Planning Proposal to amend
Newcastle LEP 2012

The City of Newcastle

Rezoning of Land from IN3 Heavy Industrial to IN2 Light Industrial, Frith and Gavey Streets Mayfield

December 2015

CONTENTS

22 Frith St, Mayfield - Rezoning of Land from IN3 Heavy Industrial to IN2 Light Industrial

Summary of Proposal

Proposal	Rezoning of land from IN3 Heavy Industrial to IN2 Light Industrial	
Property Details	14-22 Frith Street, 18 and 40 Gavey Street, and 8A Albert Street, Mayfield	Lots 41, 42 & 43 DP 1005592, Lots 3, 4, 5 and 6 DP 37883, Lot 45, DP 1005302, Lot 101 & 102 DP 1097643
Applicant Details	ADW Johnson / Newcastle City Council	

Background

Council received a request to amend Newcastle Local Environmental Plan 2012 in order to rezone 22 Frith Street from IN3 Heavy Industrial to IN2 Light Industrial. After reviewing the proposal, Council staff determined that the planning proposal should include the adjoining parcels of land as the case for rezoning also applied to these sites. Rezoning only 22 Frith Street would have resulted in two separated strips of land remaining within the IN3 Heavy Industrial Zone with 22 Frith Street in the middle zoned IN2 Light Industrial. The site now also contains a Hunter Water drainage channel described as part of 8A Albert Street.

The site is well located and connected by existing road infrastructure that would support continued use of the site as employment land. The broader site includes three different land holdings, all of which were formally part of the Commonwealth steel site.

- 14 Frith Street formerly supported engineering and administration activities of the Commonwealth steel site and a bowling club.
- 22 Frith Street has recently had a DA approved for light metal fabrication and engineering workshop and associated offices.
- 18 Gavey Street. DA 78/248 was approved for the site as a fuel supply area (natural gas and LPG storage). DA 98/2814 was approved for the sales and storage of buses and the construction of a storage shed and workshop. DA 2013/0925 approved an industrial building for the western part of the site. The existing shed on the eastern part of the site was the workshop area for the previous bus depot.
- 40 Gavey Street has been used for administration and laboratory facilities as a postgraduate and commercial research facility for the University of Newcastle since 1999. It is not expected that a change of zoning to IN2 will have any impact on this use.
- 8A Albert Street includes Lot 101 & 102 DP 1097643, which is a Hunter Water parcel comprising a large stormwater drain.

The site has minimal constraints for ongoing light industrial uses. A shift from heavy industry uses to light industrial uses is considered appropriate in the context of the adjoining residential areas.

Site

The site has a total area of approximately 2.7 hectares. The proposal includes land at 14 and 22 Frith Street and 18 and 40 Gavey Street, Mayfield West which comprises Lots 41, 42 and 43 DP 1005592, Lots 3, 4, 5 and 6 DP 37883 and Lot 45 DP 1005302. A narrow lot owned by Hunter Water Corporation, known as 8A Albert Street, and includes Lot 101 and 102, DP 1097643 also forms part of the site.

The site is approximately 700 metres from the western edge of the Mayfield commercial area. The land is located south of Maitland Road and east of Maud Street. The existing IN3 zoning of the site is reflective of the former use by Commonwealth Steel for engineering, administration and as a bowling club. The site is no longer used for heavy industry.

The site is surrounded by residential zoned land to the north, south and east. Heavy industrial land (Commonwealth Steel) is located to the west of the site. The adjoining lands to the south of the site are currently used for office and light industry uses.

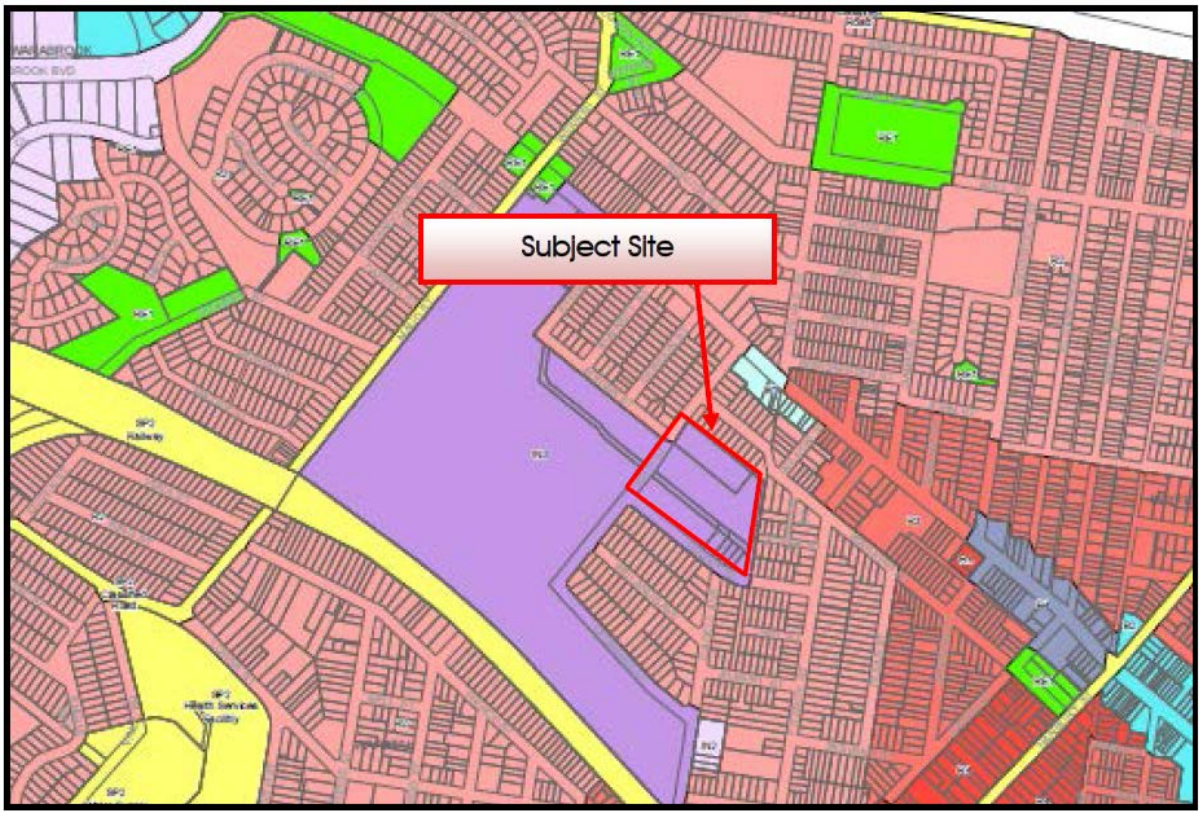


Figure 1 - Subject Site showing surrounding Residential area

Part 1 - Objectives or Intended Outcomes

The intent of the Planning Proposal is to enable the subject land to be rezoned for light industrial development. The current zoning reflects the former long standing use of the site. The site is currently underutilised and there are difficulties redeveloping the land for heavy industry. The proposed zone and additional permitted uses will encourage the site to be further developed. The proposal will reflect a more appropriate zone for land adjoining residential areas.

Part 2 - Explanation of Provisions

The proposed outcomes can be achieved by amending the Newcastle LEP 2012 Land Zoning (LZN) map to rezone the land from IN3 Heavy Industrial to IN2 Light Industrial.

Figure 2 - Aerial Photo of Site

Part 3 – Justification

Section A - Need for the planning proposal

1. Is the planning proposal a result of any strategic study or report?

The planning proposal is consistent with strategic goals for Newcastle and the region generally. Employment land will be retained albeit as light industry rather than heavy industry. The Planning Proposal responds to a number of strategic plans including the Lower Hunter Regional Strategy (LHRS), the Newcastle 2030 Community Strategic Plan, the Local Planning Strategy (2015), and the NSW 2021 Plan.

2. Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Yes. Rezoning the land from IN3 to IN2 is the best means to achieve the intended outcomes. The following alternatives were considered:

- Rezone the land to B5 Business Development. While many of the uses permitted in the B5 zone are also permitted in the IN2 zone, the B5 zone permits bulky goods and offices. Due to the potential impact of bulky goods on existing centres and the difficulties in refusing such development, if it was a permitted use, it was considered this was not a good option.
- The use of Schedule 1 to permit the existing office uses and rezone the land to IN2 Light Industrial was also considered however offices are considered best suited to the existing Mayfield Commercial area.

The Planning Proposal will provide greater certainty for the ongoing use of the site whilst providing for redevelopment options. Now that the site is no longer part of the Commonwealth Steel site, heavy industry is no longer a desirable land use. Given that this part of the site was not previously used for heavy manufacturing, the IN2 zone is considered a better outcome, consistent with the surrounding residential character of the area.

Section B - Relationship to strategic planning framework

3. Is the planning proposal consistent with the objectives and actions contained within the applicable regional or sub-regional strategy (including the Sydney Metropolitan Strategy and exhibited draft strategies)?

Lower Hunter Regional Strategy (2006)

The Lower Hunter Regional Strategy (LHRS) recognises the need to ensure that ongoing capacity is provided for both new and traditional job opportunities for the growing population is an important focus of the Regional Strategy. The Regional Strategy identifies the economic challenges for the Region are to:

- maximise the economic opportunities associated with the Region's competitive advantages, in particular its economic infrastructure and specialised centres
- ensure sufficient employment lands are available in appropriate locations, including within centres and as traditional industrial land, to provide sufficient capacity to accommodate growth in existing and emerging industries and businesses
- maintain or improve the employment self sufficiency of the Region, and
- ensure activity within the Lower Hunter complements rather than competes with the economies and communities of adjoining regions.

The proposal will ensure the site remains available as employment land as well as providing for uses that will support the surrounding residential character. The shift from heavy to light industrial uses will ensure the site is fully utilised and reduce the risk of undesirable land uses to neighbours associated with the current IN3 zone.

4. Is the planning proposal consistent with the local council's Community Strategic Plan, or other local strategic plan?

Newcastle 2030 Community Strategic Plan

Council adopted the Newcastle 2030 Community Strategic Plan in February 2011, as revised in 2013. The planning proposal primarily aligns to the strategic direction 'Open and Collaborative Leadership' identified within the Newcastle 2030 Community Strategic Plan.

Compliance with the LEP amendment process, in particular section 57 - community consultation of the *Environmental Planning and Assessment (EP&A) Act 1979*, will assist in achieving the strategic objective; "Consider decision-making based on collaborative, transparent and accountable leadership" and the identified strategy 7.2b, which states: "Provide opportunities for genuine and representative community engagement in local decision making".

Newcastle Local Planning Strategy

The site is located In the Inner Industrial lands Precinct. Retaining light industrial zones within the Inner Precinct creates important buffers and transitions to more sensitive land uses. The NELS identifies the need to protect industrial lands in the Inner Precinct. The "Zone directions Industrial lands" suggests that land for heavy industrial uses should be separated from other land uses. Rezoning the land to Light Industrial is consistent with this objective.

5. Is the planning proposal consistent with applicable State Environmental Planning Policies?

Consistency (of the planning proposal) with State Environmental Planning Policies is outlined in the table below.

Table 1 - Consideration of State Environmental Planning Policies

Name of SEPP	Applicable	Consistency
SEPP No 1 (Development Standards)	No	N/A
SEPP No 14 (Coastal Wetlands)	No	N/A
SEPP No 15 (Rural Landsharing Communities)	No	N/A
SEPP No 19 (Bushland in Urban Areas)	No	N/A
SEPP No 21 (Caravan Parks)	No	N/A
SEPP No 26 (Littoral Rainforests)	No	N/A
SEPP No 29 (Western Sydney Recreation Area)	No	N/A
SEPP No 30 (Intensive Agriculture)	No	N/A
SEPP No 32 (Urban Consolidation)	No	N/A
SEPP No 33 (Hazardous and Offensive Development)	No	N/A
SEPP No 36 (Manufactured Home Estates)	No	N/A

Name of SEPP	Applicable	Consistency
SEPP No 39 (Spit Island Bird Habitat)	No	N/A
SEPP No 44 (Koala Habitat Protection)	No	N/A
SEPP No 47 (Moore Park Showground)	No	N/A
SEPP No 50 (Canal Estate Development)	No	N/A
SEPP No 52 (Farm Dams and Other Works in Land and Water Management Plan Areas	No	N/A
SEPP No 55 (Remediation of Land)	Yes	A soil and Groundwater Contamination Assessment was submitted with the Planning Proposal and it is considered sufficient for the rezoning to proceed. Each of the lots subject to the Planning Proposal are considered contaminated but the land is suitable in its current state for the existing uses, which would fit within the light industrial zone, to continue. If the Lots were to be redeveloped the site could be made suitable for each of the uses outlined as permissible within the light industrial zone. Therefore Councils Regulatory Services Unit considers that Clause 6 of *State Environmental Planning Policy 55 - Remediation of Land* has been addressed.
SEPP No 59 (Central Western Sydney Economic and Employment Area)	No	N/A
SEPP No 62 (Sustainable Aquaculture)	No	N/A
SEPP No 64 (Advertising and Signage)	No	N/A
SEPP No 65 (Design Quality of Residential Flat Development)	No	N/A
SEPP No 70 Affordable Housing (Revised Schemes)	No	N/A
SEPP No 71 (Coastal Protection)	No	N/A
SEPP (Affordable Rental Housing) 2009	No	N/A
SEPP (Building Sustainability Index: BASIX) 2004	No	N/A
SEPP (Exempt and Complying Development Codes) 2008	No	N/A
SEPP (Housing for Seniors or People with a Disability) 2004	No	N/A
SEPP (Infrastructure) 2007	Yes	
SEPP (Kosciuszko National Park—Alpine Resorts) 2007	No	N/A
SEPP (Major Development) 2005	No	N/A
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	No	N/A
SEPP (Rural Lands) 2008	No	N/A
SEPP (State and Regional Development) 2011	No	N/A
SEPP (Sydney Region Growth Centres) 2006	No	N/A

Name of SEPP	Applicable	Consistency
SEPP (Three Ports) 2013	No	N/A
SEPP (Urban Renewal) 2010	No	N/A
SEPP (Western Sydney Employment Area) 2009	No	N/A
SEPP (Western Sydney Parklands) 2009	No	N/A

6. Is the planning proposal consistent with applicable Ministerial Directions (s.117 directions)?

Consistency of the planning proposal with applicable s117 Ministerial Directions is outlined in the table below.

