey, with silt.		MD			
					N = 9 8,5,4	4	SM	SILTY SAND: fine to coarse grained, light grey and light red brown.		L			
						5	CL	SILTY CLAY: medium plasticity, grey.	MC>PL	VSt	230 240		
						6		END OF BOREHOLE AT 6.45m					
					7								

EXPLANATORY NOTES – ENVIRONMENTAL LOGS

INTRODUCTION

These notes have been provided to supplement the environmental report with regards to drilling and field logging. Not all notes are necessarily relevant to all reports. Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and manmade processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies involve gathering and assimilating limited facts about these characteristics and properties in order to understand the ground on a particular site under certain conditions. These conditions are directly relevant only to the ground at the place where, and time when, the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726, the SAA Site Investigation Code. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geotechnical practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached Unified Soil Classification Table qualified by the grading of other particles present (e.g. sandy clay) as set out below (note that unless stated in the report, the soil classification is based on a qualitative field assessment, not laboratory testing):

Soil Classification	Particle Size
Clay	less than 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2mm
Gravel	2 to 60mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose	less than 4
Loose	4 – 10
Medium dense	10 – 30
Dense	30 – 50
Very Dense	greater than 50

Cohesive soils are classified on the basis of strength (consistency) either by use of hand penetrometer, laboratory testing or engineering examination. The strength terms are defined as shown in the following table:

Classification	Unconfined Compressive Strength kPa
Very Soft	less than 25
Soft	25 – 50
Firm	50 – 100
Stiff	100 – 200
Very Stiff	200 – 400
Hard	Greater than 400
Friable	Strength not attainable – soil crumbles

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'Shale' is used to describe thinly bedded to laminated siltstone.

DRILLING OR EXCAVATION METHODS

The following is a brief summary of drilling and excavation methods currently adopted by the Company, and some comments on their use and application. All except test pits and hand auger drilling require the use of a mechanical drilling rig.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the in-situ soils if it is safe to descend into the pit. The depth of penetration is limited to approximately 3m for a backhoe and up to 6m for an excavator. Limitations of test pits include problems associated with disturbance and difficulty of reinstatement; and the consequent effects on nearby structures. Care must be taken if construction is to be carried out near test pit locations to either properly re-compact the backfill during construction, or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Premature refusal of the hand augers can occur on a variety of materials such as fill, hard clay, gravel or ironstone, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and in-situ testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock fragments. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water 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 "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term ‘mud’ encompasses a range of products ranging from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (e.g. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, an NMLC triple tube core barrel, which gives a core of about 50mm diameter, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as CORE LOSS. The locations of losses are determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the top end of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils as a means of indicating density or strength 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 F3.1.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the ‘N’ value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm 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 150mm of, say, 4, 6 and 7 blows, as: $N = 13 (4, 6, 7)$
- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as: $N > 30 (15, 30/40\text{mm})$

The results of the test can be related empirically to the engineering properties of the soil. Occasionally, the drop hammer is used to drive 50mm diameter thin walled sample tubes (U50) in clays. In such circumstances, the test results are shown on the borehole logs in brackets.

A modification to the SPT test is where the same driving system is used with a solid 60 tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as “Nc” on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

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

The attached explanatory notes define the terms and symbols used in preparation of the logs.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than “straight line”

variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

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

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it 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 and may not be the same at the time of construction; 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 be washed out of the hole or 'reverted' chemically if water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after stabilising at intervals ranging from several days to 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 perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (e.g. bricks, concrete, plastic, slag/ash, steel etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably determine the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density, strength and material type is much greater than with natural soil deposits. If the volume and quality of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classifications and rocks strengths indicated on the environmental logs unless noted in the 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, EIS should be notified immediately.

