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Petro-Chemical Engineers - Fuel and Chemical Systems Design, Fabrication and Installation, Decommissioning and Site Environmental Remediation, Dangerous Goods Consultants

Soil Sampling and Geotechnical Analysis of site 1-23 Lenore Drive, Erskine Park, 2759 to determine feasibility for Industrial Development

1-23 LENORE DRIVE & ERSKINE PARK ROAD, ERSKINE PARK NSW 2759

July 2019

Document Prepared By:

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Contents

1.0 Purpose

In some situations, land use can cause contamination by the introduction of a range of chemicals which can pose a risk to human health or the natural environment. Such contamination, if not assessed and dealt with properly, can be detrimental to future development of land sites.

This Report is in relation to Initial Assessment and follow-up investigations of the parcel of land know as 1-23 Lenore Drive, Erskine Park, NSW and has been prepared pursuant to the provisions of SEPP 55 Clause 7 which reads as follows:

7. Contamination and remediation to be considered in determining development application

(1) A consent authority must not consent to the carrying out of any development on land unless:

(a) it has considered whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

(2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

(3) The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.

(4) The land concerned is:

(a) land that is within an investigation area,

(b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,

(c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or child-care purposes, or for the purposes of a hospital—land:

(i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and

(ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).

Based on the findings, the land is not contaminated and does not require remediation or any further reporting.

The proposed industrial use of the land is appropriate in respect of SEPP 55 considerations.

2.0 Executive Summary

The land does not appear on the EPA Contaminated Lands Register.
Appropriate Investigations have confirmed that there is no contamination of concern the land. The land is not contaminated.
As the result of an unsubstantiated rumour in early 2016 the site was checked for possible hydrocarbon contamination. The initial assessment for hydrocarbons showed no results above reportable levels.
Imported Fill was subsequently verified as coming from a swimming pool excavation in the Penrith area and a residential site in Merrylands. The imported fill that was reported by Council as displaying "discolouration" was an error, the soil was simply of two different types from different areas.

A further investigation followed to ascertain if the demolition of the existing house had resulted in asbestos contamination. No asbestos was found.

A further investigation, soil sampling and analyses was conducted on the site on 16th March 2018 in consort with the Geotechnical assessments which again revealed no contamination of concern.

A final Investigation, at the request of Penrith Council, and under guidelines and site plans approved by council environmental officers and covering an increased range of analytes was finalised in March 2019 which also showed no contamination of any type that would be of concern for human health.

All results have been provided by NATA Approved laboratories and verified by qualified Environmental professionals.

The site is not contaminated, therefore there is no necessity for any remediation.
SEPP 55 considerations have been taken into account and met, the site is suitable for industrial use.

3.0 Introduction

Petrolink Engineering was engaged by the owner Mr Nicholas as Environmental Consultants to provide information to be included in the Development Application approval for the construction of industrial units at 1-23 Lenore Drive & Erskine Park Road, Erskine Park NSW 2759.
Petrolink staff employed on this project are all Duly Qualified Persons under the definition of Penrith Council Contaminated Land DCP and the EPA, with over 30 years of experience in this field, many of those years working with Penrith Council.

The proposed development includes construction of a number of factory units with mezzanine level for offices. A 22-metre-wide access road with parking spaces is proposed through the middle of the site. Basement carpark is proposed at the eastern portion of the site which will require excavation up to about 3.5 metres below the existing ground surface. Site preparation for the construction of proposed buildings will also involve filling up to 3.0 metres deep.

The site is a triangular shaped block which is bounded by Lenore Drive to north-east, Erskine Park road to north-west and a creek to the south.

It is a vacant block of land covered with grass and scattered trees. Topography of the site is generally sloping from north to south.

The first step in the process was to undertake a Preliminary Site Investigation.

Stage 1 – Preliminary Site Investigation

The preliminary site investigation covers the following steps:-

1. Identify all past and present potentially contaminating activities.
2. Identify potential contamination types.
3. Discuss the site condition.
4. Provide a preliminary assessment of site contamination.
5. Assess the need for further investigations.

1. **Identify all past and present potentially contaminating activities.**
   The site has been confirmed as the home of the current owner's parents for the previous 40 odd years and where he himself grew up. The site had home gardens, a storage shed and a stable for the family horses. Prior to that time the land was occupied by another family who raised pigs on a small scale, not commercial. Prior to that it was vacant pastoral land. There is no evidence, physical or anecdotal of the site being used for any other purpose. No abattoirs, council yards or telegraph pole treatment works.

2. **Identify potential contamination types.**
   Some fertilisers and weed killers could have been used in the past but any signs of on-going residuals are not evident. Later soil analyses bare out this assumption.
   An amount of soil was imported unwittingly on to the block recently as the fore-runner to the works that will follow and to assist in landfill to achieve finished levels. There was a rumour spread that the soils came from adjacent to a service station site and as a result a soil sampling regime was carried out on the potentially offending soils. There were two separate "drops" of soil. Later research confirmed the soils were not from potentially contaminated sites but were in fact from a swimming pool excavation in Penrith... not an uncommon occurrence.

3. **Discuss the site condition.**
   The site is a triangular shape which is bounded by Lenore Drive to the North East , Erskine Park Road to the North West and a creek to the south.
   The site slopes from north to south to the unnamed creek recently created by other developments in the area. The site has become overgrown with kikuyu grass and other weed species that would seem to indicate there is no surface contamination or residual weed killer chemicals. In fact the site is quite fertile.
   The family home that was at the south- western end of the block has been removed with no detrimental effects. There are some building materials still to be removed. There was no evidence of asbestos on the site.

4. **Provide a preliminary assessment of site contamination.**
   Initial assessment and subsequent Detailed Site Investigations for hydrocarbons and asbestos contamination proved negative.
   Ground Water at the site is well below 4 metres and as the site will be fully concreted in future there will be no effect on the adjacent industrial water course from any the groundwater from this block.

5. **Assess the need for further investigations.**
   Following Initial assessment there appeared to be no need for further investigation. Penrith Council requested additional Investigations so further soil testing and analyses was carried out with the Geotechnical investigation. Following a further meeting with Council another Investigation was requested and subsequently carried

out after Council approved the methodology to be used. The results were all negative to any form of contamination which would pose a threat to human health. The requirements of SEPP 55 have been met. The site is not contaminated. There is no need for further Investigations, the site is suitable for industrial use.
There is no requirement for a Remediation Action Plan.

4.0 Results of Investigations

4.1 Soil Sampling Results

Soil sampling at the site were taken on 16th March 2018 and sent to a NATA accredited laboratory for analysis.

A total of 12 bore holes were drilled.
2 samples were taken from each bore hole, one at 1.5 metres and one at 3 metres depth. One additional sample was taken from the stock-pile. Sampling was carried out in accordance with EPA Guidelines for Consultants Reporting on Contaminated Land.
The samples were sent under Chain of Custody to a NATA Registered laboratory for analysis.

Samples were tested for Total Recoverable Hydrocarbons, BTEX and Polycyclic Aromatic Hydrocarbons.

All samples showed levels of potential contamination less than the Levels of Reportable limits (LOR) for the proposed industrial site development.

The only result of concern is for Benzoapyrene which showed levels of 0.6 and 1.2 mg/kg which are above the LOR of 0.5 mg/kg. Further investigation has shown that the threshold for Benzoapyrene on a site to be used for industrial/commercial purposes is 10ppm.

The results we have are at .06 at 1 metre and 1.2 at 2 metres, significantly below industrial levels. As the majority of the block will be covered with a minimum of 150mm of concrete there is no pathway to affect human health.

For a full report on soil sampling results, see Appendix A attached to the Report.

Imported Fill and Groundworks.

We confirm, after further research, that the imported fill consisted of two separate "lots" of soil.

The first load of soil was approximately 90m^3 from the excavation of a domestic swimming pool from a residential lot in Penrith Council area, approved by Penrith Council, and was not from any industrial works.

The second load of approximately the same quantity was topsoil from a council approved residential site being prepared for a re-build in Merrylands.

The different soils from different areas spread across the block accounts for the different "colours" of the soil, there is no "discolouration", just different types of soil.

There has been no ongoing ground works conducted on the site other than when the imported soils were spread across the property, works that lasted three days. The average depth of the Fill is between 100mm and 400mm.

In relation to what was termed as a "hot spot" from assessment #1, this is most likely where the bulldozer, used to spread the soil, carried out refuelling and may have had a small spill, something that happens often where earthworks are carried out. As the area has now been weather affected it has quite probably bio-degraded (diesel) to below reportable levels and will cause no further concern.

4.2 Geotechnical Result

A Geotechnical survey was conducted on the site on 16th March 2018 by Geotechnique, a well-known and reputable local company.

The site work included a walk-over survey to assess general site conditions, reviewing site plans, scanning the proposed test pits for underground services, excavation of 12 test pits to a depth of 3 metres for soil sampling, conduct field Dynamic Cone Penetration tests to assess strength of subsurface soil, conduct soil sampling, measure depth to groundwater level or seepage in test pits.

Summary of findings:

- Sub-surface conditions found to be normal
- Groundwater levels were not encountered in any of the test pits
- There is evidence that some fill has been added to the site in the past. The fill appears to be well compacted. (The fill has since been confirmed as being from a swimming pool excavation and a rebuilding site.)
- Salinity was found to be relatively high in a few areas.

The high salinity of the soil needs to be taken into account during the earthworks and proper saline soil management should be followed.

Concrete structures constructed in saline soils will require increased concrete strength, which is proportioned to the increase in soil salinity. In addition, the concrete cover and curing period should be increased depending on the degree of salinity of the soil.

Please refer to the geotechnical report in Appendix B attached to this Report for Saline Soil Management Plan and Excavation conditions for this site.

5.0 Asbestos Result

There was no asbestos found at the site.

6.0 Further Soil Analysis

At the request of Penrith Council a further Sampling Plan was submitted and approved by Council and subsequently carried out on the 8th February 2019.
An additional 10 boreholes were drilled and samples taken at two depths, 150 mm and 400 mm. Samples were collected in accordance with proper practices, placed in Laboratory prepared glass jars which were then placed in several "eskies" of ice and forwarded under Chain of Custody to the NATA Laboratory for analysis.

A full suite of analytes (B7) was selected for appraisal against the sample results.
See Appendix B for test results.
There was no contamination of concern to human health reported.

7.0 Conclusions and Recommendations

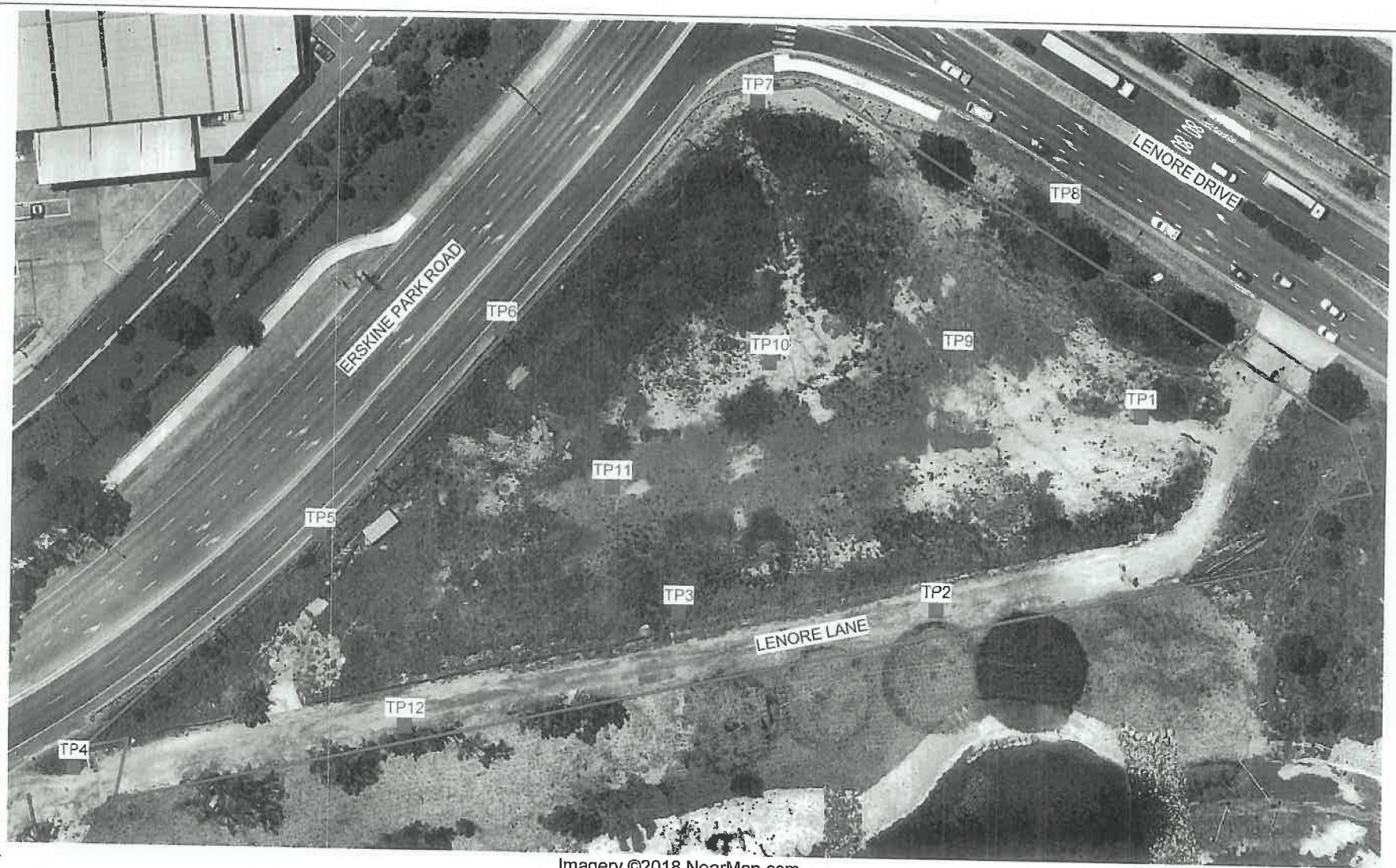
The results of the soil sampling analysis and geotechnical survey indicates no issues on the site.

As no contamination above the reportable thresholds was found, the site is considered suitable for industrial development.
The requirements of Sepp 55 have been taken into consideration and have been met.

Refer to the geotechnical report for Saline Soil Management Plan, Soil Aggressivity, Excavation Conditions, Fill Placement and other considerations during the development of this site.