Table 2 - Consideration of Section 117 Directions

S117 Direction	Applicable	Consistent
1. Employment and Resources		
1.1 Business and Industrial Zones	Yes	Yes. The proposal will retain employment uses on the site, and allow additional employment use.
1.2 Rural Zones	No	N/A
1.3 Mining, Petroleum Production and Extractive Industries	No	N/A
1.4 Oyster Aquaculture	No	N/A
1.5 Rural Lands	No	N/A
2. Environment and Heritage		
2.1 Environment Protection Zones	No	The proposed rezoning does not impact on environmentally sensitive land.
2.2 Coastal Protection	No	N/A
2.3 Heritage Conservation	No	N/A
2.4 Recreation Vehicle Areas	No	N/A
3. Housing, Infrastructure and Urban Development		
3.1 Residential Zones	No	The planning proposal will not alter the choice of housing provided for within the existing LEP.
3.2 Caravan Parks and Manufactured Home Estates	No	N/A
3.3 Home Occupations	No	The amendment will not affect provisions relating to home occupations in IN2 zones.
3.4 Integrating Land Use and Transport	Yes	The proposed amendments will be consistent with this direction. The subject land is already well developed and can be accessed by a local public bus service.
3.5 Development Near Licensed Aerodromes	No	N/A
3.6 Shooting Ranges	No	N/A

S117 Direction	Applicable	Consistent
4. Hazard and Risk		
4.1 Acid Sulfate Soils	Yes	Consistent: The draft LEP will be consistent with this Ministerial Direction. The current LEP contains an existing clause adequate to address acid sulfate soils.
4.2 Mine Subsidence and Unstable Land	No	N/A
4.3 Flood Prone Land	Yes	The land is identified as flood fringe area on Council maps but as the majority of the site is clear of the 1 in 100 year flood level this is not considered to be a significant issue with respect to rezoning the land. Any future development would be required to address flood risk.
4.4 Planning for Bushfire Protection	No	N/A
5. Regional Planning		
5.1 Implementation of Regional Strategies	Yes	Consistent: The draft LEP will be consistent with the strategic direction set by the Lower Hunter Regional Strategy in providing employment land.
5.2 Sydney Drinking Water Catchments	No	N/A
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	No	N/A
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	No	N/A
5.8 Second Sydney Airport: Badgerys Creek	No	N/A
5.9 North West Rail Link Corridor Strategy	No	N/A
6. Local Plan Making		
6.1 Approval and Referral Requirements	Yes	Consistent: The draft LEP will be consistent with this requirement.
6.2 Reserving Land for Public Purposes	Yes	Consistent: Public land will not be impacted.
6.3 Site Specific Provisions	Yes	Consistent: The draft LEP will be consistent with this requirement.
7. Metropolitan Planning		
7.1 Implementation of the Metropolitan Plan for Sydney 2036	No	N/A

Section C - Environmental, social, and economic impact

7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The subject land is not known to contain any critical habitat or threatened species, populations or ecological communities, or their habitats. Furthermore, the proposal is to facilitate the redevelopment of an already developed site, as such no flora and fauna will be affected by the proposal.

8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

No significant environmental impacts are likely. Traffic movements associated with the use can be accommodated within the existing road system without significant impact.

Traffic and Transport

It is not envisaged the rezoning the site will result in any significant increases in traffic given the current site usages. Access to the site is available via the local road network. Frith Street connects to Maitland Road. Rezoning the site from heavy to light industrial reduces the potential for heavy vehicles needing to access the site.

Stormwater

The site slopes towards the existing stormwater drainage channel that runs adjacent to the south of the site. Some minor flooding in the 1 in 100 year event could occur on the western part of the site.

Acid Sulfate Soils

The site is identified on Council's Acid Sulfate Soils Map as containing Class 5 Acid Sulfate Soils, this is the lowest risk category and should not influence further development of the site.

Contamination

A Soil & Groundwater Contamination Assessment that addresses contamination across the whole site covered by the Planning Proposal has been compiled. A phase 2 geotechnical report has been compiled for 14-22 Frith Street Mayfield. Both reports are available with this Planning Proposal at **Appendix A**.

Mine Subsidence

The site is not identified as being located within a proclaimed mine subsidence district and as such is not subject to any building restrictions imposed by the Mine Subsidence Board.

Heritage

The site is not located within a heritage conservation area nor does it contain any items of European or natural heritage significance. It is unlikely given the historical land uses that there is potential for any impact on social or cultural heritage.

Flooding

The land is identified as flood fringe area on Council maps but as the majority of the site is located outside of the 1 in 100 year flood level, this is not considered to be a significant issue with respect to rezoning. Any future development would be required to address flood risk.

It is noted that the main site entry of the property at 22 Frith Street is located in the floodway. If flood levels are within the PMF and if there is an intensification of use for the site, provision will need to be made for flood refuge. A comprehensive flood impact assessment will be required for a DA to demonstrate no adverse impact to surrounding properties as a result of redevelopment for events up to and including the 1% AEP.

9. Has the planning proposal adequately addressed any social and economic effects?

The proposal is expected to deliver significant net social and economic benefits by allowing uses on the site that reflect current needs. The site is longer required for heavy industry and more appropriate sites are available for heavy industrial uses.

Section D - State and Commonwealth interests

10. Is there adequate public infrastructure for the planning proposal?

The site is already serviced by all essential infrastructure including electricity, water and sewer. The anticipated development of the site is not expected to require any significant upgrade to existing public infrastructure.

The planning proposal has been reviewed by Council's Assets Division who have no objection to the proposal. Council has no stormwater assets within the site and a large Hunter Water drain is located between 22 Frith Street and 40 Gavey Street.

11. What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

No other State or Commonwealth public authorities have been consulted at this stage but will be carried out in accordance with the requirements of the gateway determination. It is envisaged that Council will consult with Hunter Water Corporation.

Part 4 – Mapping

The planning proposal seeks to amend the Land Zoning Map (LZN_004A) within Newcastle LEP 2012. The Matrix below indicates (with an "X"), which map sheets (of Newcastle LEP 2012) are to be amended as a result of this planning proposal.

	FSR	LAP	LZN	WRA	ASS	HOB	LSZ	LRA	CL1	HER	URA
001											
001A											
001B											
001C											
001D											
002											
002A											
002B											
002C											
002D											
002E											
002F											
002G											
002H											
003											
004											
004A			X								
004B											
004C											
004D											
004E											
004F											
004FA											
004G											
004H											
004I											
004J											
004K											

Map Codes:

FSR	=	Floor Space Ratio Map
LAP	=	Land Application Map
LZN	=	Land Zoning Map
WRA	=	Wickham Redevelopment Area Map
ASS	=	Acid Sulfate Soils Map
HOB	=	Height of Buildings Map
LSZ	=	Lot Size Map
LRA	=	Land Reservation Acquisition Map
CL1	=	Key Sites Map & Newcastle City Centre Map
HER	=	Heritage Map
URA	=	Urban Release Area Map

The following maps illustrate the proposed amendments to the Newcastle LEP 2012 maps:

Figure 3: Existing Land Zoning Map

Figure 4: Proposed Land Zoning Map

Figure 3 - Existing Land Zoning Map

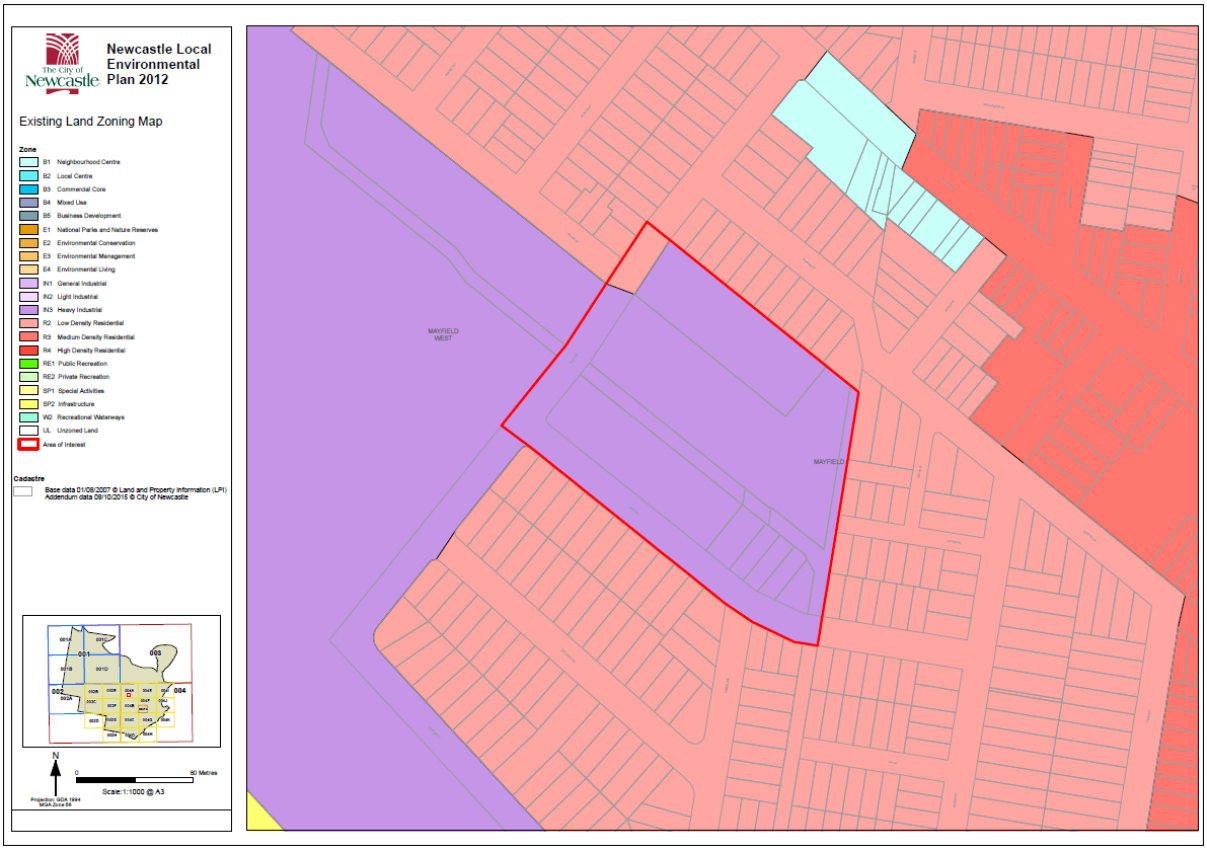
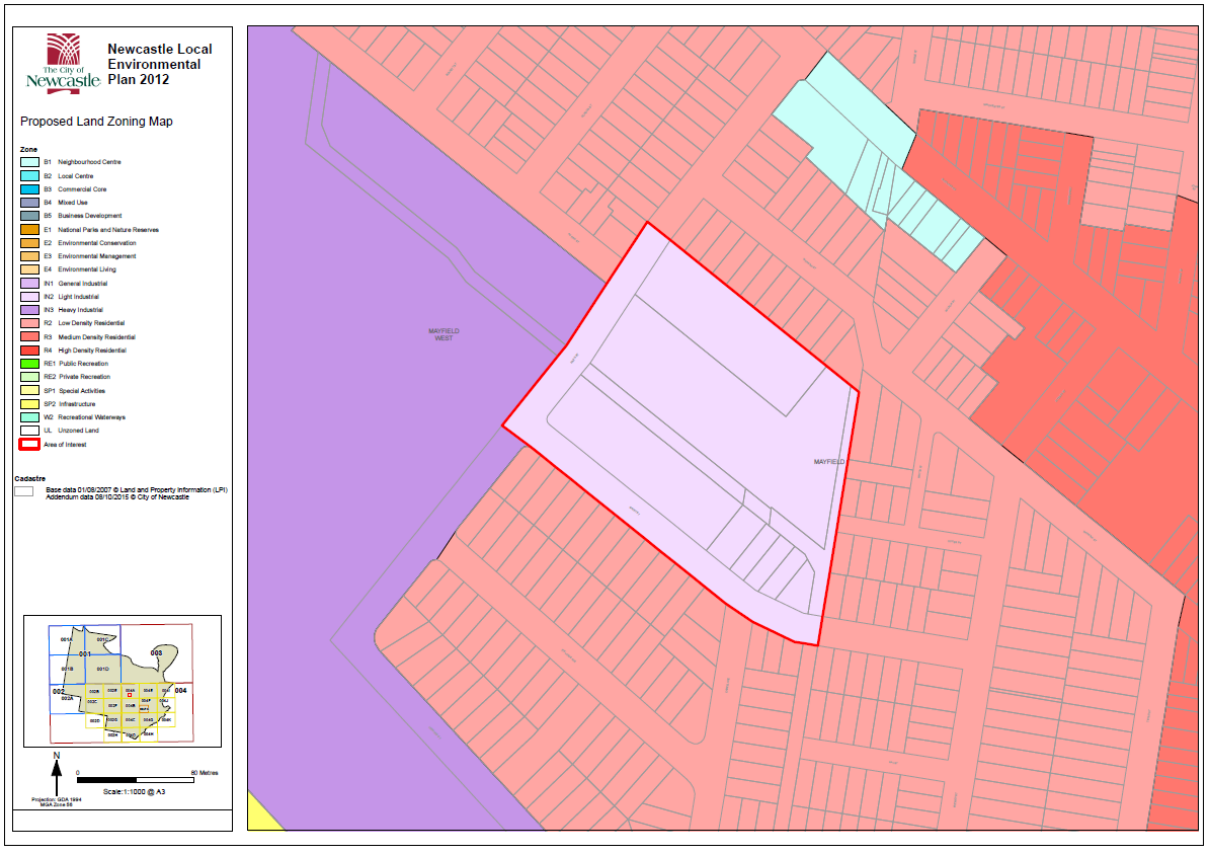


Figure 4 - Proposed Land Zoning Map



Part 5 – Community Consultation

The planning proposal is considered as low impact in accordance with the Department of Planning and Infrastructure's guidelines, 'A guide to preparing local environmental plans'. Hence it is proposed that the planning proposal will be publicly exhibited for a minimum 14 day period. Consultation with any other relevant Government agencies will be undertaken in accordance with the requirements of the gateway determination.

Part 6 – Project Timeline

The project is expected to be completed within seven (7) months from Gateway Determination. The following timetable is proposed:

Task	Planning Proposal Timeline											
	Dec 15	Jan 16	Feb 16	Mar 16	Apr 16	May 16	Jun 16	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16
Issue of Gateway Determination												
Prepare any outstanding studies												
Consult with required State Agencies												
Exhibition of planning proposal and technical studies												
Review of submissions and preparation of report to Council												
Report to Council following exhibition												
Planning Proposal sent back to Department requesting that the draft LEP be prepared												

Appendix A:

- Soil and Groundwater Contamination Assessment 14-22 Frith Street, 14-16, 18 & 40 Gavey Street Mayfield.

- Phase Two Soil and Groundwater Contamination Assessment, 14-22 Frith Street, Mayfield.

PACIFIC ENVIRONMENTAL
ABN 84161893223
Contaminated Land Consultants, Water,
Wastewater & Environmental Engineers

SOIL & GROUNDWATER CONTAMINATION ASSESSMENT

14-22 FRITH STREET, 14-16, 18 & 40 GAVEY STREET MAYFIELDNSW

FOR

ATG HOLDINGS PTY LTD
&
GLFB – PROPERTY GROUP

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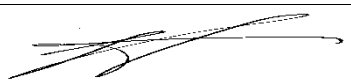
Prepared by S. Smith Bsc. Eng., MEng.,Sci.	
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1.0 INTRODUCTION/SUMMARY

At the request of ATG Holdings Pty Ltd Pacific Environmental has reviewed the four (4) existing site contamination assessments that relate to the total site described as:

- 14-22 Frith Street Mayfield;
- 14-16 Gavey Street Mayfield;
- 18 Gavey Street Mayfield;
- 40 Gavey Street Mayfield.