GRAPHIC LOG SYMBOLS FOR SOIL AND ROCKS

SOIL	ROCK	DEFECTS AND INCLUSIONS
 FILL	 CONGLOMERATE	 CLAY SEAM
 TOPSOIL	 SANDSTONE	 SHEARED OR CRUSHED SEAM
 CLAY (CL, CH)	 SHALE	 BRECCIATED OR SHATTERED SEAM/ZONE
 SILT (ML, MH)	 SILTSTONE, MUDSTONE, CLAYSTONE	 IRONSTONE GRAVEL
 SAND (SP, SW)	 LIMESTONE	 ORGANIC MATERIAL
 GRAVEL (GP, GW)	 PHYLLITE, SCHIST	
 SANDY CLAY (CL, CH)	 TUFF	
 SILTY CLAY (CL, CH)	 GRANITE, GABBRO	
 CLAYEY SAND (SC)	 DOLERITE, DIORITE	
 SILTY SAND (SM)	 BASALT, ANDESITE	
 GRAVELLY CLAY (CL, CH)	 QUARTZITE	
 CLAYEY GRAVEL (GC)		
 SANDY SILT (ML)		
 PEAT AND ORGANIC SOILS		
		OTHER MATERIALS
		 CONCRETE
		 BITUMINOUS CONCRETE, COAL
		 COLLUVIUM

Field Identification Procedures (Excluding particles larger than 75 μm and basing fractions on estimated weights)				Group Symbols	Typical Names	Information Required for Describing Soils	Laboratory Classification Criteria	
Coarse-grained soils More than half of material is larger than 75 μm sieve size ^b (The 75 μm sieve size is about the smallest particle visible to naked eye)	Gravels More than half of coarse fraction is larger than 4 mm sieve size	Clean gravels (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	GW	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbols in parentheses For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics Example: Silty sand, gravelly; about 20% hard, angular gravel particles 12 mm maximum size; rounded and subangular sand grains coarse to fine, about 15% non-plastic fines with low dry strength; well compacted and moist in place; alluvial sand; (SM)	$C_u = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
			Predominantly one size or a range of sizes with some intermediate sizes missing	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW	
		Gravels with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures see ML below)	GM	Silty gravels, poorly graded gravel-sand-silt mixtures		Atterberg limits below "A" line, or PI less than 4	
	Sands More than half of coarse fraction is smaller than 4 mm sieve size	Clean sands (little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes	SW	Well graded sands, gravelly sands, little or no fines		Atterberg limits above "A" line, with PI greater than 7	
			Predominantly one size or a range of sizes with some intermediate sizes missing	SP	Poorly graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
		Sands with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures, see ML below)	SM	Silty sands, poorly graded sand-silt mixtures		Not meeting all gradation requirements for SW	
Fine-grained soils More than half of material is smaller than 75 μm sieve size (The 75 μm sieve size is about the smallest particle visible to naked eye)	Identification Procedures on Fraction Smaller than 380 μm Sieve Size							
	Silt and clays liquid limit less than 50	Dry Strength (crushing characteristics)	None to slight	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses For undisturbed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions Example: Clayey silt, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (ML)
			Medium to high	None to very slow	Medium	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		Dilatancy (reaction to shaking)	Slight to medium	Slow	Slight	OL	Organic silts and organic silt-clays of low plasticity	
			Slight to medium	Slow to none	Slight to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
	Silt and clays liquid limit greater than 50	Dry Strength (crushing characteristics)	High to very high	None	High	CH	Inorganic clays of high plasticity, fat clays	
			Medium to high	None to very slow	Slight to medium	OH	Organic clays of medium to high plasticity	
		Dilatancy (reaction to shaking)	Readily identified by colour, odour, spongy feel and frequently by fibrous texture			Pt	Peat and other highly organic soils	

Determine percentages of gravel and sand from grain size curve

Depending on percentage of fines (fraction smaller than 75 μm sieve size) coarse grained soils are classified as follows:

Less than 5% GW, GP, SW, SP
More than 5% GM, GC, SM, SC
Borderline cases requiring use of dual symbols

Use grain size curve in identifying the fractions as given under field identification