Appendix A: Soil Sampling Analysis 19/3/18

Appendix B: Soil Sampling Analysis 20/2/19



LEGEND

■ Test Pit

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NOTES

1. Site features are indicative and are not to scale.
2. This drawing has been produced using a base plan provided by others to which additional information e.g test pits, borehole locations or notes have been added. Some or all of the plan may not be relevant at the time of producing this drawing

Petrolink Engineering Pty Ltd
Proposed Industrial Development
Lot 1 DP1071114 & Lot 55 DP1170183
1-23 Lenore Drive & Erskine Park Road, Erskine Park

Test Pit Locations

Drawing No: 14213/1-AA1
Job No: 14213/1
Drawn By: MH
Date: 28 March 2018
Checked By: AI

File No: 14213-1
Layers: 0, AA1

16-3-18

Petrolink ENGINEERING PTY LTD

CHAIN OF CUSTODY FORM – Lab Sampling

22 Peachtree Road, Penrith NSW 2750
Phone: 02 4722 9775
Fax: 02 4722 9774
Email: sales@petrolink.com.au

Investigator: DAVID MORGAN

Site: 1-28 ERSKINE PARK ROAD, ERSKINE PARK

Job No: 11839 PO No:

Laboratory: Eurofins – 02 99008400/8492

Courier: Call 02 99008492

Sample ID	Laboratory ID	Container	Sampling Date	Sampling Time	Suit B4 (TPH, BTEX, PAH)	Metals-Pb- Lead	Field Filtered (0.45 Um)	Requires Field filtering	WATER	SLUDGE	COMPOSITE	OTHER (SPECIFY)	SOIL: Clay	Sand	Silt	Rock	Fine sand	Course sand	Other (Specify)	Soil Sample Depth	Sample preservation: ICE	UNPRESERVED	OTHER (SPECIFY)
TP1-1.5M		GLASS	16/03/18	10:18	✓	✓		✓					✓					✓			✓		
TP1-3M		"	"	10:25	✓	✓		✓					✓					✓			✓		
TP2-1.5M		"	"	10:40	✓	✓		✓					✓					✓			✓		
TP2-3M		"	"	10:46	✓	✓		✓					✓					✓			✓		
TP3-1.5M		"	"	11:05	✓	✓		✓					✓					✓			✓		
TP3-2.3M		"	"	11:10	✓	✓		✓					✓					✓			✓		
TP4-1.5M		"	"	11:25	✓	✓		✓					✓					✓			✓		
TP4-2.3M		"	"	11:35	✓	✓		✓					✓					✓			✓		
TP5-1.5M		"	"	11:55	✓	✓		✓					✓					✓			✓		
TP5-3M		"	"	12:15	✓	✓		✓					✓					✓			✓		

Investigator: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: (Date)

Relinquished by: (print & signature)	Date	Time:	Received by: (print & signature)	Date	Time
DAVID MORGAN	16/03/18	16:00	Claire Learned	16/03/18	16:00
IAN (29C)	16/3		Received by: (print & signature)	Date	Time

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CHAIN OF CUSTODY FORM – Lab Sampling

Investigator:					LAB Analysis Required				Sample matrix											Soil Sample Depth	Sample preservation		
Site:																							
Job No:		PO No:																					
Laboratory:	Eurofins – 02 99008400/8492																						
Courier:	Call 02 99008492		Sampling																				
Sample ID	Laboratory ID	Container	Date	Time	Suit B4 (TPH, BTEX, PAH)	Metals-Pb- Lead	Field Filtered (0.45 Um)	Requires Field filtering	WATER	SLUDGE	COMPOSITE	OTHER (SPECIFY)	SOIL								ICE	UNPRESERVED	OTHER (SPECIFY)
													Clay	Sand	Silt	Rock	Fine sand	Course sand	Other (Specify)				
TP6-1.5M		GLASS	16/03/18	12:30	✓	✓		✓					✓					✓			✓		
TP6-3M		"	"	12:40	✓	✓		✓					✓					✓			✓		
TP7-1.5M		"	"	13:00	✓	✓		✓					✓					✓			✓		
TP7-3M		"	"	13:05	✓	✓		✓					✓					✓			✓		
TP8-1.5M		"	"	13:20	✓	✓		✓					✓					✓			✓		
TP8-3M		"	"	13:30	✓	✓		✓					✓					✓			✓		
TP9-1.5M		"	"	13:40	✓	✓		✓					✓					✓			✓		
TP9-3M		"	"	13:53	✓	✓		✓					✓					✓			✓		
TP10-1.5M		"	"	14:05	✓	✓		✓					✓					✓			✓		
TP10-3M		"	"	14:15	✓	✓		✓					✓					✓			✓		

Investigator: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: (Date)

Relinquished by: (print & signature)	Date	Time:	Received by: (print & signature)	Date	Time
DAVID MORGAN	16/03/18	16:00	Claire Lamond	16/3/18	16:00
Relinquished by: (print & signature) IAN (296)	Date 16/3	Time	Received by: (print & signature)	Date	Time

Petrolink ENGINEERING PTY LTD

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CHAIN OF CUSTODY FORM – Lab Sampling

Investigator:					**LAB Analysis Required**				**Sample matrix**													**Soil Sample Depth**	**Sample preservation**		
Site:													**SOIL**																
Job No:	**PO No:**																												
Laboratory:	**Eurofins – 02 99008400/8492**																												
Courier:	**Call 02 99008492**		**Sampling**																										
Sample ID	**Laboratory ID**	**Container**	**Date**	**Time**	**Suit B4 (TPH, BTEX, PAH)**	**Metals-Pb- Lead**	**Field Filtered (0.45 Um)**	**Requires Field filtering**	**WATER**	**SLUDGE**	**COMPOSITE**	**OTHER (SPECIFY)**	**Clay**	**Sand**	**Silt**	**Rock**	**Fine sand**	**Course sand**	**Other (Specify)**		**ICE**	**UNPRESERVED**	**OTHER (SPECIFY)**
TP11-1.5M		GLASS	16/03/18	14:30	✓	✓		✓					✓					✓			✓		
TP11-3M		"	"	14:34	✓	✓		✓					✓					✓			✓		
TP12-1.5M		"	"	14:46	✓	✓		✓					✓					✓			✓		
TP12-3M		"	"	15:00	✓	✓		✓					✓					✓			✓		
STOCK		"	"	12:41	✓	✓		✓					✓					✓			✓		

Investigator: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: (Date)

Relinquished by: (print & signature)	Date	Time:	Received by: (print & signature)	Date	Time
DAVID MORGAN	16/03/18	16:00	Elaine Learmond	16/03/18	16:00
Relinquished by: (print & signature)	Date	Time	Received by: (print & signature)	Date	Time

GEOTECHNIQUE® PTY LTD

ABN 64 002 841 063

Job No: 14213/1
Our Ref: 14213/1-AA
5 April 2018

Petrolink Engineering Pty Ltd
22 Peachtree Road
PENRITH NSW 2750
Email: ronaldo@petrolink.com.au

Attention: Mr R Perez

Dear Sir

re: **Proposed Industrial Development**
Lot 1 in DP 1071114 & Lot 55 in DP 1170183
1-23 Lenore Drive & Erskine Park Road, Erskine Park
Geotechnical Investigation Report

This report presents the results of a geotechnical investigation carried out at the above site for the proposed industrial development. The investigation was approved by Ms C Learned of Petrolink Engineering Pty Ltd in a purchase order (Ref No 5490) dated 09 March 2018 and was carried out in accordance with the scope of work detailed in a Geotechnique Pty Ltd proposal (Ref No: Al.sf/Q8438) dated 22 February 2018.

Proposed Development

From the drawings received, we understand that the proposed development includes construction of a number of factory units with mezzanine level for office. A 22m wide access road with parking spaces is proposed through the middle of the site. Basement carpark is proposed at the eastern portion of the site which will require excavation up to about 3.5m below the existing ground surface. Site preparation for the construction of proposed buildings will also involve filling up to 3.0m deep.

A geotechnical investigation was required to assess the sub-surface conditions across the site in order to provide geotechnical recommendations for the design of pavement, retaining structures, basement excavation, floor slabs and footings. Assessment of salinity, aggressivity and erodibility of soils likely to be excavated is also part of the investigation.

Regional Geology

The Geological Map of Penrith (Geological Series Sheet 9030, Scale 1:100,000, Edition 1, 1991), published by the Department of Minerals and Energy indicates the residual soils within the site to be underlain by Triassic Age Shale of the Wianamatta Group, comprising shale, carbonaceous claystone, claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff.

The Soil Landscape Map (1:100,000) of Penrith indicates that the landscape of the site belongs to the Blacktown Group, which is characterised with gently undulating rises on Wianamatta Group shales, with local relief to 30m, ground slope of less than 5%, broad rounded crests and gently inclined slopes. The sub-surface soil within this landscape is likely to be up to 3m thick, moderately reactive, high plasticity and with poor drainage.

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Reference to the Map of Salinity Potential in Western Sydney, prepared by Department of Infrastructure, Planning and Natural Resources in 2002, indicates that the landscape across the site has moderate to high salinity potential with known salinity at or nearby site.

Field Work

Field work for this geotechnical investigation was carried out on 16 March 2018 and included the followings:

- Carrying out a walk over survey to assess general site conditions and identify preferred locations for test pits.
- Reviewing services plans obtained from "Dial Before You Dig" to determine locations of underground services across the site.
- Scanning the proposed test pit locations for underground services to ensure excavation would not damage existing services. We engaged a specialist services locator for this purpose.
- Excavating 12 test pits across the site to a depth of 3m or refusal or bedrock using a backhoe fitted with a bucket. Test pits were uniformly distributed across the site and their locations are shown on the attached Drawings No 14213/1-AA1.
- Conducting field Dynamic Cone Penetration (DCP) tests to assess strength of subsurface soil.
- Recovering representative soil samples for visual assessment and laboratory tests (Shrink Swell, CBR, salinity, aggressivity and erodibility).
- Measuring the depth to groundwater level or seepage in the test pits, if encountered.

Field work was supervised by a Field Engineer from this company who was responsible for nominating the test pit locations, conducting SCP tests, sampling and preparation of field logs.

Site Description

The site is of triangular shape which is bounded by Lenore Drive to north-east, Erskine Park Road to north-west and a creek to the south. It is a vacant land covered with grass and scattered trees. Topography of the site is generally sloping from north to south. Historical map indicates that the western part of the site was previously occupied by a residential house. Disturbed terrain located south of the site indicates some mining activities in the past.

Sub-surface Conditions

Twelve test pits (TP1 and TP12) were excavated to assess the sub-surface conditions. Sub-surface profiles encountered in the test pits are detailed in the attached Table A and summarised below:

Table 1: Subsurface profiles encountered in test pits

Test Pit No	Termination Depth (m)	Topsoil (m)	Fill (m)	Natural (m)	Bedrock (m)
TP1	3.0	0.0 - 0.2	0.2 - >3.0	NE	NE
TP2	3.0	0.0 - 0.2	0.2 - >3.0	NE	NE
TP3	2.3	0.0 - 0.2	0.2 - >2.1	NE	2.1 - >2.3
TP4	2.3	0.0 - 0.2	0.2 - 0.7	0.7 - >2.1	2.1 - >2.3
TP5	3.0	0.0 - 0.2	0.2 - 2.5	2.5 - >3.0	NE
TP6	3.0	0.0 - 0.2	0.2 - >3.0	NE	NE

Test Pit No	Termination Depth (m)	Topsoil (m)	Fill (m)	Natural (m)	Bedrock (m)
TP7	3.0	0.0 - 0.2	0.2 - >3.0	NE	NE
TP8	3.0	NE	0.0 - 1.4	1.4 - >3.0	NE
TP9	3.0	NE	0.0 - >3.0	NE	NE
TP10	3.0	0.0 - 0.2	0.2 - >3.0	NE	NE
TP11	3.0	0.0 - 0.2	0.2 - 2.2	2.2 - >3.0	NE
TP12	2.2	0.0 - 0.2	NE	0.2 - 2.0	2.0 - >2.2

NE : Not Encountered up to the terminated depth

The subsurface materials encountered in boreholes may generally be described as follows:

Topsoil	Silty Clay, medium plasticity, brown, traces of root fibres and gravel
Fill	Clay, high plasticity, red mottled grey, traces of gravel and root fibres Silty Clay, medium to high plasticity, grey Gravelly Clay, medium to high plasticity, brown/yellow, traces of ironstone
Natural	CLAY, medium to high plasticity, yellow/grey Shaley CLAY, high plasticity, grey
Bedrock	SHALE, grey, extremely weathered, very low strength, ironstone interbedded SANDSTONE/ SILTSTONE, brown/red, iron stained

Table 1 indicates that the sub-surface profile across the site comprises a sequence of topsoil/fill and natural clayey soils (medium to high plasticity) underlain by weathered shale bedrock. Thick fill (>3m) was encountered in most of the test pits. Weathered bedrock (SHALE / SILTSTONE / SANDSTONE) was encountered in three test pits located at the south-west corner of the site.

Groundwater Conditions

Groundwater level was not encountered in any test pits within the termination depth. It should also be noted that fluctuations in the level of groundwater/seepage might occur due to variations in rainfall and/or other factors not evident during drilling. The presence of creek along the south boundary line may influence the ground water table.

Assessment of Fill

Clayey fill material of more than 3m deep (the maximum reach of the backhoe) was encountered at the north-east half of the site. Desktop study of the historical aerial photographs of the site (attached at the end of the report) indicates that the site was previously occupied by a number of different structures. Although the field observation and DCP test results indicate that fill was well compacted, we cannot confirm whether it was placed in a controlled manner. Also, the presence of unsuitable fill material (e.g., dam sediments, organic and non soil matters etc.) below the termination depth of test pits cannot be ruled out. Therefore, the fill material at site was assessed as uncontrolled.

Field and Laboratory Tests

Dynamic Cone Penetration (DCP) Tests

A number of field Dynamic Cone Penetration (DCP) tests were conducted during the field investigation to assess strength of subsurface soil. DCP tests were conducted next to test pits locations TP1, TP3, TP4 and TP7. The test result certificate is attached at the end of this report with indicates that the fill materials are well compacted and the natural clayey soils are stiff to very stiff in nature.

Shrink Swell Index and Atterberg Limits Tests

These tests were carried out in accordance with relevant Australian Standard in the NATA accredited laboratory of Geotech Testing Pty Ltd to determine soil reactivity to moisture variations and plasticity characteristics of sub-surface soils. Test results are detailed in the attached certificates and summarised below.

Table 2: Shrink Swell Index and Atterberg Limits Tests Results

Test Pit No	Sample Depth (m)	Material Description	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Shrinkage Limit (%)	Shrink/swell Index (%/pF)
TP2	0.2 - 0.5	FILL: Clay, low to medium plasticity, red-brown & grey, trace of fine to medium gravel	-	-	-	-	1.9
TP4	0.7 - 0.9	(CI) CLAY, medium plasticity, grey	-	-	-	-	2.7
TP10	1.0 - 1.2	FILL: Silty Clay, low to medium plasticity, brown, traces of fine to medium gravel	35	21	14	9	-

Based on the field observation and test results, the fill material has a low to medium plasticity whereas the natural clay has a medium to high plasticity.