The purpose of the review is to assess any environmental and contamination impacts of re-zoning the subject land from IN3 Heavy Industrial to IN1 Light Industrial. This report determines if the four (4) existing contamination assessments are still relevant and if the site usage has not changed significantly such that the assessments can be relied upon. The original assessments were prepared to determine if the three sites would be suitable for commercial/industrial development. The contamination assessments that have been reviewed are:

- Environmental Site Assessment BHP Refractories Gavey Street Mayfield – CMPS&F Environmental November 1997;
- Environmental Site Assessment BHP Refectories Administration and Laboratory Site Robert Carr & Associates June 1999;
- Preliminary Site Investigation 18 Gavey Street Mayfield - Environmental & Safety Professionals (ESP) November 2013
- Phase Two Soil & Groundwater Contamination Assessment 18-22 Frith Street Mayfield NSW – Pacific Environmental 7th May 2014.

In addition to reviewing the above reports a review of the historical site aerial photographs from 1997 to 2015 has been undertaken to determine if there have been any changes to the site usages. This photographic assessment was also accompanied by several site inspections, in August 2013, February 2014 and August 2015.

The site under review is detailed at ***Appendix A - SITE PLAN***.

The previous reports concluded, in each case, that the sites are suitable for commercial/industrial development.

The CMPS & F 1997 document, in relation to the site under assessment and described in that document as Site B (18 and 40 Gavey Street), found that there was fill (containing ash) in the centre if the site. In the area described as the bus depot a single composite (of two) sample was found to contain zinc above the document criteria. The level detailed is now less than the current NEPM HIL 2013 criteria for industrial/commercial development.

The Robert Carr 1999 document concentrated on the sites that are the subject of this review. This document found no significant contamination in the groundwater. It also found that PAH levels underneath the internal road exceeded the then current criteria. Subsequent NEPM criteria are not exceeded.

The ESP 2013 document was an investigation of 18 Gavey Street, prior to the construction of the new building in 2014. The investigation found that there were no uncovered exceedances of the 2013 NEPM D HILs.

The Pacific Environmental 2014 assessment found that the site (14-22 Frith Street) soil contamination levels were within the criteria adopted by the NEPM HILs 2013 for Industrial/commercial development. Groundwater was found to be impacted, with respect to heavy metals, by the BHP site west of Frith Street. As with previous investigations the report found that any development that did not intersect the groundwater would not create any impact on the use of the site.

The site inspections and review of the historical aerial photographs found that there has been two changes to the site since the 1997 CMPS & F documentation, being:

1. The use of the area described as 14-16 and 18 Gavey Street ceased being utilized as a bus depot in April 2014. At this time the building and concrete capped yard (14-16 Gavey Street) was commence to be utilized as a carpenter's warehouse.
2. The area described as 18 Gavey Street had a new building erected on the western end in May 2014. The building is utilized as administration and equipment storage for a building company.

None of the changes to the sites has a potential to impact on the potential soil and groundwater contamination at the sites.

2.0 SITE DESCRIPTION

The site under review encompasses three lots being:

- Lot 41 & 42 DP 1005592, known as 14-22 Frith Street Mayfield;
- Lot 43 DP 1005592 , known as 40 Gavey Street Mayfield;
- Lots 45 10053202 (new building), known as 18 Gavey Street Mayfield;
- Lots 3, 4, 5 and 6 DP 37803, all known as 14-16 Gavey Street Mayfield.

The four (4) sites are outlined at ***Appendix A- SITE PLAN***. The site location is detailed at ***Appendix B – SITE LOCATION***.

3.0 CURRRENT SITE USAGE & HISTORY FROM 1997

Current site usages have remained unchanged since the 1997 CMPS & F and the 1999 Robert Carr contamination assessments, with the following three (3) exceptions:

1. The use of the area described as 14-16 Gavey Street ceased being utilized as a bus depot in April 2014. At this time the building and concrete capped

yard were commence to be utilized as administration, warehousing, equipment storage for a carpenters warehouse operation.

2. The area described as 18 Gavey Street had a new building erected on the northern end in May 2014. The building is utilized as a equipment storage for a building company.

3. The area described as 14-22 Frith Street was utilized as BHP administration, pilot plant operation and storage until 1999; at this time it was converted to self-storage units, which has continued until present.

The 14-22 Frith Street has not changed since the 2014 report by Pacific Environmental.

The current usage of the site at 40 Gavey Street is as a University of Newcastle Annex for laboratories and car parking. The 1999 Robert Carr report indicates that the site was occupied by the university. This usage has not changed at August 2015.

The use of site at 18 Gavey Street (east of the university grounds) has changed as described above.

3.0 CMPS& F 1997 REPORT

The CMPS&F 1997 Report found that the sites (described as Area B in that report – being all the sites described above) soils were suitable for industrial/commercial development with the exception of an area of ash fill in the centre of the site. This material was identified as having as B(a)P concentration in near surface soils greater than the then current health based criteria. In what was described as the bus parking area the manganese concentration was found to be also greater than the then current criteria. These two exceedances, when now compared to the NEPM D HILs, are with acceptable limits for industrial/commercial development. Table 3.1 identifies the contaminants identified as exceedances and the current criteria.

TABLE 3.1 1997 Compounds identified of Concern

Compound	1997 concentration mg/kg	2013 NEPM D HIL mg/kg
Zinc	110	400,000
Manganese	5,000	60,000 or 30,000 for a composite of two samples

The report also indicated that groundwater heavy metal contamination was associated with groundwater movement from the site described as Site A (west of Frith Street). The final conclusion of the report indicated that further investigation was recommended.

4.0 ROBERT CARR 1999 REPORT

The 1999 Robert Carr contamination assessment found significant PAH contamination in three (3) samples beneath the internal road. The noted PAH levels were found to be contained between the road surface seal and the natural geology, comprising residual clay overlying mudstone. In addition elevated concentrations of heavy hydrocarbon fractions were noted. The report's site description matches the historical aerial photographs at the time.

The Carr report found that the groundwater was not affected by contamination at the site.

The report concluded that the PAH in the fill beneath the road would require remedial action if the soils were to be disturbed during re-development. The report also stated that the site did not pose significant risk to human health or the environment in its state at 1999.

The significant PAH concentrations detailed in the Carr report were in the range 1,910 to 2,110 mg/kg and at the time exceeded the relevant criteria. However the NEPM D HIL 2013 indicate that the acceptable criteria for PAH is 4,000 mg/kg. Hence the assessment of the PAH concentrations is now not relevant.

5.0 ESP 2013 REPORT

The November 2013 Environmental & Safety Professionals preliminary investigation report involved the drilling of four sampling bores at the property at 18 Gavey Street – the site of the new building in 2014. A range of analyites accepted by the NSW EPA were analysed form in all samples. The analysis results demonstrated that the site soils were suitable for industrial/commercial development as outlined in the NEPM D HILs. OC/OP pesticides were not amount the analyites, however this is not considered significant as previous investigations had not raised these contaminants as being in excess of relevant guidelines. The interleaving years of usage had not included an opportunity to contaminate the soils with pesticides.

6.0 PACIFIC ENVIRONMENTAL 2014 REPORT

The 2014 Pacific Environmental report found that the groundwater at the north western corner of the site (14-22 Frith Street) was impacted by heavy metals from the BHP site west of Frith Street. However the contamination was not detected leaving the eastern boundary of the site.

The soils were found to contain an excess concentration (in excess of the NEPM D HIL 2013) for B(A)P at the north western corner of the site (in the bowling green). The report recommended that if the site were to be re-developed for residential housing this corner hot spot would require remediation. The report also found that the site was suitable for industrial/commercial development at May 2014.