Plasticity index

Comparing soils at equal liquid limit

Toughness and dry strength increase with increasing plasticity index

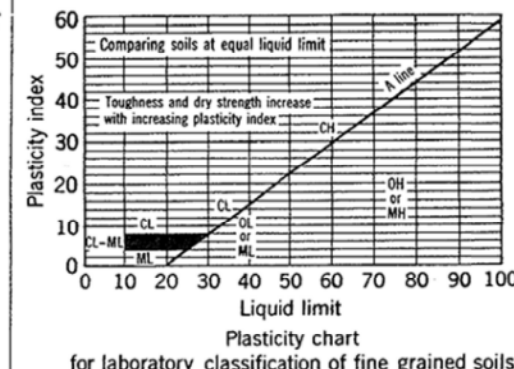
CL, OL, CH, OH, MH

Liquid limit

Plasticity chart for laboratory classification of fine grained soils

Determine percentages of gravel and sand from grain size curve
 Depending on percentage of fines (fraction smaller than 75 µm sieve size) coarse grained soils are classified as follows:
 Less than 5% GW, GP, SW, SP
 More than 5% GM, GC, SM, SC
 Borderline cases requiring use of dual symbols

Use grain size curve in identifying the fractions as given under field identification



- Note: 1 Soils possessing characteristics of two groups are designated by combinations of group symbols (eg. GW-GC, well graded gravel-sand mixture with clay fines).
 2 Soils with liquid limits of the order of 35 to 50 may be visually classified as being of medium plasticity.

LOG SYMBOLS

LOG COLUMN	SYMBOL		DEFINITION												
Groundwater Record			Standing water level. Time delay following completion of drilling may be shown.												
			Extent of borehole collapse shortly after drilling.												
			Groundwater seepage into borehole or excavation noted during drilling or excavation.												
Samples	ES		Soil sample taken over depth indicated, for environmental analysis.												
	U50		Undisturbed 50mm diameter tube sample taken over depth indicated.												
	DB		Bulk disturbed sample taken over depth indicated.												
	DS		Small disturbed bag sample taken over depth indicated.												
	ASB		Soil sample taken over depth indicated, for asbestos screening.												
	ASS		Soil sample taken over depth indicated, for acid sulfate soil analysis.												
	SAL		Soil sample taken over depth indicated, for salinity analysis.												
Field Tests	N = 17 4, 7, 10		Standard Penetration Test (SPT) performed between depths indicated by lines. Individual show blows per 150mm penetration. 'R' as noted below.												
	N _c =	5	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60 degree solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.												
		7													
		3 R													
	VNS = 25		Vane shear reading in kPa of Undrained Shear Strength.												
	PID = 100		Photoionisation detector reading in ppm (Soil sample heads pace test).												
Moisture (Cohesive Soils) (Cohesionless)	MC>PL MC≈PL MC<PL D M W	Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. DRY – Runs freely through fingers. MOIST – Does not run freely but no free water visible on soil surface. WET – Free water visible on soil surface.													
Strength (Consistency) Cohesive Soils	VS S F St VSt H ()	VERY SOFT – Unconfined compressive strength less than 25kPa SOFT – Unconfined compressive strength 25-50kPa FIRM – Unconfined compressive strength 50-100kPa STIFF – Unconfined compressive strength 100- 200kPa VERY STIFF – Unconfined compressive strength 200- 400kPa HARD – Unconfined compressive strength greater than 400kPa Bracketed symbol indicates estimated consistency based on tactile examination or other tests.													
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ()	<table><thead><tr><th>Density Index (ID) Range (%)</th><th>SPT 'N' Value Range (Blows/300mm)</th></tr></thead><tbody><tr><td>Very Loose < 15</td><td>0-4</td></tr><tr><td>Loose 15-35</td><td>4-10</td></tr><tr><td>Medium Dense 35-65</td><td>10-30</td></tr><tr><td>Dense 65-85</td><td>30-50</td></tr><tr><td>Very Dense > 85</td><td>> 50</td></tr></tbody></table> Bracketed symbol indicates estimated density based on ease of drilling or other tests.		Density Index (ID) Range (%)	SPT 'N' Value Range (Blows/300mm)	Very Loose < 15	0-4	Loose 15-35	4-10	Medium Dense 35-65	10-30	Dense 65-85	30-50	Very Dense > 85	> 50
Density Index (ID) Range (%)	SPT 'N' Value Range (Blows/300mm)														
Very Loose < 15	0-4														
Loose 15-35	4-10														
Medium Dense 35-65	10-30														
Dense 65-85	30-50														
Very Dense > 85	> 50														
Hand Penetrometer Readings	300 250	Numbers indicate individual test results in kPa on representative undisturbed material unless noted otherwise													
Remarks	'V' bit 'TC' bit T ₆₀	Hardened steel 'V' shaped bit. Tungsten carbide wing bit. Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.													