California Bearing Ratio (CBR) Tests

Soaked CBR tests were conducted on two (2) subgrade samples obtained from the proposed driveway and car parking area, in the NATA accredited laboratory of Geotech Testing Pty Ltd. The Soaked CBR tests were carried out on specimens compacted to a target dry density ratio of 100% Standard (AS1289 5.4.1) at moisture content close to Standard Optimum. The CBR results are detailed on the attached certificate and summarised below:

Table 3: CBR Tests Results

Test Pit No	Depth (m)	Summary Description	MDD (t/m3)	OMC (%)	FMC (%)	Variation from OMC (%)	CBR (%)
TP4	0.7 - 0.9	(CI) CLAY, medium plasticity, grey	1.69	18.3	15.7	2.6 Dry	4.0
TP9	1.0 - 1.2	FILL: Clay, medium plasticity, red-brown	1.82	15.0	18.7	3.6 Wet	4.5

MDD: Maximum Dry Density, FMC: Field Moisture Content, OMC: Optimum Moisture Content, CBR: California Bearing Ratio

Salinity, Aggressivity and Erodibility Tests Results

Representative soil samples recovered from the test pits were tested in the NATA accredited laboratory of SGS Environmental Services, in accordance with relevant Australian Standards, to determine Electrical Conductivity (EC), pH, Sulphate, Chloride and Exchangeable Sodium Percentage (ESP). Laboratory test results are attached and summaries are presented in the following Tables 4.

Table 4: Chemical Tests Results

Test Pit No	Depth (m)	EC (µS/cm)	ECe (dS/m)	pH	Chloride mg/kg	Sulphate mg/kg	ESP (%)
TP1	0.2-0.4	430	3.01	5.6	260	470	13.1
TP2	0.5-0.7	210	1.47	6.2	90	190	-
TP3	2.0-2.2	260	1.82	7.6	260	64	27.6
TP4	0.5-0.7	1200	8.4	8.7	1200	280	-
TP5	1.5-1.7	710	4.97	8.9	750	110	13.5
TP6	2.2-2.4	650	4.55	9	640	83	-
TP7	0.7-0.9	320	2.24	6.1	340	130	26.3
TP8	1.6-1.8	310	2.17	6	350	87	-
TP9	2.6-2.8	220	1.54	5.8	120	200	34.8
TP10	0.0-0.2	190	1.33	5.7	150	98	-
TP11	1.0-1.2	1100	7.7	7.4	1200	160	15.7
TP12	1.8-2.0	1200	8.4	5.4	1800	200	-

DISCUSSION AND RECOMMENDATIONS

Soil Salinity

Soil salinity is generally assessed by measuring Electrical Conductivity (EC) of a soil sample made up of 1:5 soil water suspensions. Thus determined Electrical Conductivity (EC) is multiplied by a factor varying from 6 to 17, based on the texture of the soil sample, to obtain Corrected Electrical Conductivity designated as EC_e (Reference 1). Alternatively, EC_e may be directly measured in soil saturation extract. The criteria for assessment of soil salinity classes are shown in the following Table 5 (Reference 1):

Table 5: Soil Salinity Classes

Classification	EC_e (dS/m)	Comments
Non-saline	<2	Salinity effects mostly negligible
Slightly saline	2 – 4	Yields of very sensitive crops may be affected
Moderately saline	4 – 8	Yields of many crops affected
Very saline	8 – 16	Only tolerant crops yield satisfactorily
Highly saline	>16	Only a few tolerant crops yield satisfactorily

Note 1 µS/cm=1000xdS/m

Subsurface soils encountered across the site were predominantly medium to high plasticity clay. Average multiplying factor of 7 is deemed appropriate for the soils encountered across the site. For a multiplying factor of 7, estimates of ECe values for representative soil samples presented in Table 4 vary from about 1.33dS/m to 8.4dS/m. Out of 12 samples tested, 7 samples (i.e., 58%) show ECe values of less than 4.0dS/m, 3 samples (i.e., 25%) show ECe values of ranging between 4.0 and 8.0dS/m and only 2 samples (i.e., 17%) show ECe values slightly above 8.0dS/m.

Therefore, it is our assessment that the soils likely to be disturbed or excavated during the proposed development works are non-saline to moderately saline with the possibility of finding high saline soil. Therefore, earthworks for the proposed development should follow proper saline soil management plan.

Concrete structures constructed in saline soils will require increased concrete strength, which is proportioned to the increase in soil salinity (Reference 2). In addition, the concrete cover and curing period should be increased depending on the degree of salinity of the soil.

Saline Soil Management Plan

As mentioned before, the soils likely to be disturbed or excavated during the proposed development works are non-saline to moderately saline with the possibility of finding high saline soil. Therefore, we recommend that disturbance and excavation of the soils are carried out in accordance with a saline soil management plan in order to minimise the adverse effects of saline soils.

We recommended the following as part of the saline soil management plan:

- Develop the best use of the existing topography in order to minimise cut and fill operations. The site will be suitable for proposed development works even if saline soils are left insitu provided construction materials appropriate for the salinity of soils are used.
- Construct a V-drain behind the crest of all excavation faces or slopes to divert water away from the slope face.
- Ensure that earthworks and construction activities do not affect the natural flow of groundwater. Where groundwater is intercepted during development works / excavation the flow should be diverted to stormwater drains or creeks by providing appropriate surface and sub-surface drainage. We do not anticipate that proposed earthworks will affect the natural flow of groundwater as well as surface water.
- Re-use excavated saline soils in areas where saline soils are acceptable or dispose to an appropriately licensed landfill.
- Finished ground surface should be provided with adequate fall to the street or stormwater drainage to allow water run-off and prevent water ponding, waterlogging and infiltration of rainwater.
- Erosion and Sediment Control Plans must be developed and implemented by the earthworks contractors in accordance with recommendations provided by the NSW Department of Housing (Reference 3). All sediment and erosion controls proposed by the Erosion and Sediment Control Plan are to be installed prior to commencement of any construction works.
- On cut and fill batters provide a secured turf overlay or shotcreting to guard against erosion.
- Utilise native and deep-rooted plants to minimise soil erosion. Where vegetation cover is not adequate to control erosion, improve soil resistance to erosion by stabilising dispersive soils with hydrated lime and gypsum. Exact proportions of lime and gypsum to be used can be determined on the basis of laboratory testing, but for preliminary planning purposes we suggest about 3% to 5% of lime and gypsum.
- Select construction materials and techniques suitable for a moderately aggressive site.

Soil Aggressivity

Aqueous solution of chlorides causes corrosion of iron and steel, including steel reinforcement in concrete. High acidity and soils with high sulphates and magnesium affect the integrity of concrete structures buried in the soil.

The aggressivity classifications of soil and groundwater applicable to iron and steel, in accordance with Australian Standard AS2159 (Reference 4), are given below in Table 6:

Table 6: Aggressivity Classification for Steel/Iron

Chloride		pH	Resistivity (ohm cm)	Soil Condition A*	Soil Condition B#
In Soil (ppm)	In Water (ppm)				
<5000	<1000	>5.0	>5000	Non-aggressive	Non-aggressive
5000-20000	1000-10000	4.0-5.0	2000-5000	Mild	Non-aggressive
20000-50000	10000-20000	3.0-4.0	1000-2000	Moderate	Mild
>50000	>20000	<3.0	<1000	Severe	Moderate

*Soil Condition A = high permeability soils (e.g. sands and gravels) which are below groundwater
#Soil Condition B = low permeability soils (e.g. silts and clays) and all soils above groundwater

The aggressivity classifications of soil and groundwater applicable to concrete, in accordance with Australian Standard AS2159 (Reference 4), are given below in Table 7:

Table 7: Aggressivity Classification for Concrete

Sulphate expressed as SO_4		pH	Chloride in Water (ppm)	Soil Condition A	Soil Condition B
In Soil (ppm)	In Groundwater (ppm)				
<5000	<1000	>5.5	<6000	Mild	Non-aggressive
5000-10000	1000-3000	4.5-5.5	6000-12000	Moderate	Mild
10000-20000	3000-1000	4.0-4.5	12000-30000	Severe	Moderate
>20000	>10000	<4.0	>30000	Very Severe	Severe

Approximately 100ppm of SO_4 = 80ppm of SO_3

Results of aggressivity tests, which include determination of pH, chloride and sulphate of 12 representative samples, are presented in Table 4. The table shows that the pH values of soils are greater than 5.4; chloride values less than 1800 ppm and sulphate values less than 470 ppm. Based on the laboratory test results and the assumption that soils have low permeability, the soils across the site are assessed to be non-aggressive towards both steel and concrete.

Excavation Condition

Proposed development is understood to involve up to 3.5m deep excavation for the basement car park located at the south-east corner of the site. Therefore, materials to be excavated are expected to comprise compacted fill and natural clayey soils. We do not expect to encounter bedrock in the area where the basement is proposed.

It is our assessment that excavation of soils (including fill and natural soil) and weathered bedrock (if encountered) can be achieved using conventional earthmoving equipment such as excavators and dozers. The selection of suitable equipment is based on site access and acceptable ground vibration during operation.

Groundwater level was not encountered in any test pits within the termination depth. We do not anticipate significant groundwater inflow during proposed excavation. Minor groundwater/seepage inflow if any could be managed by a conventional sump and pump method. It should be noted that fluctuations in the level of groundwater/seepage might occur due to variations in rainfall and/or other factors and trafficability problems could arise locally during wet weather or if water is allowed to pond at the site.

Also, the presence of creek along the south boundary line may influence the ground water table. We suggest a specialist dewatering contractor be contacted for advice if significant groundwater inflow is encountered during basement excavation.

Fill Placement

We understand that proposed development works would require fill placement up to about 3m thick. The following procedures are recommended for placement of controlled fill, where required.

- Strip existing topsoil and stockpile separately for possible future use. Additional stripping would be required if uncontrolled fill is encountered.
- Undertake proof rolling (using an 8 to 10 tonnes roller) of the exposed residual soils to detect potentially weak spots (ground heave). Excavate areas of localised heaving to a depth of about 300mm and replace with granular fill, compacted as described below.
- Undertake proof rolling of soft spots backfilled with granular fill, as described above. If the backfilled area shows movement during proof rolling, this office should be contacted for further recommendations.
- Place suitable fill materials on proof rolled residual soils. The fill should be placed in horizontal layers of 200mm to 250mm maximum loose thickness (depending on the size of equipment) and compacted to a Minimum Dry Density Ratio (MDDR) of 98% Standard, at moisture content within 2% of Optimum Moisture Content (OMC). Controlled fill should preferably comprise non-reactive fill (e.g. crushed sandstone) with a maximum particle size not exceeding 75mm, or low plasticity clay. The residual soils and bedrock obtained from excavations within the site may be used in controlled fill after removal of unsuitable materials, if any, crushing to sizes finer than 75mm, proper mixing and moisture conditioning.
- Fill placement should be supervised to ensure that material quality, layer thickness, testing frequency and compaction criteria conform to the specifications. We recommend "Level 2" or better supervision, in accordance with AS3798-2007 – "Guidelines on Earthworks for Commercial and Residential Developments". It should be noted that a Geotechnical Inspection and Testing Authority will generally provide certification on the quality of entire compacted fill only if Level 1 supervision and testing is carried out.

Batter Slopes and Retaining Structures

Proposed development will involve up to about 3.0m thick fill placement and 3.5m deep basement excavation. Cut and fill slopes during and after development works should be battered for stability or retained by engineered retaining structures. Recommended batter slopes for the stability of cut and fill slopes are presented in Table 8.

Table 8: Recommended batter slopes

Material	Temporary (Vertical : Horizontal)		Permanent (Vertical : Horizontal)	
	Protected	Exposed	Protected	Exposed
Controlled Fill/ Natural Soil	1.0 : 1.0	1.0 : 1.5	1.0 : 2.0	1.0 : 2.5
Bedrock - Class V to IV	1.0 : 0.75	1.0 : 1.0	1.0 : 1.0	1.0 : 1.5

Surface protection of the slopes can be provided by shotcreting, which may be reinforced. It is also recommended that batter slopes are provided with adequate surface and sub-surface drainage.

If batter slopes steeper than those recommended in Table 8 are required, excavation faces would need to be retained by engineered retaining structures.

Appropriate retaining structures would comprise bored pier walls installed prior to excavation or gravity walls constructed after excavation is completed. The pressure distribution on such retaining structures is assumed to be triangular and estimated as follows:

$$p_h = \gamma k H$$

Where,

p_h = Horizontal active earth pressure (kN/m^2)
γ = Bulk density of materials to be retained (kN/m^3)
k = Coefficient of earth pressure (k_a or k_0)
H = Retained height (m)

For the design of flexible retaining structures where some lateral movement is acceptable an active earth pressure coefficient (k_a) is recommended. If it is critical to limit the horizontal deformation of a retaining structure use of an earth pressure coefficient at rest (k_0) should be considered. Recommended earth pressure coefficients for the design of retaining structures are presented in the following Table 9.

Table 9: Recommended earth pressure coefficients

Retained Material	Unit Weight (kN/m^3)	Active Earth Pressure Coefficient, K_a	At Rest Earth Pressure Coefficient, K_0	Ultimate Passive Earth Pressure (kPa)
Existing Fill	18	0.40	0.60	Ignore
Natural Soil	19	0.30	0.50	3.0
Shale- Class V to IV	20	0.25	0.40	350*

** Apply appropriate factor of safety*

The above coefficients are based on the assumption that ground level behind the retaining structure is horizontal and the retained material is effectively drained. Additional earth pressures resulting from surcharge load (buildings, infrastructures, etc) on retained materials and groundwater pressure, if any should also be allowed for in design of retaining structures. The design of any retaining structure should also be checked for bearing capacity, overturning, sliding and overall stability of the slope.

Floor Slabs and Footings

Material at the base of basement excavation is anticipated to be to be existing fill or natural clayey soil. Further testing and assessment of the material at the base of the basement is required (following the completion of excavation) in order to confirm its suitability for the construction of ground bearing slab and recommend appropriate remedial measures. Alternatively, suspended slabs supported by deep footings (i.e., pier foundation) socketed into bedrock can be used. During our investigation, weathered bedrock (Class V to IV) was encountered at the south-west corner of the site within the termination depth of 3m. Additional geotechnical investigation with deep boreholes (including rock coring) is required to assess depth and strength of bedrock across the site.

For the preliminary design of the foundation following allowable bearing pressures can be used. Note that the depth of different founding materials and their strengths need to be confirmed through additional investigation with deeper boreholes.

Table 10: Recommended allowable bearing pressures for preliminary design

Founding Material	Allowable Bearing Pressure (kPa)	Allowable Shaft Adhesion (kPa)
Control Fill	100	Ignore
Residual Soil	150	10
Shale – Class V	600	50
Shale - Class IV	1200	100

The recommended allowable shaft adhesions against uplift pressures are half the shaft adhesions for compressive loads presented in Table 10.

Concrete Driveway

Proposed development at the site includes construction of a 22m wide concrete driveway with parking spaces. Pavement design for roads (including driveway) depends on anticipated traffic loading and subgrade conditions.

It is our understanding that the proposed driveway can be classified as a Local Access Road in an industrial area in accordance with Austroads (Reference 5) for which traffic loading of 2.5×10^5 Heavy Vehicle Axle Group (HVAG) is recommended for design of rigid (concrete) pavement.