7.0 SITE PHOTOGRAPHS

The August inspection of the site was undertaken at ground level to ensure that the site buildings and grounds had not changed from 2014 or indeed from the reports in 1997 and 1999 by CMPS& F and Robert Carr and Associates respectively. The photographs taken at that time are attached at ***Appendix C- SITE PHOTOGRAPHS***. The site photographs reflect the minor changes to the site discussed at Section 3.0, above.

The historical aerial photographs from 1997 to present were inspected at the Department of Lands on the 1st September 201. These photographs indicated no change in the sites, with the exception of a new building at 18 Gavey Street.

8.0 REZONING

The objectives of the Newcastle LEP 2012, with respect to the relevant zones are:

1. Zone IN3 Heavy Industrial
    - To provide suitable areas for those industries that need to be separated from other land uses;
    - To encourage employment opportunities;
    - To minimize any adverse effect of heavy industry on other land uses;
    - To support and protect industrial land uses.

    The need for heavy industrial uses in close proximity to residential development, such as at the sites in question, is no longer applicable in the area.

A re-zoning of the sites in question to IN2 Light Industrial would be more appropriate considering the proximity of the residential dwellings south of Gavey Street. The four (4) Contamination assessments of the sites from 1997 to 2014 would indicate that the sites are suitable for land that is zoned IN2.

The IN2 zoning describes child care and community facilities as permissible uses. These uses would suggest a slightly higher standard that that adopted by NEPM D 2013. On this basis any future child care or community facility development should be considered in accompaniment with a RAP of the hot spot at the north western corner of 14-22 Frith Street (as detailed in the PE report of 2014) and the centre of the Gavey Street sites in the fill areas.
In addition any intersection of the water table by structural components should be carefully managed due to the potential presence of heavy metals. The adoption of a cap and contain strategy in regard to these areas is highly recommended, should sensitive uses be contemplated.

9.0 CONCLUSIONS

The minor changes and usages to the site have not adversely impacted upon the potential to contaminate the site soils and groundwater. The changes to the criteria (specifically the contaminant concentration levels of Health Investigation Levels) for assessing contamination at sites has addressed concerns regarding PAHs and heavy metals found in the site soils at earlier investigation reports.

After reviewing the four (4) previous investigation reports the site soils can be regarded as suitable for industrial/commercial development. The groundwater at the north western corner shows signs of heavy metal contamination which can be expected to diminish as the original source, located at the BHP site west of Frith Street, has been remediated to meet the requirements of the NSW EPA. (Reference NSW EPA correspondence re the Site B – the land immediately west of Frith Street.)

The site review of the contamination assessment documentation from 1997 to 2014 has found that the site is suitable for industrial/commercial development as recommended by the NEPM D HIL Guidelines Schedule B1.

The adoption of an IN2 Light Industrial zoning for the sites in question (14-22 Frith, 40 Gavey, 18 Gavey and 14-16 Gavey Streets) may in the future include child care centres – as proscribed by the Newcastle Local Environmental Plan 2013. In this eventuality (if a child care centre were to be considered), in the areas of the identified minor contamination, then those areas should be re-assessed and remediated when the Development Application is lodged. Such remediation would be recommended as a cap and contain strategy. The availability of economical remediation, with suitable outcomes, ensures that potential future uses under the IN2 zoning are not limited.

Council, could in our opinion as stated in SEPP 55, satisfy itself that the land is suitable in its current state (or will be suitable after remediation - as in in the case of

any future Child Care Centres) for all purposes for which land in the zone concerned is permitted to be used, and depending on the actual uses proposed be satisfied that the land could be so remediated or appropriately managed.

APPENDIX A – SITE PLAN


Bowling Green
U-Stores 14 - 22
Frith Street
Newcastle
University No 40
Gavey Street
New Building 18
Gavey Street
Former Bus Depot
14-16 Gavey Street
14 Frith St
Frith St
Wilson St
Wynyard St
Oliver St
Gavey St
Irelands Ave
Leonard St
Fitzroy St
Waratah St
Google earth
© 2015 Google
2004
32°53'42.29" S 151°43'44.71" E elev 14 m eye alt 571 m

APPENDIX B- SITE LOCATION

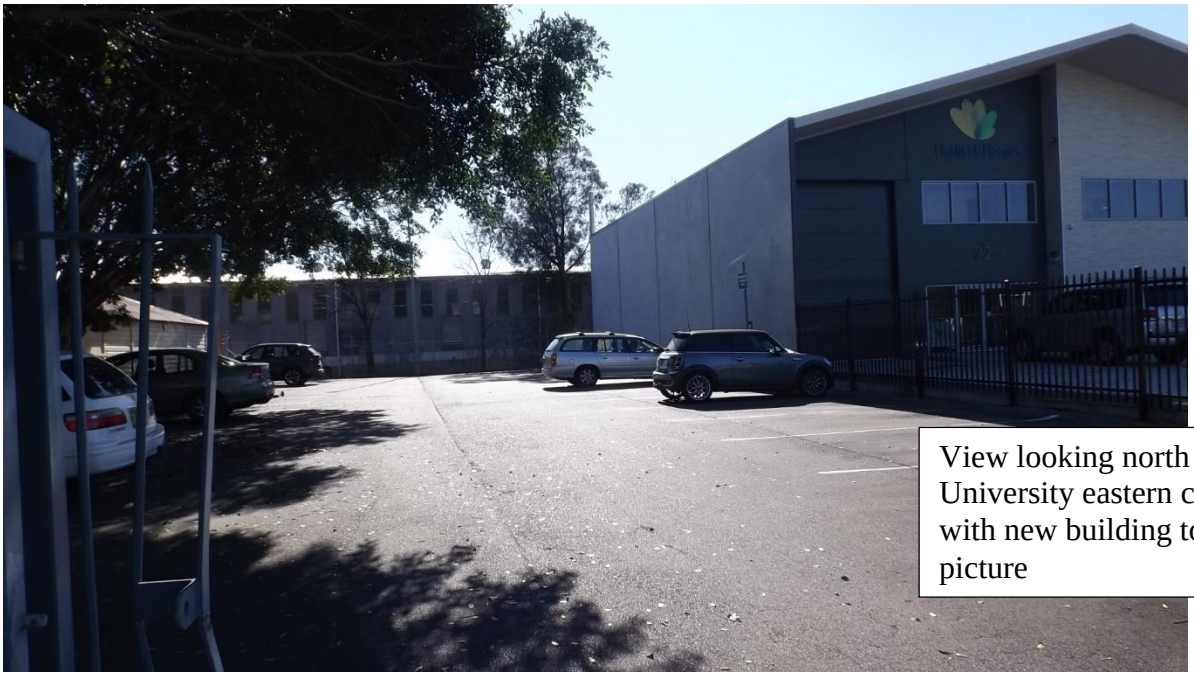
APPENDIX C- SITE PHOTOGRAPHS

View looking north along internal University road towards canal (east/west)

View looking east from Frith Street across former bowling green at north western corner of 14—22 Frith Street Site.

View looing east along stormwater canal immediately north of University grounds and south of U -store.