LOG SYMBOLS CONTINUED

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the bedding. The test procedure is described by the International Journal of Rock Mechanics, Mining and Geomechanics Abstract Volume 22, No 2, 1985.

TERM	SYMBOL	Is (50) MPa	FIELD GUIDE
Extremely Low:	EL	0.03	Easily remoulded by hand to a material with soil properties.
Very Low:	VL	0.1	May be crumbled in the hand. Sandstone is "sugary" and friable.
Low:	L	0.3	A piece of core 150 mm long x 50mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.
Medium Strength:	M	1	A piece of core 150 mm long x 50mm dia. can be broken by hand with difficulty. Readily scored with knife.
High:	H	3	A piece of core 150 mm long x 50mm dia. core cannot be broken by hand, can be slightly scratched or scored with knife; rock rings under hammer.
Very High:	VH	10	A piece of core 150 mm long x 50mm dia. may be broken with hand-held pick after more than one blow. Cannot be scratched with pen knife; rock rings under hammer.
Extremely High:	EH		A piece of core 150 mm long x 50mm dia. is very difficult to break with hand-held hammer. Rings when struck with a hammer.

ROCK STRENGTH

ABBREVIATION	DESCRIPTION	NOTES
Be	Bedding Plane Parting	Defect orientations measured relative to the normal to (i.e. relative to horizontal for vertical holes)
CS	Clay Seam	
J	Joint	
P	Planar	
Un	Undulating	
S	Smooth	
R	Rough	
IS	Iron stained	
XWS	Extremely Weathered Seam	
Cr	Crushed Seam	
60t	Thickness of defect in millimetres	

Appendix C: Laboratory Reports & COC Documents



12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS

155059

Client:

Environmental Investigation Services

PO Box 976

North Ryde BC

NSW 1670

Attention: Mitch Delaney

Sample log in details:

Your Reference:

E29816KD, North Curl Curl

No. of samples:

13 Soils

Date samples received / completed instructions received

11/10/16

/ 11/10/16

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:

18/10/16

/ 17/10/16

Date of Preliminary Report:

Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing

Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer
General Manager



Envirolab Reference: 155059

Revision No: R 00

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	155059-1 BH1	155059-3 BH2	155059-4 BH2	155059-5 BH3	155059-7 BH4
Depth	-----	0.1-0.2	0.1-0.2	0.5-0.95	0.1-0.2	0.1-0.2
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	14/10/2016	14/10/2016	14/10/2016	14/10/2016	14/10/2016
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ 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	%	82	81	83	84	83

vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	155059-9 BH5	155059-11 BH6	155059-12 BH6	155059-13 DUPA
Depth	-----	0.2-0.3	0.1-0.2	0.5-0.95	-
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	14/10/2016	14/10/2016	14/10/2016	14/10/2016
TRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25
TRHC ₆ - C ₁₀	mg/kg	<25	<25	<25	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	83	82	87	84

svTRH (C10-C40) in Soil Our Reference: Your Reference	UNITS ----- -	155059-1 BH1	155059-3 BH2	155059-4 BH2	155059-5 BH3	155059-7 BH4
Depth	-----	0.1-0.2	0.1-0.2	0.5-0.95	0.1-0.2	0.1-0.2
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	160	<100	<100	110	<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	160	<100	<100	130	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	80	71	81	71	80

svTRH (C10-C40) in Soil Our Reference: Your Reference	UNITS ----- -	155059-9 BH5	155059-11 BH6	155059-12 BH6	155059-13 DUPA
Depth	-----	0.2-0.3	0.1-0.2	0.5-0.95	-
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	80	71	79	75