Laboratory tests on a representative samples from subgrade material along the proposed drive way indicate the CBR value ranges between 4.0% and 4.5% (Table 3). However, to allow for potential variations in subgrade strength along the length of the driveway, we recommend that the driveway pavement be designed for indicative CBR value of 3.0%.

For the anticipated traffic loading and subgrade conditions, the recommended concrete pavement thickness for the proposed driveway is 175mm if concrete shoulder is provided and 205mm if concrete shoulder is not provided. These recommendations are based on the following assumptions:

- Concrete base is provided with minimum of 100mm thick granular subbase
- Design concrete flexural strength is 4.0MPa
- Load Safety factor is 1.2
- Pavement and adjacent areas are provided with adequate surface and sub-surface drainage

General

Assessments and recommendations presented in this report are based on site observation and information from twelve test pits. Test pits were excavated to a maximum depth of 3m (the maximum reach of the backhoe used for this investigation). Clayey fill material of more than 3m deep was encountered at the north-east half of the site.

Although the field observation and DCP test results indicate that fill was well compacted, we cannot confirm whether it was placed in a controlled manner. Also, the presence of unsuitable fill material (e.g., dam sediments, organic and non soil matters etc.) below the termination depth of test pits cannot be ruled out. Therefore, we recommend that the proposed structure is founded on piers socketed into strong bedrock. Further investigation with deep boreholes (including rock coring) is required to assess depth and strength of bedrock across the site.

If you have any questions, please do not hesitate to contact the undersigned.

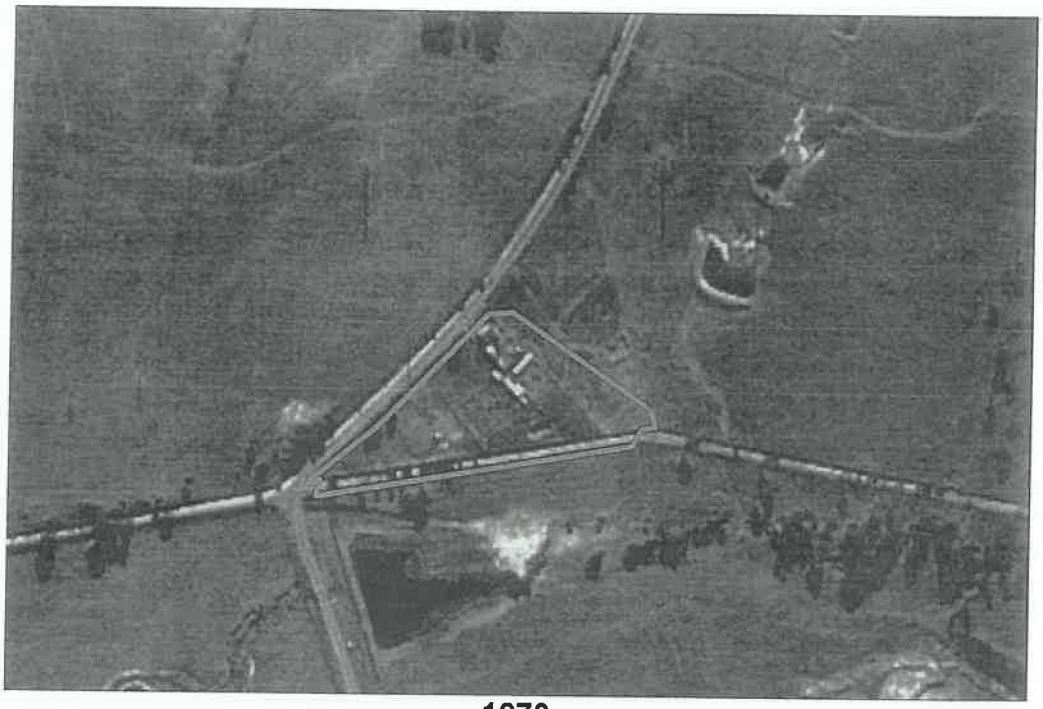
Yours faithfully
GEOTECHNIQUE PTY LTD

DR MD ARIFUL ISLAM
Senior Geotechnical Engineer

Attached
Drawing No 14213/1-AA1 Test Pit Location Plan
Historical Aerial Photograph
Table A
Test Results

References

1. Lillicrap, A and McGhie, S., Site Investigation for Urban Salinity, Department of Land and Water Conservation, 2002.
2. *Australian Standard AS2870-2011 "Residential Slabs and Footings".*
3. NSW Department of Housing – Managing Urban Stormwater, Soils and Construction, 1998.
4. *Australian Standard AS2159-2009, Piling – Design and Installation, 2009.*
5. Austroads, Pavement Design for Light Traffic: A Supplement to Austroads Pavement Design Guide, AP-T36/06, 2006.



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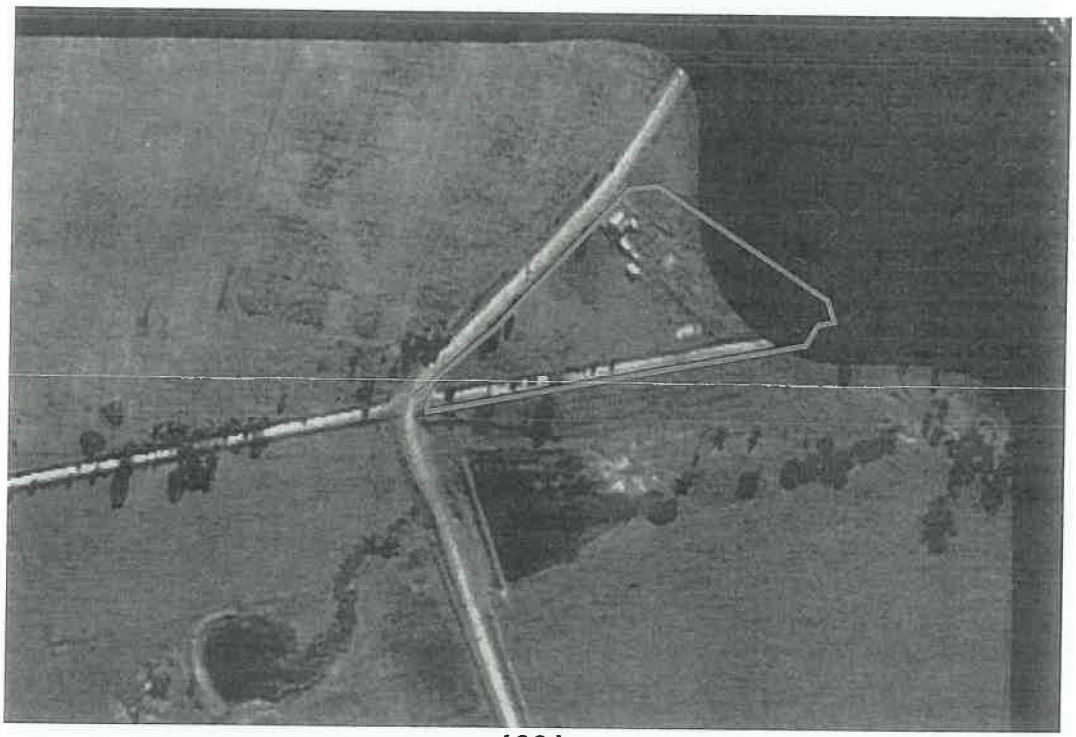

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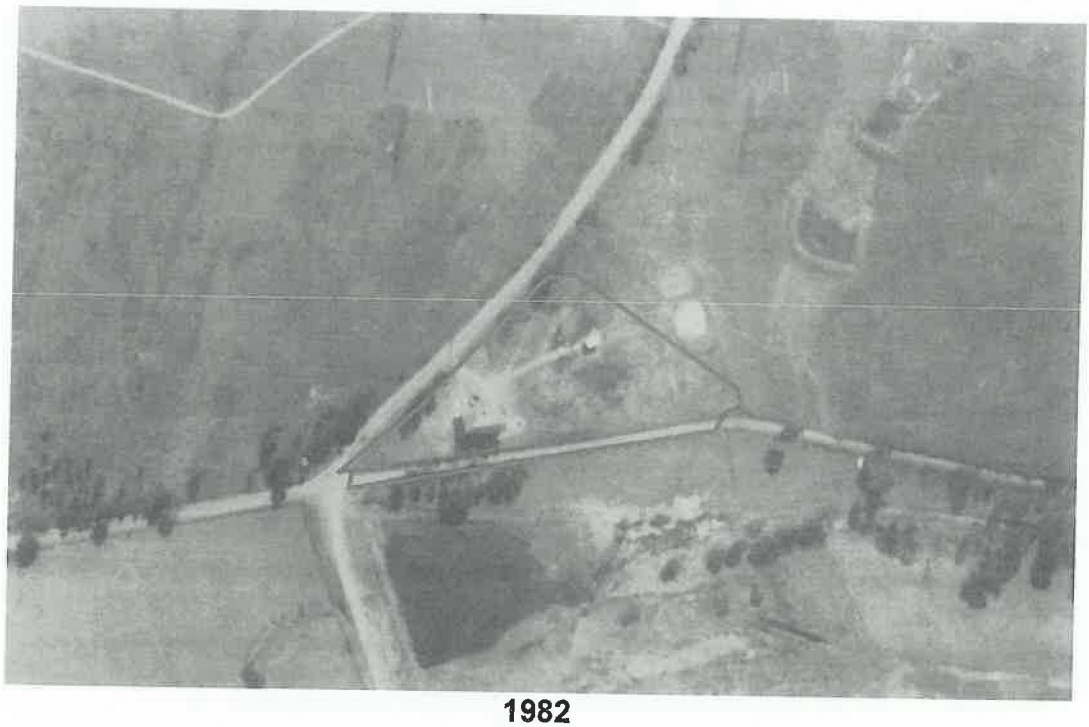
2002



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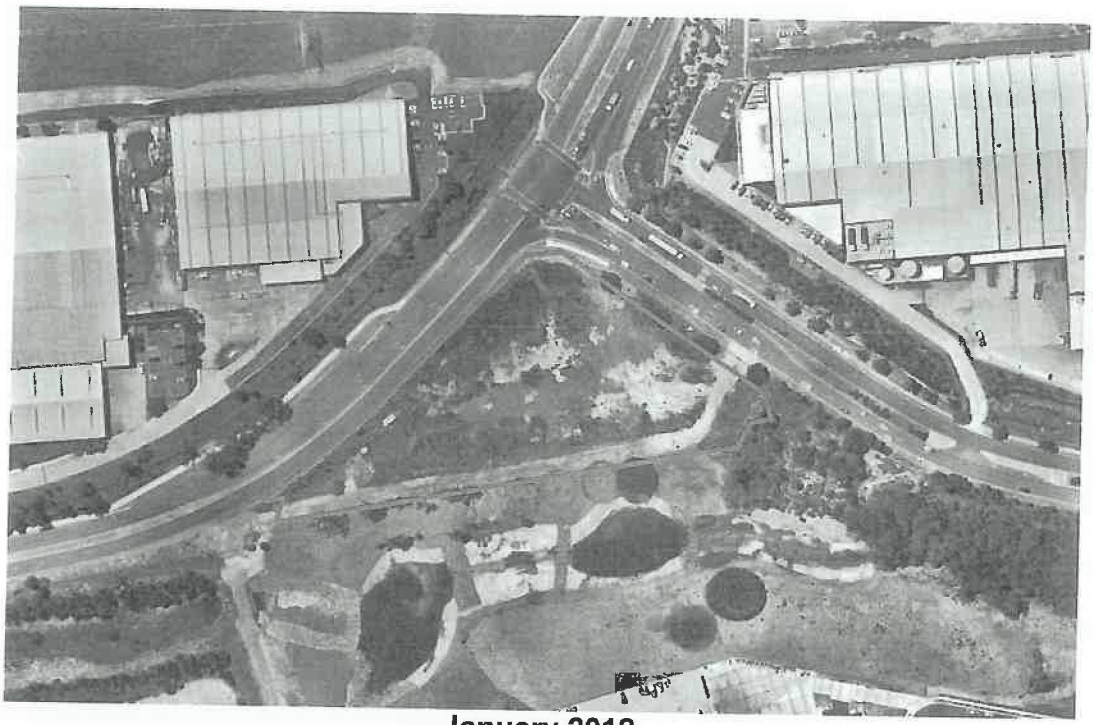

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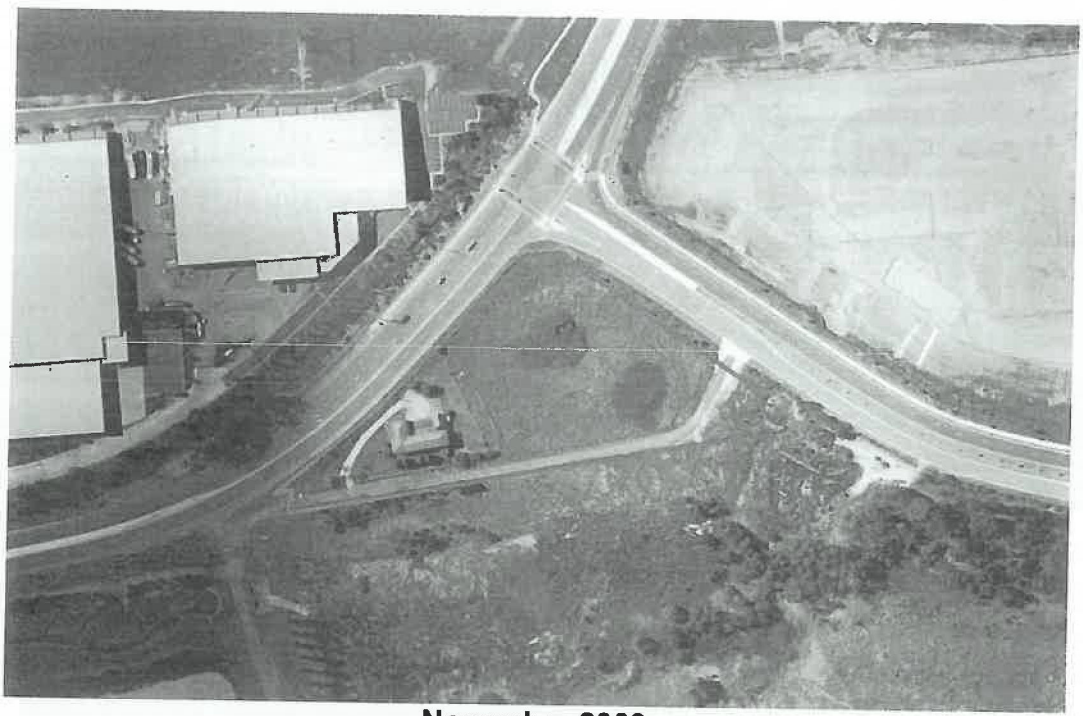