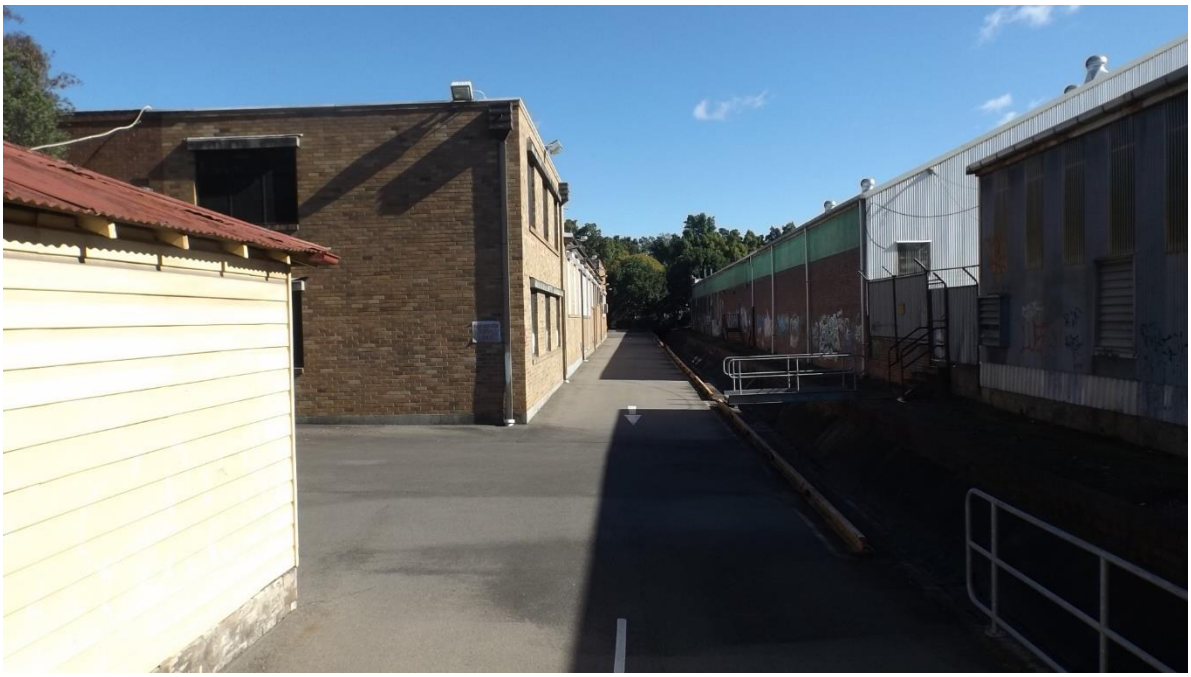
View looking west at area between Gavey Street and University administration building



View looking north through University eastern carpark, with new building to right of picture

View looking north at builders yard at 14-16 Gavey Street

View looking north along canal at east of 14-16 Gavey Street



View of canal between u store and University buildings looking west towards Frith Street

PACIFIC ENVIRONMENTAL
ABN 84161893223

Contaminated Land Consultants, Water, Wastewater & Environmental Engineers

PHASE TWO SOIL & GROUNDWATER CONTAMINATION ASSESSMENT

14-22 FRITH STREET MAYFIELD, NSW

FOR

ATG HOLDINGS PTY LTD

Prepared by:
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Date: 7th May 2014
Ref: Baudinet/FrithStMayfieldStage2/07May2014b

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Issued to ATG Holdings Pty Ltd	9th May 2014
Prepared by S. Smith Bsc. Eng., MEng.,Sci.	
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1.0 INTRODUCTION/SUMMARY

At the request of ATG Holdings Pty Ltd Pacific Environmental has prepared a Phase Two Investigation to determine if the site soils and groundwater are suitable for Commercial/Industrial Development with access to soils (NEPM A) at a site known as 14-22 Frith Street Mayfield. The site is currently used as a self storage facility and employment training centre. The site was formerly part of the BHP/Comsteel steel production facility, being support engineering and administration facilities and a small bowling club. The main concern concerning soil and groundwater contamination emanates from the production of refractory metals at the area west of Frith Street and some 20 m to 100 m from the site.

There has been an initial investigation, by Pacific Environmental (PE), of the site soils and groundwater in August 2013 to determine the potential level of contamination of the site. This investigation revealed that the site groundwater had minor hydrocarbons at concentration less than the NSW EPA Service Station Guidelines) in the bore located at north eastern corner of the site (Bore 2). The groundwater was identified at 1.3 m to 1.5 m BGL and its depth depended upon local rainfall. The groundwater was identified to flow from south west to north east as indicated at ***Appendix B – SITE PLAN WITH 2013/2014 BORES***.

In 1997 the soils and groundwater were investigated by CMPS &F, who identified PAH contamination and heavy metals in groundwater upstream of the site – at the BHP site on the western side of Frith Street. In November 2000 the NSW EPA assessed the potential for PAH and heavy metals to migrated from the site on the western side of Frith Street; they found that there was little potential for the Comsteel site contamination to migrate off site and cause Significant Risk of Harm.

The initial investigations by Pacific Environmental in 2013 identified concentrations in soil of TRH (C10-C36), B(a)P and PAH in excess of NEPM and NSW EPA Service Station Guidelines at Bore 2 (the western most Bore). The February 2014 Investigation by PE revealed that the groundwater at the south western corner of the site exhibited heavy metal concentrations in excess of the NEPM Fresh Water Investigation Levels for Cadmium, Copper, Nickel, lead and zinc. The 2014 PE extensive soil investigation (involving 23 sampling points) identified two (2) hot spots at S15 and S17. These hot spots are identified at ***Appendix C – SOIL INVESTIGATION BORES 2014***. Both of these bores are located at the western end of the site. Bore S15 exhibited TRH (C10-C36), B(a)P TEQ , PAH and Chromium in excess of NEPM A (Residential with access to soils) criteria (but not NEPM D criteria (Commercial/Industrial) – for Bore 15. Bore S17 exhibited B(a)P TEQ in excess NEPM A and D, PAH in excess of NEPM A and NSW EPA Service Station Guidelines. The remainder of the site was found to meet the highest standard recommended NEPM A (Residential with access to soils). The site is currently utilized as a Self storage facility and an administration office for an employment training centre. The north western corner of the site is a disused bowling green. The site history indicates that it was originally developed as residential, then a bus depot, then a large equipment contractor. The latter usage as a self storage facility commenced from in early 2005.

The soil samples taken have been analysed by NATA Certified Laboratory for a range of contaminants recommended by the NSW EPA. The laboratory reports (SGS Australia Pty Ltd Report are attached as ***Appendix D***.

The soil investigations and sample analysis reveal that the site soils are not impacted by contaminants (those recommended by the NSW EPA) that would exceed the requirements of the Health Investigation Levels stated by the National Environment Protection Measure (NEPM A) (as amended in May 2013) for Residential Development with access to the soils; that is the highest standard recommended, Schedule B1 Table 1A(1). This statement is made for a situation where-by two hot spots at Sample points S15 and S17 are removed;

these hot spots are at 0.9 and 0.3 m BGL respectively. It is recommended that a 10 m radius and 1.0 m BGL be adopted for remediation purposes.

The sampling program adopted a density of sampling recommended by the NSW EPA for assessing contamination by sampling three (3) groundwater and soils sites in 2013 and a further one (1) groundwater and twenty three (3) soil sites in 2014.

The site intrusive investigations indicated that the site has been filled at the north eastern end with ash, unfired refractory mixes and off specification brick mixes. CMPS&F have confirmed this finding in their earlier report.

The following is a summary of the findings of the Phase Two investigation.