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	155059-1 BH1	155059-3 BH2	155059-4 BH2	155059-5 BH3	155059-7 BH4
Depth	-----	0.1-0.2	0.1-0.2	0.5-0.95	0.1-0.2	0.1-0.2
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
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	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.1	0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.08	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	0.52	0.31
Surrogate p-Terphenyl-d14	%	87	88	106	82	89

PAHs in Soil Our Reference: Your Reference	UNITS ----- -	155059-9 BH5	155059-11 BH6	155059-12 BH6	155059-13 DUPA
Depth	-----	0.2-0.3	0.1-0.2	0.5-0.95	-
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	0.060
Surrogate p-Terphenyl-d14	%	84	86	87	89

Organochlorine Pesticides in soil	UNITS	155059-1	155059-3	155059-4	155059-5	155059-7
Our Reference:	-----	BH1	BH2	BH2	BH3	BH4
Your Reference	-					
Depth	-----	0.1-0.2	0.1-0.2	0.5-0.95	0.1-0.2	0.1-0.2
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
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
HeptachlorEpoxide	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	%	94	102	103	100	105

Organochlorine Pesticides in soil	UNITS	155059-9	155059-11	155059-12	155059-13
Our Reference:	-----	BH5	BH6	BH6	DUPA
Your Reference	-				
Depth	-----	0.2-0.3	0.1-0.2	0.5-0.95	-
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	99	101	97

Organophosphorus Pesticides	UNITS	155059-1	155059-3	155059-4	155059-5	155059-7
Our Reference:	-----	BH1	BH2	BH2	BH3	BH4
Your Reference	-					
Depth	-----	0.1-0.2	0.1-0.2	0.5-0.95	0.1-0.2	0.1-0.2
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	94	102	103	100	105

Organophosphorus Pesticides	UNITS	155059-9	155059-11	155059-12	155059-13
Our Reference:	-----	BH5	BH6	BH6	DUPA
Your Reference	-				
Depth	-----	0.2-0.3	0.1-0.2	0.5-0.95	-
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	99	101	97

PCBs in Soil Our Reference: Your Reference	UNITS ----- -	155059-1 BH1	155059-3 BH2	155059-4 BH2	155059-5 BH3	155059-7 BH4
Depth	-----	0.1-0.2	0.1-0.2	0.5-0.95	0.1-0.2	0.1-0.2
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	94	102	103	100	105

PCBs in Soil Our Reference: Your Reference	UNITS ----- -	155059-9 BH5	155059-11 BH6	155059-12 BH6	155059-13 DUPA
Depth	-----	0.2-0.3	0.1-0.2	0.5-0.95	-
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	100	99	101	97

Acid Extractable metals in soil	UNITS	155059-1	155059-3	155059-4	155059-5	155059-7
Our Reference:	-----	BH1	BH2	BH2	BH3	BH4
Your Reference	-					
Depth	-----	0.1-0.2	0.1-0.2	0.5-0.95	0.1-0.2	0.1-0.2
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	3	<1	2	4
Copper	mg/kg	9	3	<1	5	28
Lead	mg/kg	30	18	<1	130	230
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Nickel	mg/kg	1	<1	<1	1	3
Zinc	mg/kg	36	16	<1	60	120

Acid Extractable metals in soil	UNITS	155059-9	155059-11	155059-12	155059-13
Our Reference:	-----	BH5	BH6	BH6	DUPA
Your Reference	-				
Depth	-----	0.2-0.3	0.1-0.2	0.5-0.95	-
Date Sampled		4/10/2016	4/10/2016	4/10/2016	4/10/2016
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Arsenic	mg/kg	30	<4	<4	29
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	3	1	2
Copper	mg/kg	14	12	7	13
Lead	mg/kg	420	110	3	320
Mercury	mg/kg	0.3	0.1	<0.1	0.3
Nickel	mg/kg	2	2	<1	1
Zinc	mg/kg	46	110	26	52