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GEOTECHNIQUE PTY LTD

Project	**Proposed Industrial Development**	**Job No**	**14213/1**
Location	**Lot 1 in DP1071114 & Lot 55 in DP1170183**	**Refer to Drawing No**	
	1-23 Lenore Drive & Erskine Park Road Erskine Park	**Logged & Sampled by**	**KS**

TABLE 1

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP1	0-0.2		16/03/2018		TOPSOIL: Silty Clay, medium plasticity, brown, traces of gravel, M<PL, firm	
	0.2-2.2	(DSP) 0.2-0.4			FILL: Clay, high plasticity, red mottled grey, traces of gravel and root fibres, M<PL, well compacted	
	2.2-3.0				FILL: Silty Clay, medium to high plasticity, grey, M=PL, well compacted	
TP2	0-0.2		16/03/2018		TOPSOIL: Sandy Silt, low plasticity, brown	
	0.2-1.85	(U_{50}) 0.5-0.7			FILL: Clay, high plasticity, red mottled grey, traces of gravel, M<PL, well compacted	
		(DSP) 1.0-1.2				
	1.85-3.0				FILL: Gravelly Clay, medium to high plasticity, brown/yellow, traces of ironstone, M=PL, well compacted	
TP3	0-0.2		16/03/2018		TOPSOIL: Sandy Silt, low plasticity, brown	
	0.2-1.4				FILL: Clay, high plasticity, red mottled grey, traces of ironstone, M<PL, well compacted	
	1.4-2.1	(DSP) 2.0-2.2			FILL: Silty Clay, medium plasticity, grey M=PL, well compacted	Varying in colour from grey/brown/black
	2.1-2.3				SANDSTONE/ SILTSTONE, brown/red, iron stained	
TP4	0-0.2		16/03/2018		TOPSOIL: Silty clay, medium plasticity, brown, trace of root fibre, M<PL	
	0.2-0.7	(DSP) 0.5-0.7			FILL: Clay, medium plasticity, brown, M<PL, traces of root fibres and ironstone, well compacted	
	0.7-1.8	(U_{50}) 0.7-0.9			(CI) CLAY, medium plasticity, grey, M<PL, VSt	
		(CBR) 0.7-0.9				
	1.8-2.1				(CH) Shaley CLAY, high plasticity, grey, M<PL, VSt	
	2.1-2.3				SHALE, grey, extremely weathered, very low strength, ironstone interbedded	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Proposed Industrial Development**	**Job No**	**14213/1**
Location	**Lot 1 in DP1071114 & Lot 55 in DP1170183**	**Refer to Drawing No**	
	1-23 Lenore Drive & Erskine Park Road Erskine Park	**Logged & Sampled by**	**KS**

TABLE 1

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP5	0-0.2		16/03/2018		TOPSOIL: Silty Clay, medium plasticity, red/brown, traces of root fibres	
	0.2-0.9				FILL: Clay, high plasticity, red, traces of root fibres	
	0.9-2.5	(DSP) 1.5-1.7			FILL: Silty Clay, medium plasticity, brown/grey, alluvium inclusions, traces of ironstone, M<PL, well compacted	
	2.5-3.0				(CH) Shaley CLAY, high plasticity ,grey, M<PL, VSt	
TP6	0-0.2		16/03/2018		TOPSOIL: Silty Clay, medium plasticity, red/brown, traces of root fibres, firm	
	0.2-0.8				FILL: Clay, high plasticity, red, traces of root fibres, M<PL, well compacted	
	0.8-3.0	(DSP) 2.2-2.4			FILL: Silty Clay, medium plasticity, grey, traces of ironstone, M<PL, well compacted	
TP7	0-0.2		16/03/2018		TOPSOIL: Silty Clay, medium plasticity, brown, firm	
	0.2-1.1	(DSP) 0.7-0.9			FILL: Clay, high plasticity, red, traces of root fibres, M<PL, well compacted	
	1.1-3.0				FILL: Silty Clay, medium plasticity, grey, traces of root fibres and ironstone, M<PL, well compacted	
TP8	0-1.4		16/03/2018		FILL: Silty Clay, medium plasticity, brown, inclusion of gravel and root fibres, M<PL, well compacted	
	1.4-3.0	(DSP) 1.6-1.8			(CH) CLAY, high plasticity, yellow then red, M<PL, VSt	
TP9	0-0.8		16/03/2018		FILL: Silty Clay, medium plasticity, brown, gravel, M<PL, well compacted	
	0.8-1.3	(CBR) 1.0-1.2			FILL: Clay, high plasticity, red, M<PL, well compacted	
	1.3-1.6				FILL: Clayey Silt, medium plasticity, brown, M<PL, well compacted	
	1.6-3.0	(DSP) 2.6-2.8			FILL: Silty Clay, medium to high plasticity, red mottled grey, M<PL, well compacted	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE
PTY LTD

Project	**Proposed Industrial Development**	**Job No**	**14213/1**
Location	**Lot 1 in DP1071114 & Lot 55 in DP1170183**	**Refer to Drawing No**	
	1-23 Lenore Drive & Erskine Park Road Erskine Park	**Logged & Sampled by**	**KS**

TABLE 1

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP10	0-0.2	(DSP) 0-0.2	16/03/2018		TOPSOIL: Silty Clay, medium plasticity, brown, traces of root fibres and gravel	
	0.2-1.8	(U_{50}) 1.0-1.2			FILL: Silty Clay, medium plasticity, brown, traces of root fibres, gravel and plastic, M<PL, well compacted	
	1.8-3.0				FILL: Clay, high plasticity, red mottled grey, M<PL, well compacted	
TP11	0-0.2		16/03/2018		TOPSOIL: Silty Clay, medium plasticity, red, trace of root fibres	
	0.2-2.2	(DSP) 1.0-1.2)			FILL: Clay, high plasticity, brown/yellow, trace of root fibres, M<PL, well compacted	
	2.2-3.0				(CH) CLAY, high plasticity ,grey, M<PL, stiff to very stiff	
TP12	0-0.2		16/03/2018		TOPSOIL: Silty Clay, medium plasticity, brown, trace of roots	
	0.2-1.65				(CH) CLAY, high plasticity, yellow/grey, M<PL, very stiff	
	1.65-2.0	(DSP) 1.8-2.0			(CH) Shaley CLAY ,high plasticity, grey, highly weathered, M<PL, hard	
	2.0-2.2				SHALE, grey, extremely weathered. Very low strength	
	2.2				Refusal	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE® PTY LTD

ACLCA

TEST RESULTS

ABN 64 002 841 063

Hammer Weight 9kg
Drop 510mm
Rod Diameter 16mm

CLIENT:	Petrolink Engineering Pty Ltd	Job No:	14213/1
PROJECT:	Proposed Industrial Development	Tested By:	KS & IC
LOCATION:	1-23 Lenore Drive & Erskine Park Road, Erskine Park	Checked By:	AI
		Date Tested:	16/03/2018

Test Procedure: AS1289 6.3.2 DYNAMIC CONE PENETROMETER

Test Number	DCP1	DCP2	DCP2-A	DCP3	DCP4	
Location	TP1	TP3	TP3	TP4	TP7	
Depth (mm)	Number of Blows per 100mm					
0 – 100	21	52	22/50	9	8	
100 – 200	34	Refusal	Refusal	10	14	
200 – 300	15			5	27	
300 – 400	9			5	20	
400 – 500	7			5	17	
500 – 600	11			7	18	
600 – 700	13			8	16	
700 – 800	4			8	12	
800 – 900	6			5	8	
900 – 1000	5			5	9	
1000 – 1100	9			5	11	
1100 – 1200	7			6	13	
1200 – 1300	4			7	11	
1300 – 1400	6			6	10	
1400 – 1500	8					
1500 – 1600						
1600 – 1700						
1700 – 1800						
1800 – 1900						
1900 – 2000						
2000 – 2100						
2100 – 2200						
2200 – 2300						
2300 – 2400						
2400 – 2500						
2500 – 2600						
2600 – 2700						
2700 – 2800						
2800 – 2900						
2900 – 3000						

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

PETROLINK ENGINEERING PTY LTD
22 PEACHTREE ROAD
PENRITH NSW 2750

Job No:	14213/1
Tested By:	AN
Checked By:	AK
Date Tested:	23/03/2018
Laboratory	Penrith

GEOTECHNICAL INVESTIGATION

PROPOSED INDUSTRIAL DEVELOPMENT, LOT 1 DP1071114 & LOT 55 DP1170183, 1-23 LENORE DRIVE & ERSKINE PARK ROAD, ERSKINE PARK

TEST RESULTS - SHRINK / SWELL INDEX

Test Procedure: AS 1289 7.1.1

Sample Identification	Test Pit 2	Test Pit 4		
Depth (m)	0.2 - 0.5	0.7 - 0.9		
Laboratory Number	14213/1-1	14213/1-2		
Test Description				
Moisture Content				
Initial %	17.4	21.8		
Final %	20.2	25.3		
Swell %	Nil	4.4		
Shrinkage %	3.5	2.7		
Shrink/Swell Index $\%/_pF$	1.9	2.7		
Material Description	FILL: Clay, low to medium plasticity, red-brown & grey, trace of fine to medium gravel	(CI) CLAY, medium plasticity, grey		

Form No R007 Version 12 06/13

NATA

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 03/04/2018
Approved Signatory

NATA Accreditation Number 2734
Corporate Site Number 2727

Head Office:
34 Borec Road, Penrith NSW 2750
P O Box 880 Penrith NSW 2751
Telephone: (02) 4722 2744 Facsimile: (02) 4722 2777

Prestons Laboratory:
Unit 4, 18-20 Whyalla Place, Prestons NSW 2170
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PENRITH NSW 2750

GEOTECHNICAL INVESTIGATION
PROPOSED INDUSTRIAL DEVELOPMENT, LOT 1 DP1071114 & LOT 55 DP1170183, 1-23 LENORE DRIVE & ERSKINE PARK ROAD, ERSKINE PARK

CALIFORNIA BEARING RATIO TEST REPORT

CBR Test Procedure	Laboratory Compaction Method	Sampling Method	Date of Test
AS1289 6.1.1	AS1289 5.1.1	AS1289 1.2.1 Clause 6.5.4	30/03/2018
Job No: 14213/1	Tested By: DLS	Checked By: AK	Lab Penrith

Laboratory Number	14213/1-2	14213/1-4		
Drawing No	Test Pit 4	Test Pit 9		
Sample No	14213/1-AA1	14213/1-AA1		
Depth (m)	2	3		
Date Sampled	0.7 - 0.9	1.0 - 1.2		
	16/03/2018	16/03/2018		
Sample Description	(Cl) CLAY, medium plasticity, grey	FILL: Clay, medium plasticity, red-brown		
Maximum Dry Density t/m3	1.69	1.82		
Optimum Moisture Content %	18.3	15.0		
Field Moisture Content %	15.7	18.7		
% Retained 19mm	0	0		
Excluded (Yes / No / Not Applicable)	Not Applicable	Not Applicable		

CBR TEST RESULTS

Dry Density t/m^3	Before soaking	1.67	1.80		
	After soaking	1.67	1.79		
Density Ratio %	Before soaking	99	99		
Moisture Content %	Before soaking	18.6	13.9		
	After soaking	24.2	18.1		
Moisture Ratio %	Before soaking	101.5	92.5		
Number of Days Soaked		4	4		
Surcharge	kg	9	9		
Moisture Content after test %	Top 30mm	24.8	19.0		
	Whole Sample	23.9	17.7		
Swell after soaking %		Nil	0.5		
Penetration mm		5.0	5.0		
CBR VALUE %		**4**	**4.5**		

Form No R003 Version 04 06/13 - issued by ER

NATA
Nata Accreditation Number 2734
Corporate Site Number 2727

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A Kench 03/04/2018
Approved Signatory

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ABN 71 076 676 321

PETROLINK ENGINEERING PTY LTD
22 PEACHTREE ROAD
PENRITH NSW 2750

GEOTECHNICAL INVESTIGATION

PROPOSED INDUSTRIAL DEVELOPMENT, LOT 1 DP1071114 & LOT 55 DP1170183, 1-23 LENORE DRIVE & ERSKINE PARK ROAD, ERSKINE PARK

TEST RESULTS - ATTERBERG LIMITS

Test Procedure AS1289 3.1.1, 3.2.1, 3.3.1, 3.4.1

Job No:	14213/1	Tested By:	BG
Laboratory	Penrith	Checked By:	AK
Date Tested	28/03/2018		

Sample Identification	Test Pit 10
Laboratory Number	14213/1-4
Depth (m)	1.0 - 1.2
Test Description	
Liquid Limit (W_L)	35%
Plastic Limit (W_P)	21%
Plastic Index (I_P)	14%
Linear Shrinkage (LS)	9.0%
Mould Length (mm)	127
Sample History	Oven Dried Dry Sieved
Material Description	FILL: Silty Clay, low to medium plasticity, brown, tracew of fine to medium gravel

Form No R004 Version 12 - 06/13 - Issued by ER

A Kench 03/04/2018
Approved Signatory

NATA

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Nata Accreditation Number 2734
Corporate Site Number 2727

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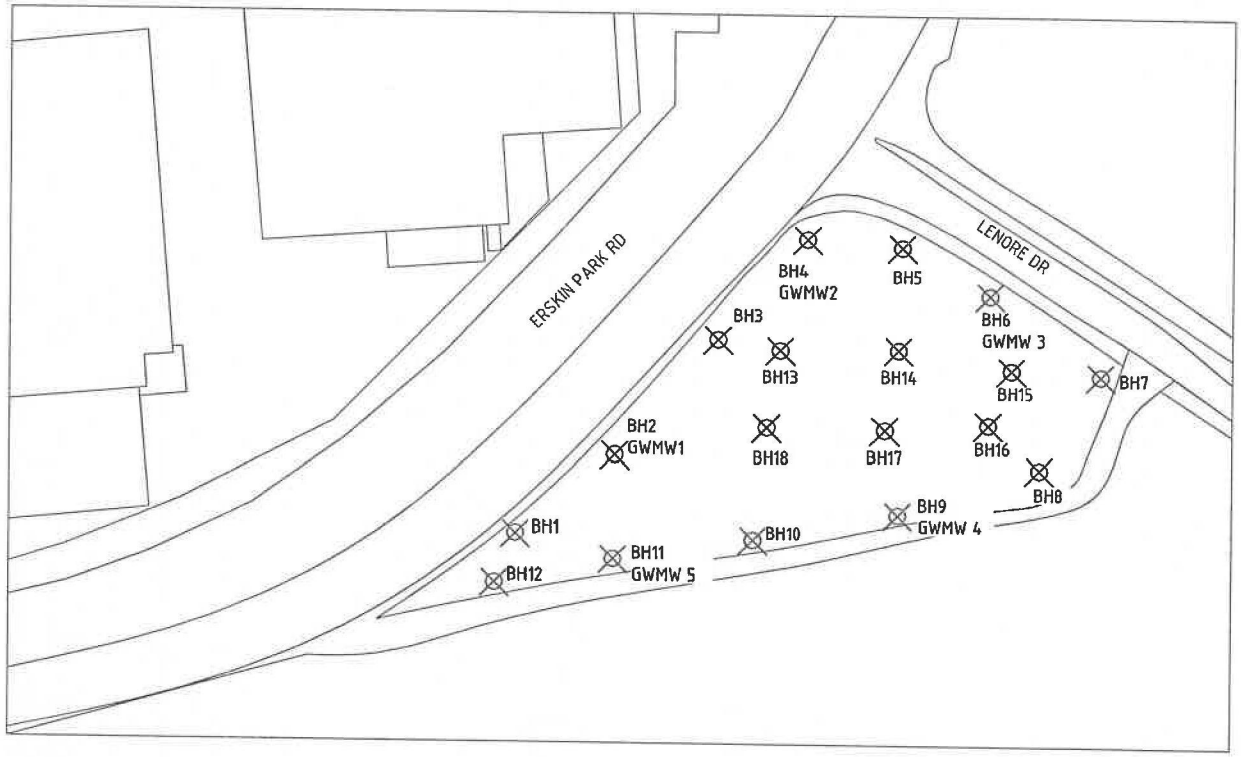