Moisture Our Reference: Your Reference	UNITS ----- -	155059-1 BH1	155059-3 BH2	155059-4 BH2	155059-5 BH3	155059-7 BH4
Depth Date Sampled Type of sample	----- ----- -----	0.1-0.2 4/10/2016 Soil	0.1-0.2 4/10/2016 Soil	0.5-0.95 4/10/2016 Soil	0.1-0.2 4/10/2016 Soil	0.1-0.2 4/10/2016 Soil
Date prepared	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Moisture	%	10	11	4.5	10	9.8

Moisture Our Reference: Your Reference	UNITS ----- -	155059-9 BH5	155059-11 BH6	155059-12 BH6	155059-13 DUPA
Depth Date Sampled Type of sample	----- ----- -----	0.2-0.3 4/10/2016 Soil	0.1-0.2 4/10/2016 Soil	0.5-0.95 4/10/2016 Soil	- 4/10/2016 Soil
Date prepared	-	12/10/2016	12/10/2016	12/10/2016	12/10/2016
Date analysed	-	13/10/2016	13/10/2016	13/10/2016	13/10/2016
Moisture	%	8.0	7.3	4.7	7.0

Asbestos ID - soils Our Reference: Your Reference	UNITS ----- -	155059-1 BH1	155059-3 BH2	155059-5 BH3	155059-7 BH4	155059-9 BH5
Depth Date Sampled Type of sample	----- ----- -----	0.1-0.2 4/10/2016 Soil	0.1-0.2 4/10/2016 Soil	0.1-0.2 4/10/2016 Soil	0.1-0.2 4/10/2016 Soil	0.2-0.3 4/10/2016 Soil
Date analysed	-	17/10/2016	17/10/2016	17/10/2016	17/10/2016	17/10/2016
Sample mass tested	g	Approx 25g	Approx 35g	Approx 45g	Approx 40g	Approx 30g
Sample Description	-	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks
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 - soils Our Reference: Your Reference	UNITS ----- -	155059-11 BH6
Depth Date Sampled Type of sample	----- ----- -----	0.1-0.2 4/10/2016 Soil
Date analysed	-	17/10/2016
Sample mass tested	g	Approx 50g
Sample Description	-	Grey coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos 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	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	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
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.

Client Reference: E29816KD, North Curl Curl

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Date analysed	-			14/10/2016	155059-1	14/10/2016 14/10/2016	LCS-7	14/10/2016
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	155059-1	<25 <25	LCS-7	99%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	155059-1	<25 <25	LCS-7	99%
Benzene	mg/kg	0.2	Org-016	<0.2	155059-1	<0.2 <0.2	LCS-7	103%
Toluene	mg/kg	0.5	Org-016	<0.5	155059-1	<0.5 <0.5	LCS-7	99%
Ethylbenzene	mg/kg	1	Org-016	<1	155059-1	<1 <1	LCS-7	97%
m+p-xylene	mg/kg	2	Org-016	<2	155059-1	<2 <2	LCS-7	98%
o-Xylene	mg/kg	1	Org-016	<1	155059-1	<1 <1	LCS-7	103%
naphthalene	mg/kg	1	Org-014	<1	155059-1	<1 <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	85	155059-1	82 83 RPD: 1	LCS-7	88%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Date analysed	-			13/10/2016	155059-1	13/10/2016 13/10/2016	LCS-7	13/10/2016
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	155059-1	<50 <50	LCS-7	101%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	155059-1	<100 <100	LCS-7	100%
TRHC ₂₈ - C ₃₆	mg/kg	100	Org-003	<100	155059-1	160 170 RPD: 6	LCS-7	82%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	155059-1	<50 <50	LCS-7	101%
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	155059-1	160 170 RPD: 6	LCS-7	100%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	155059-1	<100 <100	LCS-7	82%
Surrogate o-Terphenyl	%		Org-003	84	155059-1	80 74 RPD: 8	LCS-7	85%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Date analysed	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Naphthalene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	LCS-7	95%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	LCS-7	112%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	LCS-7	124%
Anthracene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	LCS-7	115%
Pyrene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	LCS-7	120%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	155059-1	<0.2 <0.2	[NR]	[NR]

Client Reference: E29816KD, North Curl Curl

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	155059-1	<0.05 <0.05	LCS-7	113%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	97	155059-1	87 88 RPD: 1	LCS-7	109%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base II Duplicate II %RPD		
Date extracted	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Date analysed	-			13/10/2016	155059-1	13/10/2016 13/10/2016	LCS-7	13/10/2016
HCB	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	84%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	94%
Heptachlor	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	90%
delta-BHC	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	92%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	89%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	86%
Dieldrin	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	94%
Endrin	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	92%
pp-DDD	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	84%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	LCS-7	86%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	107	155059-1	94 106 RPD: 12	LCS-7	115%

Client Reference: E29816KD, North Curl Curl

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organophosphorus Pesticides						Base II Duplicate II %RPD		
Date extracted	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Date analysed	-			13/10/2016	155059-1	13/10/2016 13/10/2016	LCS-7	13/10/2016
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	LCS-7	89%
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	LCS-7	79%
Dimethoate	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	LCS-7	96%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	LCS-7	98%
Malathion	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	LCS-7	76%
Parathion	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	LCS-7	108%
Ronnel	mg/kg	0.1	Org-008	<0.1	155059-1	<0.1 <0.1	LCS-7	96%
Surrogate TCMX	%		Org-008	107	155059-1	94 106 RPD: 12	LCS-7	105%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Date analysed	-			13/10/2016	155059-1	13/10/2016 13/10/2016	LCS-7	13/10/2016
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	155059-1	<0.1 <0.1	LCS-7	102%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	155059-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	107	155059-1	94 106 RPD: 12	LCS-7	105%

Client Reference: E29816KD, North Curl Curl

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base Duplicate %RPD		
Date prepared	-			12/10/2016	155059-1	12/10/2016 12/10/2016	LCS-7	12/10/2016
Date analysed	-			13/10/2016	155059-1	13/10/2016 13/10/2016	LCS-7	13/10/2016
Arsenic	mg/kg	4	Metals-020	<4	155059-1	<4 <4	LCS-7	123%
Cadmium	mg/kg	0.4	Metals-020	<0.4	155059-1	<0.4 <0.4	LCS-7	110%
Chromium	mg/kg	1	Metals-020	<1	155059-1	6 7 RPD: 15	LCS-7	115%
Copper	mg/kg	1	Metals-020	<1	155059-1	9 8 RPD: 12	LCS-7	116%
Lead	mg/kg	1	Metals-020	<1	155059-1	30 20 RPD: 40	LCS-7	113%
Mercury	mg/kg	0.1	Metals-021	<0.1	155059-1	<0.1 <0.1	LCS-7	84%
Nickel	mg/kg	1	Metals-020	<1	155059-1	1 1 RPD: 0	LCS-7	109%
Zinc	mg/kg	1	Metals-020	<1	155059-1	36 37 RPD: 3	LCS-7	112%
QUALITYCONTROL vTRH(C6-C10)/BTEXNin Soil	UNITS	Dup. Sm#		Duplicate Base + Duplicate + %RPD		Spike Sm#	Spike % Recovery	
Date extracted	-	[NT]		[NT]		155059-3	12/10/2016	
Date analysed	-	[NT]		[NT]		155059-3	14/10/2016	
TRHC ₆ - C ₉	mg/kg	[NT]		[NT]		155059-3	101%	
TRHC ₆ - C ₁₀	mg/kg	[NT]		[NT]		155059-3	101%	
Benzene	mg/kg	[NT]		[NT]		155059-3	106%	
Toluene	mg/kg	[NT]		[NT]		155059-3	101%	
Ethylbenzene	mg/kg	[NT]		[NT]		155059-3	100%	
m+p-xylene	mg/kg	[NT]		[NT]		155059-3	100%	
o-Xylene	mg/kg	[NT]		[NT]		155059-3	106%	
naphthalene	mg/kg	[NT]		[NT]		[NR]	[NR]	
Surrogate aaa-Trifluorotoluene	%	[NT]		[NT]		155059-3	88%	
QUALITYCONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#		Duplicate Base + Duplicate + %RPD		Spike Sm#	Spike % Recovery	
Date extracted	-	[NT]		[NT]		155059-3	12/10/2016	
Date analysed	-	[NT]		[NT]		155059-3	13/10/2016	
TRHC ₁₀ - C ₁₄	mg/kg	[NT]		[NT]		155059-3	94%	
TRHC ₁₅ - C ₂₈	mg/kg	[NT]		[NT]		155059-3	89%	
TRHC ₂₉ - C ₃₆	mg/kg	[NT]		[NT]		155059-3	77%	
TRH>C ₁₀ -C ₁₆	mg/kg	[NT]		[NT]		155059-3	94%	
TRH>C ₁₆ -C ₃₄	mg/kg	[NT]		[NT]		155059-3	89%	
TRH>C ₃₄ -C ₄₀	mg/kg	[NT]		[NT]		155059-3	77%	
Surrogate o-Terphenyl	%	[NT]		[NT]		155059-3	71%	