SOIL SAMPLE LOCATION PLAN
3-28 ERSKINE PARK RD, ERSKINE PARK

SOIL SAMPLE DATA	
BORE ID	**DEPTH OF SAMPLE (Mt)**
BH1	0.1
BH1	0.4
BH2	1.5
BH2	3.0
BH3	0.1
BH3	0.4
BH4	1.5
BH4	3.0
BH5	0.1
BH5	0.4
BH6	1.5
BH6	3.0
BH7	0.1
BH7	0.4
BH8	0.1
BH8	0.4
BH9	1.5
BH9	3.0
BH10	0.1
BH10	0.4
BH11	1.5
BH11	3.0
BH12	0.1
BH12	0.4
BH13	0.1
BH13	0.4
BH14	0.1
BH14	0.4
BH15	0.1
BH15	0.4
BH16	0.1
BH16	0.4
BH17	0.1
BH17	0.4
BH18	0.1
BH18	0.4

LEGEND:
BH XX - BORE HOLE XX
GWMW XX - GROUND WATER MONITORING WELL XX

0 15 30 45 60 75m
1:1500

FOR CONSTRUCTION

REV	REV. BY	DATE	DESCRIPTION
1	CP	22/11/18	INITIAL ISSUE

Petrolink ENGINEERING PTY LTD
Quality Safety Experience

Petro-Chemical Storage and Handling Systems
Design - Fabrication - Installation
Environmental Support Services

4/31-33 JACK WILLIAMS DRIVE, PENRITH, NSW 2750
Phone: 02 4722 9775 Fax: 02 4722 9774
Email: sales@petrolink.com.au
Website: www.petrolink.com.au

DRN.	CP	DATE 22/11/18
CHK.	BB	DATE 22/11/18
APPV.	-	DATE -
SCALE	1:1500	

DIMENSIONS IN MILLIMETRES

DRAWING No. 11839-5582-002
CLIENT -
CONTRACT No -
TITLE PULLMAN AND WILLIAMS
1-23 ERSKINE PARK RD, ERSKINE PARK
SOIL SAMPLE ANALYSIS
SOIL SAMPLE LOCATION PLAN
REV 1
SIZE A3

eurofins | mgt

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
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NATA # 1261
Site # 1254 & 14271

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Petrolink Engineering P/L**
Contact name:	- Accounts
Project name:	1-28 ERSKINE PARK ROAD ERSKINE PARK
Project ID:	11839
COC number:	Not provided
Turn around time:	2 Day
Date/Time received:	Mar 19, 2018 6:37 PM
Eurofins | mgt reference:	**589990**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to - Accounts - accounts@petrolink.com.au.

eurofins | mgt

30 years Testing For Life 1987–2017

Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

Petrolink Engineering P/L
22 Peachtree Rd
Penrith
NSW 2750

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **- cc SRAs/Results Craig Boné**

Report **589990-S**
Project name 1-28 ERSKINE PARK ROAD ERSKINE PARK
Project ID 11839
Received Date Mar 19, 2018

Client Sample ID **Sample Matrix** **Eurofins | mgt Sample No.** **Date Sampled** Test/Reference	LOR	Unit	**TP1-1.5M** **Soil** **S18-Ma22029** **Mar 16, 2018**	**TP1-3M** **Soil** **S18-Ma22030** **Mar 16, 2018**	**TP2-1.5M** **Soil** **S18-Ma22031** **Mar 16, 2018**	**TP2-3M** **Soil** **S18-Ma22032** **Mar 16, 2018**
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	91	91	77	80
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP1-1.5M Soil S18-Ma22029 Mar 16, 2018	TP1-3M Soil S18-Ma22030 Mar 16, 2018	TP2-1.5M Soil S18-Ma22031 Mar 16, 2018	TP2-3M Soil S18-Ma22032 Mar 16, 2018
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	99	100	105	96
p-Terphenyl-d14 (surr.)	1	%	97	100	107	98
Heavy Metals						
Lead	5	mg/kg	26	44	35	14
% Moisture	1	%	12	13	17	12

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP3-1.5M Soil S18-Ma22033 Mar 16, 2018	TP3-2.3M Soil S18-Ma22034 Mar 16, 2018	TP4-1.5M Soil S18-Ma22035 Mar 16, 2018	TP4-2.3M Soil S18-Ma22036 Mar 16, 2018
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	76	57	70	64
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP3-1.5M Soil S18-Ma22033 Mar 16, 2018	TP3-2.3M Soil S18-Ma22034 Mar 16, 2018	TP4-1.5M Soil S18-Ma22035 Mar 16, 2018	TP4-2.3M Soil S18-Ma22036 Mar 16, 2018
Polycyclic Aromatic Hydrocarbons						
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	99	99	102	107
p-Terphenyl-d14 (surr.)	1	%	101	102	106	113
Heavy Metals						
Lead	5	mg/kg	16	16	27	20
% Moisture	1	%	13	16	13	13

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP5-1.5M Soil S18-Ma22037 Mar 16, 2018	TP5-3M Soil S18-Ma22038 Mar 16, 2018	TP6-1.5M Soil S18-Ma22039 Mar 16, 2018	TP6-3M Soil S18-Ma22040 Mar 16, 2018
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	69	75	79	76
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP5-1.5M Soil S18-Ma22037 Mar 16, 2018	TP5-3M Soil S18-Ma22038 Mar 16, 2018	TP6-1.5M Soil S18-Ma22039 Mar 16, 2018	TP6-3M Soil S18-Ma22040 Mar 16, 2018
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	95	100	99	101
p-Terphenyl-d14 (surr.)	1	%	99	106	105	108
Heavy Metals						
Lead	5	mg/kg	17	12	16	15
% Moisture	1	%	8.0	13	11	7.6

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP7-1.5M Soil S18-Ma22041 Mar 16, 2018	TP7-3M Soil S18-Ma22042 Mar 16, 2018	TP8-1.5M Soil S18-Ma22043 Mar 16, 2018	TP8-3M Soil S18-Ma22044 Mar 16, 2018
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	77	75	78	75

Client Sample ID			TP7-1.5M	TP7-3M	TP8-1.5M	TP8-3M
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Ma22041	S18-Ma22042	S18-Ma22043	S18-Ma22044
Date Sampled			Mar 16, 2018	Mar 16, 2018	Mar 16, 2018	Mar 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	99	94	96	104
p-Terphenyl-d14 (surr.)	1	%	105	99	102	112
Heavy Metals						
Lead	5	mg/kg	37	48	24	23
% Moisture	1	%	14	11	14	15

Client Sample ID			TP9-1.5M	TP9-3M	TP10-1.5M	TP10-3M
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Ma22045	S18-Ma22046	S18-Ma22047	S18-Ma22048
Date Sampled			Mar 16, 2018	Mar 16, 2018	Mar 16, 2018	Mar 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50

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Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	TP9-1.5M Soil S18-Ma22045 Mar 16, 2018	TP9-3M Soil S18-Ma22046 Mar 16, 2018	TP10-1.5M Soil S18-Ma22047 Mar 16, 2018	TP10-3M Soil S18-Ma22048 Mar 16, 2018
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	78	75	73	77
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	99	103	98	92
p-Terphenyl-d14 (surr.)	1	%	105	114	103	106
Heavy Metals						
Lead	5	mg/kg	16	35	16	6.0
% Moisture	1	%	14	18	16	18

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Client Sample ID			TP11-1.5M	TP11-3M	TP12-1.5M	TP12-2M
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Ma22049	S18-Ma22050	S18-Ma22051	S18-Ma22052
Date Sampled			Mar 16, 2018	Mar 16, 2018	Mar 16, 2018	Mar 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97	82	99	97
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	101	102	96	107
p-Terphenyl-d14 (surr.)	1	%	103	108	103	112
Heavy Metals						
Lead	5	mg/kg	17	11	19	19
% Moisture	1	%	15	19	10	9.4

Client Sample ID			STOCK
Sample Matrix			Soil
Eurofins | mgt Sample No.			S18-Ma22053
Date Sampled			Mar 16, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	98
p-Terphenyl-d14 (surr.)	1	%	98
Heavy Metals			
Lead	5	mg/kg	10
% Moisture	1	%	4.0

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B4			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Mar 20, 2018	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Mar 20, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 20, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 20, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Mar 20, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soils by GCMS			
Heavy Metals	Sydney	Mar 20, 2018	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Sydney	Mar 19, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261 Site # 18217

Brisbane
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Phone : +61 7 3902 4600
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Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Petrolink Engineering P/L	**Order No.:**	5505
Address:	22 Peachtree Rd Penrith NSW 2750	**Report #:**	589990
		Phone:	02 4722 9775
		Fax:	
Project Name:	1-28 ERSKINE PARK ROAD ERSKINE PARK		
Project ID:	11839		

Received:	Mar 19, 2018 6:37 PM
Due:	Mar 22, 2018
Priority:	2 Day
Contact Name:	- cc SRAs/Results Craig Boné

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Lead	Moisture Set	Eurofins | mgt Suite B4
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	TP1-1.5M	Mar 16, 2018	10:18AM	Soil	S18-Ma22029	X	X	X
2	TP1-3M	Mar 16, 2018	10:25AM	Soil	S18-Ma22030	X	X	X
3	TP2-1.5M	Mar 16, 2018	10:40AM	Soil	S18-Ma22031	X	X	X
4	TP2-3M	Mar 16, 2018	10:46AM	Soil	S18-Ma22032	X	X	X
5	TP3-1.5M	Mar 16, 2018	11:05AM	Soil	S18-Ma22033	X	X	X
6	TP3-2.3M	Mar 16, 2018	11:10AM	Soil	S18-Ma22034	X	X	X
7	TP4-1.5M	Mar 16, 2018	11:25AM	Soil	S18-Ma22035	X	X	X
8	TP4-2.3M	Mar 16, 2018	11:35AM	Soil	S18-Ma22036	X	X	X
9	TP5-1.5M	Mar 16, 2018	11:55AM	Soil	S18-Ma22037	X	X	X

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Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
10	TP5-3M	Mar 16, 2018	12:15PM	Soil	S18-Ma22038	X	X	X
11	TP6-1.5M	Mar 16, 2018	12:30PM	Soil	S18-Ma22039	X	X	X
12	TP6-3M	Mar 16, 2018	12:40PM	Soil	S18-Ma22040	X	X	X
13	TP7-1.5M	Mar 16, 2018	1:00PM	Soil	S18-Ma22041	X	X	X
14	TP7-3M	Mar 16, 2018	1:05PM	Soil	S18-Ma22042	X	X	X
15	TP8-1.5M	Mar 16, 2018	1:20PM	Soil	S18-Ma22043	X	X	X
16	TP8-3M	Mar 16, 2018	1:30PM	Soil	S18-Ma22044	X	X	X
17	TP9-1.5M	Mar 16, 2018	1:40PM	Soil	S18-Ma22045	X	X	X
18	TP9-3M	Mar 16, 2018	1:53PM	Soil	S18-Ma22046	X	X	X
19	TP10-1.5M	Mar 16, 2018	2:05PM	Soil	S18-Ma22047	X	X	X
20	TP10-3M	Mar 16, 2018	2:15PM	Soil	S18-Ma22048	X	X	X
21	TP11-1.5M	Mar 16, 2018	2:30PM	Soil	S18-Ma22049	X	X	X

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Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
22	TP11-3M	Mar 16, 2018	2:34PM	Soil	S18-Ma22050	X	X	X
23	TP12-1.5M	Mar 16, 2018	2:46PM	Soil	S18-Ma22051	X	X	X
24	TP12-2M	Mar 16, 2018	3:00PM	Soil	S18-Ma22052	X	X	X
25	STOCK	Mar 16, 2018	12:41PM	Soil	S18-Ma22053	X	X	X
Test Counts						25	25	25

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**NOTE: pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

ug/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Lead	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	74			70-130	Pass	
TRH C10-C14	%	88			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	78			70-130	Pass	
Toluene	%	80			70-130	Pass	
Ethylbenzene	%	78			70-130	Pass	
m&p-Xylenes	%	80			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
o-Xylene	%	77			70-130	Pass	
Xylenes - Total	%	79			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	75			70-130	Pass	
TRH C6-C10	%	79			70-130	Pass	
TRH >C10-C16	%	92			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	85			70-130	Pass	
Acenaphthylene	%	86			70-130	Pass	
Anthracene	%	91			70-130	Pass	
Benz(a)anthracene	%	78			70-130	Pass	
Benzo(a)pyrene	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	%	84			70-130	Pass	
Benzo(g.h.i)perylene	%	94			70-130	Pass	
Benzo(k)fluoranthene	%	89			70-130	Pass	
Chrysene	%	91			70-130	Pass	
Dibenz(a.h)anthracene	%	89			70-130	Pass	
Fluoranthene	%	85			70-130	Pass	
Fluorene	%	88			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	89			70-130	Pass	
Naphthalene	%	87			70-130	Pass	
Phenanthrene	%	90			70-130	Pass	
Pyrene	%	85			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Lead	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S18-Ma22030	CP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Ma22032	CP	%	71			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Ma22032	CP	%	80			70-130	Pass	
Toluene	S18-Ma22032	CP	%	79			70-130	Pass	
Ethylbenzene	S18-Ma22032	CP	%	75			70-130	Pass	
m&p-Xylenes	S18-Ma22032	CP	%	76			70-130	Pass	
o-Xylene	S18-Ma22032	CP	%	75			70-130	Pass	
Xylenes - Total	S18-Ma22032	CP	%	75			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Ma22032	CP	%	73			70-130	Pass	
TRH C6-C10	S18-Ma22032	CP	%	72			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S18-Ma22035	CP	%	85			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S18-Ma22035	CP	%	88			70-130	Pass	
Spike - % Recovery									

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-Ma22035	CP	%	78			70-130	Pass	
Acenaphthylene	S18-Ma22035	CP	%	81			70-130	Pass	
Anthracene	S18-Ma22035	CP	%	85			70-130	Pass	
Benz(a)anthracene	S18-Ma22035	CP	%	73			70-130	Pass	
Benzo(a)pyrene	S18-Ma22035	CP	%	83			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Ma22035	CP	%	82			70-130	Pass	
Benzo(g.h.i)perylene	S18-Ma22035	CP	%	86			70-130	Pass	
Benzo(k)fluoranthene	S18-Ma22035	CP	%	79			70-130	Pass	
Chrysene	S18-Ma22035	CP	%	86			70-130	Pass	
Dibenz(a.h)anthracene	S18-Ma22035	CP	%	83			70-130	Pass	
Fluoranthene	S18-Ma22035	CP	%	80			70-130	Pass	
Fluorene	S18-Ma22035	CP	%	83			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Ma22035	CP	%	82			70-130	Pass	
Naphthalene	S18-Ma22035	CP	%	83			70-130	Pass	
Phenanthrene	S18-Ma22035	CP	%	84			70-130	Pass	
Pyrene	S18-Ma22035	CP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Ma22042	CP	%	73			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Ma22042	CP	%	78			70-130	Pass	
Toluene	S18-Ma22042	CP	%	81			70-130	Pass	
Ethylbenzene	S18-Ma22042	CP	%	77			70-130	Pass	
m&p-Xylenes	S18-Ma22042	CP	%	81			70-130	Pass	
o-Xylene	S18-Ma22042	CP	%	81			70-130	Pass	
Xylenes - Total	S18-Ma22042	CP	%	81			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Ma22042	CP	%	74			70-130	Pass	
TRH C6-C10	S18-Ma22042	CP	%	77			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S18-Ma22045	CP	%	88			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S18-Ma22045	CP	%	90			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-Ma22045	CP	%	86			70-130	Pass	
Acenaphthylene	S18-Ma22045	CP	%	84			70-130	Pass	
Anthracene	S18-Ma22045	CP	%	81			70-130	Pass	
Benz(a)anthracene	S18-Ma22045	CP	%	86			70-130	Pass	
Benzo(a)pyrene	S18-Ma22045	CP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Ma22045	CP	%	87			70-130	Pass	
Benzo(g.h.i)perylene	S18-Ma22045	CP	%	85			70-130	Pass	
Benzo(k)fluoranthene	S18-Ma22045	CP	%	86			70-130	Pass	
Chrysene	S18-Ma22045	CP	%	83			70-130	Pass	
Dibenz(a.h)anthracene	S18-Ma22045	CP	%	95			70-130	Pass	
Fluoranthene	S18-Ma22045	CP	%	75			70-130	Pass	
Fluorene	S18-Ma22045	CP	%	82			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Ma22045	CP	%	96			70-130	Pass	
Naphthalene	S18-Ma22045	CP	%	81			70-130	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenanthrene	S18-Ma22045	CP	%	78			70-130	Pass	
Pyrene	S18-Ma22045	CP	%	81			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S18-Ma22050	CP	%	88			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Ma22052	CP	%	104			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Ma22052	CP	%	129			70-130	Pass	
Toluene	S18-Ma22052	CP	%	113			70-130	Pass	
Ethylbenzene	S18-Ma22052	CP	%	110			70-130	Pass	
m&p-Xylenes	S18-Ma22052	CP	%	112			70-130	Pass	
o-Xylene	S18-Ma22052	CP	%	111			70-130	Pass	
Xylenes - Total	S18-Ma22052	CP	%	112			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Ma22052	CP	%	82			70-130	Pass	
TRH C6-C10	S18-Ma22052	CP	%	101			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S18-Ma23301	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Ma23301	NCP	mg/kg	60	< 50	58	30%	Fail	Q15
TRH C29-C36	S18-Ma23301	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S18-Ma23301	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-Ma23301	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-Ma23301	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Ma22031	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Ma22031	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Ma22031	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Ma22031	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Ma22031	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Ma22031	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Ma22031	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Ma22031	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Ma22031	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Benzo(g.h.i)perylene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a.h)anthracene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S18-Ma22034	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S18-Ma22041	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S18-Ma22041	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S18-Ma22041	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S18-Ma22041	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S18-Ma22041	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S18-Ma22041	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S18-Ma22041	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S18-Ma22041	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S18-Ma22041	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S18-Ma22041	CP	%	14	13	7.0	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g.h.i)perylene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a.h)anthracene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S18-Ma22044	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Lead	S18-Ma22049	CP	mg/kg	17	15	13	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S18-Ma22051	CP	mg/kg	< 20	< 20	<1	30%	Pass

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Ma22051	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Ma22051	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Ma22051	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Ma22051	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Ma22051	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Ma22051	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Ma22051	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Ma22051	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Ma22051	CP	%	10	12	16	30%	Pass	

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Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black — Analytical Services Manager

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

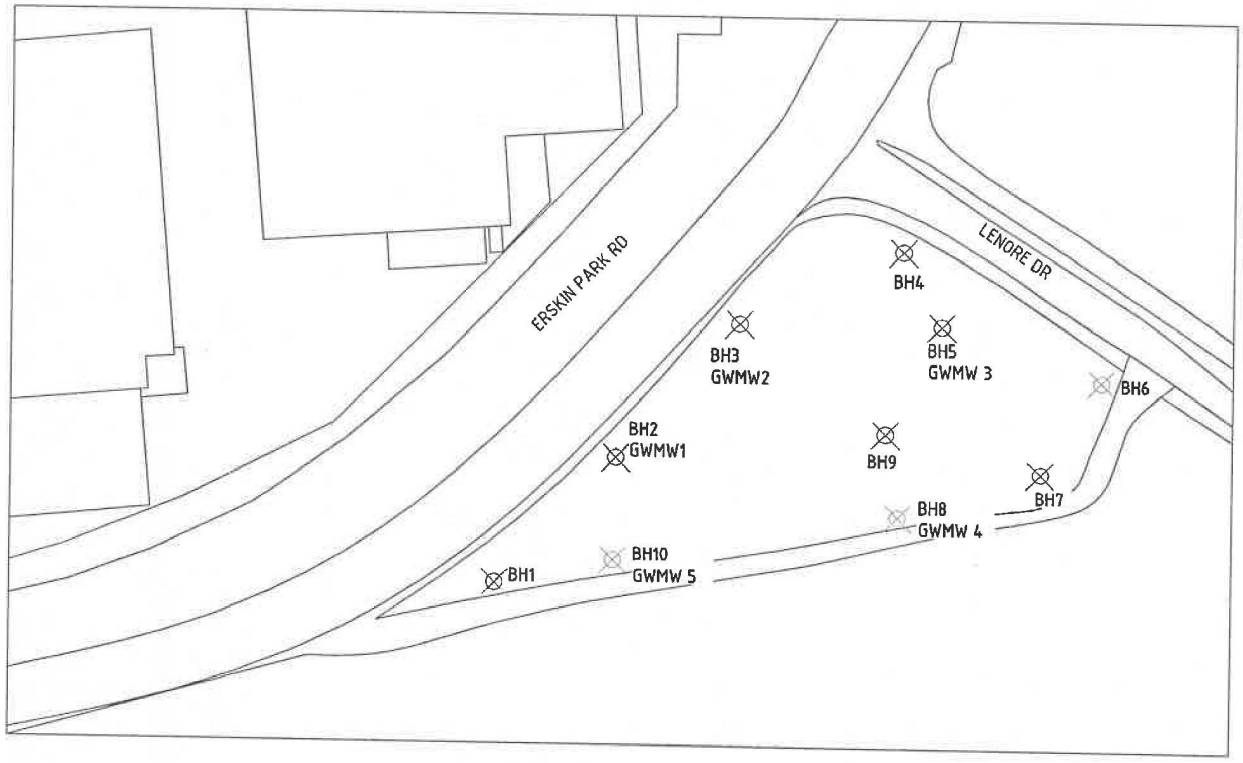
- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Appendix B: Soil Sampling Analysis 20/2/19

SOIL SAMPLE DATA	
BORE ID	**DEPTH OF SAMPLE (Mt)**
BH1	0.1
BH1	0.4
BH2	0.1
BH2	0.4
BH3	0.1
BH3	0.4
BH4	0.1
BH4	0.4
BH5	0.1
BH5	0.4
BH6	0.1
BH6	0.4
BH7	0.1
BH7	0.4
BH8	0.1
BH8	0.4
BH9	0.1
BH9	0.4
BH10	0.1
BH10	0.4



SOIL SAMPLE LOCATION PLAN
3-28 ERSKINE PARK RD, ERSKINE PARK

LEGEND:
BH XX - BORE HOLE XX
GWMW XX - GROUND WATER MONITORING WELL XX

0 15 30 45 60 75m
1:1500

FOR CONSTRUCTION

REV	REV. BY	DATE	DESCRIPTION
1	CP	08/02/19	INITIAL ISSUE

Petrolink ENGINEERING PTY LTD
Quality Safety · Experience

Petro-Chemical Storage and Handling Systems
Design - Fabrication - Installation
Environmental Support Services
4/31-33 JACK WILLIAMS DRIVE, PENRITH, NSW 2750
Phone: 02 4722 9775 Fax: 02 4722 9774
Email: sales@petrolink.com.au
Website: www.petrolink.com.au

DRN.	CP	DATE	08/02/19
CHK.	BB	DATE	08/02/19
APRV.	-	DATE	-
SCALE	1:1500		

DIMENSIONS IN MILLIMETRES

DRAWING No. Q6223-001
CLIENT -
CONTRACT No -
TITLE PULLMAN AND WILLIAMS
1-23 ERSKINE PARK RD, ERSKINE PARK
SOIL SAMPLE ANALYSIS
SOIL SAMPLE LOCATION PLAN
REV 1
SIZE A3

20-2-19

Petrolink ENGINEERING PTY LTD

CHAIN OF CUSTODY FORM – Lab Sampling

Investigator: B. B.					**LAB Analysis Required**				**Sample matrix**														**Soil Sample Depth**	**Sample preservation**		
Site: 23 Lenore Drive Erskine Park													**SOIL**																	
Job No: 12217	**PO No:**				Suit Bf (TPH, BTEX, PAH)	Metals: ~~Pb~~ Lead B7	Field Filtered (0.45 Um)	Requires Field filtering	WATER	SLUDGE	COMPOSITE	OTHER (SPECIFY)	Clay	Sand	Silt	Rock	Fine sand	Course sand	Other (Specify)					ICE	UNPRESERVED	OTHER (SPECIFY)
Laboratory: Eurofins – 02 99008400/8492																							A = 100 mm							
Courier: Call 02 99008492			**Sampling**																				B = 400 mm							
Sample ID	**Laboratory ID**	**Container**	**Date**	**Time**																										
BH1A	Petrolink	Glass Jar	18-2-19	AM	✓	✓							✓										DUE TO LAND FILL ACTIVITY	✓		
BH1B	"	Glass Jar	18-2-19	AM	✓	✓							✓											✓		
BH2A	"	"	"	"	✓	✓							✓											✓		
BH2B	"	"	"	"	✓	✓																		✓		
BH3A	"	"	"	"	✓	✓																		✓		
BH3B	"	"	"	"	✓	✓																		✓		
BH4A	"	"	"	"	✓	✓																		✓		
BH4B	"	"	"	"	✓	✓																		✓		
BH5A	"	"	"	"	✓	✓																		✓		
BH5B	"	"	"	"	✓	✓																		✓		
																								✓		

Investigator: I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler name: Barry Boré (Date) 18-2-19

Relinquished by: (print & signature)	Date: 20-2-19	Time: 12:56	Received by: (print & signature) Claire Learmont
Relinquished by: (print & signature)	Date	Time	Received by: (print & signature)

Date	Time
20/2/19	12:56
Date	Time

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Certificate of Analysis

Petrolink Engineering P/L
Unit 4/31-33 Jack Williams Drive
Penrith
NSW 2750

ilac-MRA

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Craig Boné**

Report **641827-S**
Project name 23 LENORE DRIVE ERSKINE PARK
Project ID 12217
Received Date Feb 20, 2019

Client Sample ID			BH1A	BH1B	BH2A	BH2B
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			M19-Fe29017	M19-Fe29018	M19-Fe29019	M19-Fe29020
Date Sampled			Feb 18, 2019	Feb 18, 2019	Feb 18, 2019	Feb 18, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	75	89	81	85
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH1A Soil M19-Fe29017 Feb 18, 2019	BH1B Soil M19-Fe29018 Feb 18, 2019	BH2A Soil M19-Fe29019 Feb 18, 2019	BH2B Soil M19-Fe29020 Feb 18, 2019
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	71	75	66	71
p-Terphenyl-d14 (surr.)	1	%	53	56	70	74
Heavy Metals						
Arsenic	2	mg/kg	17	13	7.5	13
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	30	27	21	33
Copper	5	mg/kg	14	14	42	16
Lead	5	mg/kg	20	21	28	26
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	6.1	5.8	6.5
Zinc	5	mg/kg	30	52	35	40
% Moisture	1	%	9.8	8.5	8.1	9.1

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH3A Soil M19-Fe29021 Feb 18, 2019	BH3B Soil M19-Fe29022 Feb 18, 2019	BH4A Soil M19-Fe29023 Feb 18, 2019	BH5A Soil M19-Fe29024 Feb 18, 2019
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	86	83	88	88
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100

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Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH3A Soil M19-Fe29021 Feb 18, 2019	BH3B Soil M19-Fe29022 Feb 18, 2019	BH4A Soil M19-Fe29023 Feb 18, 2019	BH5A Soil M19-Fe29024 Feb 18, 2019
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	76	89	50	61
p-Terphenyl-d14 (surr.)	1	%	57	67	73	61
Heavy Metals						
Arsenic	2	mg/kg	12	12	11	7.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	18	21	8.1
Copper	5	mg/kg	26	25	27	33
Lead	5	mg/kg	20	21	15	16
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	12	10.0	24	19
Zinc	5	mg/kg	56	68	65	99
% Moisture	1	%	8.0	10	4.4	8.0

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH5B Soil M19-Fe29025 Feb 18, 2019	BH6A Soil M19-Fe29026 Feb 18, 2019	BH6B Soil M19-Fe29027 Feb 18, 2019	BH7A Soil M19-Fe29028 Feb 18, 2019
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50

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Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH5B Soil M19-Fe29025 Feb 18, 2019	BH6A Soil M19-Fe29026 Feb 18, 2019	BH6B Soil M19-Fe29027 Feb 18, 2019	BH7A Soil M19-Fe29028 Feb 18, 2019
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	83	87	90	89
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	93	60	87	65
p-Terphenyl-d14 (surr.)	1	%	75	58	68	67
Heavy Metals						
Arsenic	2	mg/kg	6.9	10	7.1	8.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.9	18	17	19
Copper	5	mg/kg	33	16	28	27
Lead	5	mg/kg	14	23	20	36
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	17	8.5	18	11
Zinc	5	mg/kg	93	36	63	130
% Moisture	1	%	8.9	7.4	7.9	7.6