Client Reference: E29816KD, North Curl Curl

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	155059-3	12/10/2016
Date analysed	-	[NT]	[NT]	155059-3	12/10/2016
Naphthalene	mg/kg	[NT]	[NT]	155059-3	87%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	155059-3	99%
Phenanthrene	mg/kg	[NT]	[NT]	155059-3	100%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	155059-3	91%
Pyrene	mg/kg	[NT]	[NT]	155059-3	98%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(b,j+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	155059-3	90%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	155059-3	96%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	155059-3	12/10/2016
Date analysed	-	[NT]	[NT]	155059-3	13/10/2016
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	155059-3	91%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	155059-3	83%
Heptachlor	mg/kg	[NT]	[NT]	155059-3	75%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	155059-3	84%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	155059-3	80%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	155059-3	80%
Dieldrin	mg/kg	[NT]	[NT]	155059-3	87%
Endrin	mg/kg	[NT]	[NT]	155059-3	87%
pp-DDD	mg/kg	[NT]	[NT]	155059-3	79%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	155059-3	81%

Client Reference: E29816KD, North Curl Curl

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	155059-3	119%
QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	155059-3	12/10/2016
Date analysed	-	[NT]	[NT]	155059-3	13/10/2016
Azinphos-methyl (Guthion)	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	mg/kg	[NT]	[NT]	155059-3	81%
Chlorpyrifos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dichlorvos	mg/kg	[NT]	[NT]	155059-3	111%
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	155059-3	82%
Fenitrothion	mg/kg	[NT]	[NT]	155059-3	101%
Malathion	mg/kg	[NT]	[NT]	155059-3	89%
Parathion	mg/kg	[NT]	[NT]	155059-3	107%
Ronnel	mg/kg	[NT]	[NT]	155059-3	89%
Surrogate TCMX	%	[NT]	[NT]	155059-3	100%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	155059-3	12/10/2016
Date analysed	-	[NT]	[NT]	155059-3	13/10/2016
Aroclor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	[NT]	[NT]	155059-3	110%
Aroclor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	155059-3	100%

Client Reference: E29816KD, North Curl Curl

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	155059-3	12/10/2016
Date analysed	-	[NT]	[NT]	155059-3	13/10/2016
Arsenic	mg/kg	[NT]	[NT]	155059-3	105%
Cadmium	mg/kg	[NT]	[NT]	155059-3	108%
Chromium	mg/kg	[NT]	[NT]	155059-3	108%
Copper	mg/kg	[NT]	[NT]	155059-3	109%
Lead	mg/kg	[NT]	[NT]	155059-3	103%
Mercury	mg/kg	[NT]	[NT]	155059-3	84%
Nickel	mg/kg	[NT]	[NT]	155059-3	106%
Zinc	mg/kg	[NT]	[NT]	155059-3	110%

Report Comments:

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

INS: Insufficient sample for this test
NR: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.