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Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH7B Soil M19-Fe29029 Feb 18, 2019	BH8A Soil M19-Fe29030 Feb 18, 2019	BH8B Soil M19-Fe29031 Feb 18, 2019	BH9A Soil M19-Fe29032 Feb 18, 2019
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	81	92	105	90
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	67	66	60	62
p-Terphenyl-d14 (surr.)	1	%	69	65	60	65

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH7B Soil M19-Fe29029 Feb 18, 2019	BH8A Soil M19-Fe29030 Feb 18, 2019	BH8B Soil M19-Fe29031 Feb 18, 2019	BH9A Soil M19-Fe29032 Feb 18, 2019
Heavy Metals						
Arsenic	2	mg/kg	12	14	12	5.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	31	34	18	17
Copper	5	mg/kg	28	17	34	32
Lead	5	mg/kg	45	22	19	32
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	18	7.2	16	16
Zinc	5	mg/kg	180	35	96	97
% Moisture	1	%	5.3	9.4	9.1	9.2

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH9B Soil M19-Fe29033 Feb 18, 2019	BH10A Soil M19-Fe29034 Feb 18, 2019	BH10B Soil M19-Fe29035 Feb 18, 2019
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	210
TRH C29-C36	50	mg/kg	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	210
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	107	89	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	230
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	230
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	7.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	7.5
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	7.5
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	2.1
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	5.3
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	5.2
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	4.8

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	BH9B Soil M19-Fe29033 Feb 18, 2019	BH10A Soil M19-Fe29034 Feb 18, 2019	BH10B Soil M19-Fe29035 Feb 18, 2019
Polycyclic Aromatic Hydrocarbons					
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	3.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	2.4
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	4.0
Chrysene	0.5	mg/kg	< 0.5	< 0.5	4.8
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	1.0
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	21
Fluorene	0.5	mg/kg	< 0.5	< 0.5	2.3
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	3.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	0.7
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	20
Pyrene	0.5	mg/kg	< 0.5	< 0.5	17
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	97.6
2-Fluorobiphenyl (surr.)	1	%	68	53	61
p-Terphenyl-d14 (surr.)	1	%	73	58	73
Heavy Metals					
Arsenic	2	mg/kg	14	6.9	12
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	39	16	27
Copper	5	mg/kg	38	26	42
Lead	5	mg/kg	41	48	53
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	17	12	23
Zinc	5	mg/kg	83	98	120
% Moisture	1	%	9.9	8.1	9.0

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Feb 22, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Feb 22, 2019	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 22, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 22, 2019	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Feb 22, 2019	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Feb 22, 2019	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	Feb 22, 2019	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261 Site # 20794

Perth
261 Leach Highway
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NATA # 1261
Site # 23736

Company Name:	Petrolink Engineering P/L	**Order No.:**	6270
Address:	Unit 4/31-33 Jack Williams Drive Penrith NSW 2750	**Report #:**	641827
		Phone:	02 4722 9775
		Fax:	
Project Name:	23 LENORE DRIVE ERSKINE PARK	**Received:**	Feb 20, 2019 5:45 PM
Project ID:	12217	**Due:**	Feb 28, 2019
		Priority:	5 Day
		Contact Name:	- cc SRAs/Results Craig Boné

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	BH1A	Feb 18, 2019		Soil	M19-Fe29017	X	X
2	BH1B	Feb 18, 2019		Soil	M19-Fe29018	X	X
3	BH2A	Feb 18, 2019		Soil	M19-Fe29019	X	X
4	BH2B	Feb 18, 2019		Soil	M19-Fe29020	X	X
5	BH3A	Feb 18, 2019		Soil	M19-Fe29021	X	X
6	BH3B	Feb 18, 2019		Soil	M19-Fe29022	X	X
7	BH4A	Feb 18, 2019		Soil	M19-Fe29023	X	X
8	BH5A	Feb 18, 2019		Soil	M19-Fe29024	X	X
9	BH5B	Feb 18, 2019		Soil	M19-Fe29025	X	X

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NATA # 1261 Site # 20794

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NATA # 1261
Site # 23736

Company Name:	Petrolink Engineering P/L	**Order No.:**	6270
Address:	Unit 4/31-33 Jack Williams Drive Penrith NSW 2750	**Report #:**	641827
		Phone:	02 4722 9775
		Fax:	
Project Name:	23 LENORE DRIVE ERSKINE PARK	**Received:**	Feb 20, 2019 5:45 PM
Project ID:	12217	**Due:**	Feb 28, 2019
		Priority:	5 Day
		Contact Name:	- cc SRAs/Results Craig Boné

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
10	BH6A	Feb 18, 2019		Soil	M19-Fe29026	X	X
11	BH6B	Feb 18, 2019		Soil	M19-Fe29027	X	X
12	BH7A	Feb 18, 2019		Soil	M19-Fe29028	X	X
13	BH7B	Feb 18, 2019		Soil	M19-Fe29029	X	X
14	BH8A	Feb 18, 2019		Soil	M19-Fe29030	X	X
15	BH8B	Feb 18, 2019		Soil	M19-Fe29031	X	X
16	BH9A	Feb 18, 2019		Soil	M19-Fe29032	X	X
17	BH9B	Feb 18, 2019		Soil	M19-Fe29033	X	X
18	BH10A	Feb 18, 2019		Soil	M19-Fe29034	X	X
19	BH10B	Feb 18, 2019		Soil	M19-Fe29035	X	X
Test Counts						19	19

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

ppm: Parts per million

org/100mL: Organisms per 100 millilitres

mg/L: milligrams per litre

ppb: Parts per billion

NTU: Nephelometric Turbidity Units

ug/L: micrograms per litre

%: Percentage

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	115			70-130	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	83			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	113			70-130	Pass	
Toluene	%	111			70-130	Pass	
Ethylbenzene	%	113			70-130	Pass	
m&p-Xylenes	%	100			70-130	Pass	
Xylenes - Total	%	105			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	102			70-130	Pass	
TRH C6-C10	%	112			70-130	Pass	
TRH >C10-C16	%	83			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	106			70-130	Pass	
Acenaphthylene	%	109			70-130	Pass	
Anthracene	%	117			70-130	Pass	
Benz(a)anthracene	%	98			70-130	Pass	
Benzo(a)pyrene	%	70			70-130	Pass	
Benzo(b&j)fluoranthene	%	84			70-130	Pass	
Benzo(g.h.i)perylene	%	83			70-130	Pass	
Benzo(k)fluoranthene	%	70			70-130	Pass	
Chrysene	%	80			70-130	Pass	
Dibenz(a.h)anthracene	%	94			70-130	Pass	
Fluoranthene	%	86			70-130	Pass	
Fluorene	%	115			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	86			70-130	Pass	
Naphthalene	%	82			70-130	Pass	
Phenanthrene	%	87			70-130	Pass	
Pyrene	%	86			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	111			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	102			80-120	Pass	
Copper	%	101			80-120	Pass	
Lead	%	113			80-120	Pass	
Mercury	%	111			75-125	Pass	
Nickel	%	101			80-120	Pass	
Zinc	%	114			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M19-Fe31607	NCP	%	109			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M19-Fe31607	NCP	%	97			70-130	Pass	
Toluene	M19-Fe31607	NCP	%	101			70-130	Pass	
Ethylbenzene	M19-Fe31607	NCP	%	106			70-130	Pass	
m&p-Xylenes	M19-Fe31607	NCP	%	95			70-130	Pass	
o-Xylene	M19-Fe31607	NCP	%	109			70-130	Pass	
Xylenes - Total	M19-Fe31607	NCP	%	99			70-130	Pass	
Spike - % Recovery									

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M19-Fe31607	NCP	%	118			70-130	Pass	
TRH C6-C10	M19-Fe31607	NCP	%	109			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M19-Fe29017	CP	%	106			75-125	Pass	
Cadmium	M19-Fe29017	CP	%	98			75-125	Pass	
Chromium	M19-Fe29017	CP	%	87			75-125	Pass	
Copper	M19-Fe29017	CP	%	95			75-125	Pass	
Lead	M19-Fe29017	CP	%	107			75-125	Pass	
Mercury	M19-Fe29017	CP	%	106			70-130	Pass	
Nickel	M19-Fe29017	CP	%	94			75-125	Pass	
Zinc	M19-Fe29017	CP	%	110			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C16-C34	P19-Fe28568	NCP	%	0.0000000			70-130	Fail	
TRH >C34-C40	P19-Fe28568	NCP	%	0.0000000			70-130	Fail	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M19-Fe29026	CP	%	113			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M19-Fe29026	CP	%	111			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M19-Fe29027	CP	%	113			75-125	Pass	
Cadmium	M19-Fe29027	CP	%	112			75-125	Pass	
Chromium	M19-Fe29027	CP	%	116			75-125	Pass	
Copper	M19-Fe29027	CP	%	115			75-125	Pass	
Lead	M19-Fe29027	CP	%	115			75-125	Pass	
Mercury	M19-Fe29027	CP	%	106			70-130	Pass	
Nickel	M19-Fe29027	CP	%	113			75-125	Pass	
Zinc	M19-Fe29027	CP	%	122			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M19-Fe29029	CP	%	97			70-130	Pass	
Acenaphthylene	M19-Fe29029	CP	%	102			70-130	Pass	
Anthracene	M19-Fe29029	CP	%	95			70-130	Pass	
Benz(a)anthracene	M19-Fe29029	CP	%	104			70-130	Pass	
Benzo(a)pyrene	M19-Fe29029	CP	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	M19-Fe29029	CP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	M19-Fe29029	CP	%	80			70-130	Pass	
Benzo(k)fluoranthene	M19-Fe29029	CP	%	96			70-130	Pass	
Chrysene	M19-Fe29029	CP	%	106			70-130	Pass	
Dibenz(a.h)anthracene	M19-Fe29029	CP	%	93			70-130	Pass	
Fluoranthene	M19-Fe29029	CP	%	97			70-130	Pass	
Fluorene	M19-Fe29029	CP	%	80			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M19-Fe29029	CP	%	81			70-130	Pass	
Naphthalene	M19-Fe29029	CP	%	79			70-130	Pass	
Phenanthrene	M19-Fe29029	CP	%	88			70-130	Pass	
Pyrene	M19-Fe29029	CP	%	94			70-130	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M19-Fe29017	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M19-Fe29017	CP	mg/kg	17	17	1.0	30%	Pass	
Cadmium	M19-Fe29017	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M19-Fe29017	CP	mg/kg	30	31	3.0	30%	Pass	
Copper	M19-Fe29017	CP	mg/kg	14	14	4.0	30%	Pass	
Lead	M19-Fe29017	CP	mg/kg	20	20	1.0	30%	Pass	
Mercury	M19-Fe29017	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M19-Fe29017	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	M19-Fe29017	CP	mg/kg	30	31	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M19-Fe29437	NCP	%	15	15	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M19-Fe29023	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M19-Fe29023	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M19-Fe29023	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M19-Fe29023	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M19-Fe29023	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M19-Fe29023	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M19-Fe29023	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M19-Fe29023	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M19-Fe29023	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M19-Fe29025	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M19-Fe29025	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M19-Fe29025	CP	mg/kg	< 50	< 50	<1	30%	Pass	

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Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M19-Fe29025	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M19-Fe29025	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M19-Fe29025	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M19-Fe29026	CP	mg/kg	10	9.1	12	30%	Pass	
Cadmium	M19-Fe29026	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M19-Fe29026	CP	mg/kg	18	18	3.0	30%	Pass	
Copper	M19-Fe29026	CP	mg/kg	16	16	1.0	30%	Pass	
Lead	M19-Fe29026	CP	mg/kg	23	19	18	30%	Pass	
Mercury	M19-Fe29026	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M19-Fe29026	CP	mg/kg	8.5	8.5	<1	30%	Pass	
Zinc	M19-Fe29026	CP	mg/kg	36	42	14	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M19-Fe29027	CP	mg/kg	7.1	6.8	4.0	30%	Pass	
Cadmium	M19-Fe29027	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M19-Fe29027	CP	mg/kg	17	16	2.0	30%	Pass	
Copper	M19-Fe29027	CP	mg/kg	28	28	2.0	30%	Pass	
Lead	M19-Fe29027	CP	mg/kg	20	20	<1	30%	Pass	
Mercury	M19-Fe29027	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M19-Fe29027	CP	mg/kg	18	17	3.0	30%	Pass	
Zinc	M19-Fe29027	CP	mg/kg	63	63	1.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M19-Fe29028	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Andrew Black	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Petrolink Engineering P/L**
Contact name:	Barry Boné AMS (Grad) AIDGC
Project name:	23 LENORE DRIVE ERSKINE PARK
Project ID:	12217
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Feb 20, 2019 5:45 PM
Eurofins | mgt reference:	641827

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☒ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

BH4B not received

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Barry Boné AMS (Grad) AIDGC - Barry@petrolink.com.au.

eurofins | mgt

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web : www.eurofins.com.au

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Petrolink Engineering P/L	**Order No.:**	6270	**Received:**	Feb 20, 2019 5:45 PM
Address:	Unit 4/31-33 Jack Williams Drive Penrith NSW 2750	**Report #:**	641827	**Due:**	Feb 28, 2019
		Phone:	02 4722 9775	**Priority:**	5 Day
		Fax:		**Contact Name:**	- cc SRAs/Results Craig Boné
Project Name:	23 LENORE DRIVE ERSKINE PARK				
Project ID:	12217				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	BH1A	Feb 18, 2019		Soil	M19-Fe29017	X	X
2	BH1B	Feb 18, 2019		Soil	M19-Fe29018	X	X
3	BH2A	Feb 18, 2019		Soil	M19-Fe29019	X	X
4	BH2B	Feb 18, 2019		Soil	M19-Fe29020	X	X
5	BH3A	Feb 18, 2019		Soil	M19-Fe29021	X	X
6	BH3B	Feb 18, 2019		Soil	M19-Fe29022	X	X
7	BH4A	Feb 18, 2019		Soil	M19-Fe29023	X	X
8	BH5A	Feb 18, 2019		Soil	M19-Fe29024	X	X
9	BH5B	Feb 18, 2019		Soil	M19-Fe29025	X	X

eurofins | mgt

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Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail					Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
10	BH6A	Feb 18, 2019		Soil	M19-Fe29026	X	X
11	BH6B	Feb 18, 2019		Soil	M19-Fe29027	X	X
12	BH7A	Feb 18, 2019		Soil	M19-Fe29028	X	X
13	BH7B	Feb 18, 2019		Soil	M19-Fe29029	X	X
14	BH8A	Feb 18, 2019		Soil	M19-Fe29030	X	X
15	BH8B	Feb 18, 2019		Soil	M19-Fe29031	X	X
16	BH9A	Feb 18, 2019		Soil	M19-Fe29032	X	X
17	BH9B	Feb 18, 2019		Soil	M19-Fe29033	X	X
18	BH10A	Feb 18, 2019		Soil	M19-Fe29034	X	X
19	BH10B	Feb 18, 2019		Soil	M19-Fe29035	X	X
Test Counts						19	19