2.0 SCOPE OF WORKS

Pacific Environmental has been engaged to assess the potential for soil contamination at the site known as 14-22 Frith Street Mayfield NSW. This assessment is to be undertaken by:

1. Conduction a review of the 1997 groundwater and Soils Investigation by CMPS &F, who identified PAH contamination and heavy metals in groundwater upstream of the site – at the BHP site on the western side of Frith Street.;
2. Conduct an intrusive soil sampling of the site soils, such that the total number of sample points exceeds the NSW EPA's recommended sampling points;
3. Have the sampled soils analysised by a NATA Certified laboratory for a range of analyites recommended by the NSW EPA and of sufficient spread to characterize the site;
4. Conduct a groundwater sampling program to assess the continuing impact of the BHP refractory site, west of the subject site.
5. Review the site history to assist in characterizing the site and ensure that the sampling program is adequate;
6. Report on the findings of the site investigation in accordance with the NSW EPA' "Guidelines for Consultant's Reporting on Contaminated Sites 2011".

3.0 SITE:

The site is described as:

- Number 14-22 Frith Street Mayfield N
- Lot 41 and 42 DP 1005592, as per survey;
- Latitude: 32^0 53'44.59"
- Longitude: 151^0 43'42.00";
- Elevation: 11 m.

The site is detailed in the attached site plan and sample locations, as well, on the attached site location plan as ***Appendix B - SITE PLAN*** and ***Appendix A- SITE LOCATION***. The site is bounded by a stormwater channel on the eastern and southern sides; both channels drain to Throsby Creek.

The site occupies nominally l.8 Ha, most of which is covered by concrete and asphalt.

4.0 HISTORY

4.1 Site Usage

The site is known to have been originally occupied by residential dwellings until 1943, when parts of the site were occupied by as administrative officers for the Newbold Silica Firebrick Company. Filling of the north eastern corner of the site began at this time. In 1974 BHP purchased the land and extended the office and storage facilities at the site. Waste from the kilns and off-specification bricks were used as fill in the north eastern corner and centre of the site.

In approximately 1993 the site was utilized for bus parking, up until 2004 when a heavy equipment contractor occupied the site. It was during this latter period that an oil spill was reported. This spill was reported as having been cleaned up (reference SMP&F Report). There is no current evidence of this spill that was uncovered during the investigation that is the subject of this report. The site is currently utilized as a self storage facility and employment training office. The bowling club, occupying the north west corner of the site, thought to have operated from 1993 is now disused. Aerial photos of the site confirm the existence of the existing site buildings from 1974. There appears to have been no other industrial activity at the site.

There is no record of USTs having been at the site.

4.2 OVERVIEW CONTAMINATION POTENTIAL

The potential for site contamination is intimately linked with the history of it's near neighbor at the western side of Frith Street. This western site has a history of contributing PAH and heavy metal contamination to the groundwater, which flows in a north easterly direction across the site. The greatest area of potential contamination is the north western and western sides of the investigation site. The reported historical oil spill is not delineated and the extensive investigation of the site in 2014 identified significant TRH at Bore 2 and soil test bore S15 only .

The site several large single storey steel framed buildings that are currently utilized as self storage facility, employment training and administration buildings. The site is relatively level, as the north eastern corner has been filled. The sample locations S3,4 and S23 exhibited ash in the upper 200 mm and sand fill to 500 mm BGL.

5.0 POTENTIAL FOR SOIL CONTAMINATION – Chemicals and Waste Associated with the Site)

The site historical review, inspection and interview with the site's owners indicates that there has been no past or current activity that would have resulted in significant site contamination, that would exceed NSW EPA Guidelines or NEPM Criteria for residential development (highest standard available) except for the impact of the contaminated groundwater from the site east of Frith Street. This contamination has been identified as PAH and heavy metals. The reported oil spill at the site was reported by the owners as having been cleaned before their ownership. No evidence of this spill was noted at the site during the intrusive investigation.

No asbestos was noted at the site, on or in the buildings and not in any sample bores.

On the basis of the above there may be minor potential for soil contamination in excess of:

- National Environment Protection Measure – NEPM A for Residential Development with access to soils – HILs, May 2013.
- Or
- National Environment Protection Measure – NEPM D for Industrial/Commercial Development – HILs, May 2013.

for

PAH and heavy metals. There is also a potential for pesticide contamination in and around the site buildings; accordingly the sample analysis program includes:

- TRH,
- BTEX;
- PAH;
- Heavy metals;
- Pesticides – OC & OP.

There are no known underground storage tanks at the site; additionally there is no evidence of such tanks existing at the site.. There is no physical evidence of product spill loss at the site. Enquiries with the former owner indicated that there were no complaints relating to spillages or soil contamination at the site.

There are no work cover records that indicate that there were USTs at the site. Nor are there any records that indicate that such tanks existed on adjoining lands.

A search of the nearest groundwater bores revealed that the nearest is located at 1.1km east of the site with no salinity data recorded. The nearest bore with any salinity data is Bore GW047734 at 1.5 km north east of the site and is recored as having a salinity of 5001-1000ppm. On this basis the site groundwater is regarded as fresh water.

6.0 POTENTIAL FOR OFF-SITE EFFECTS

The relatively low slope at the site and the limited exposure to the soils of any contamination by current activities would preclude any off-site impacts. The silty clays and relatively neutral pH of the site soils would ensure that any metals associated with the site east of the investigation site would remain on site. The relatively high metal concentrations of metals found in the groundwater at the western end of the site confirm the impact of the property west of the site. The lack of PAH contamination in the bores at the western and eastern end of the site indicate that the impact of regional PAH contamination has not evidenced at the site, or is being transmitted around the site. The adjoining property former heavy metal contamination is evident only at the north western corner of the site

7.0 DATA QUALITY OBJECTIVES

7.1 SUMMARY

According to the NSW DECCW (2006) (now NSW EPA) Guidelines for the NSW Site Auditor Scheme (2nd Edition), Data Quality Objectives (DQO) are the qualitative and quantitative criteria that clarify the objectives of the investigation. In this case the determination of the potential PAH and heavy metal contamination of the site soils in the vicinity of the western boundary, associated with the usage of the site west of the investigation site. The DQOs are based around the NEPM 2013 HILs for residential development with unlimited access to the soils and industrial/commercial development as the site is currently utilized. The DQOs have been prepared to:

- clarify the objectives of the investigation;
- Define the amount and type of data to be collected;
- Specify the tolerable levels of decision making errors.

The DQOs for the investigation site ensure that the data collected is of a type that is relevant to:

- *NSW EPA Sampling Design Guidelines* (NSW EPA 1995);
- *Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA reprinted 2000);
- *National Environment Protection Measures as* appropriate
- *All* in quantity (sampling frequency) and quality to allow for sound decisions to be made about the nature and extent of subsurface impacts.

The DQOs adopted for the site have been developed in accordance with:

- *National Environment Protection Measure NEPM A and D HILs May 2013*

The seven (7) step process established by the US EPA and endorsed by AS4482.1-2005 has been adopted to ensure that appropriate DQOs are achieved for the site.

These DQOs are being stated to bring the DQO process up to date in the light of the western off-site potential groundwater contamination. The former investigations did not fully identify the potential for contamination at the subject site. The location of the areas of concern are detailed in the attached ***Appendices B and C***.

Investigations, by Pacific Environmental, to date have found that there is minimal residual contamination of the site soils and this contamination is generally within the criteria set by the NEPM A HILs (2013) A and D. , with the exception of a hot spot in near surface soils (to 1.4 m BGL at the north western end of the site.

7.2 STATE THE PROBLEM

The investigation of the site on the western side of Frith Street by CMPS&F in 1997 has raised concerns that there may be residual contamination that has passed under Frith Street and entered the subject site potentially contaminating the site soils. Additionally there is a minor potential for soil contamination at the subject site to have occurred since the limited investigation by CMPS&F in 1997. The client has determined that the site warrants an investigation with a Stage Two density of sampling.

There are no USTs at the site nor is there any history of such tanks.

This document serves to address the situation that required further validation of the site, including a more intensive soil and groundwater sampling and analysis.

The visual inspection of the site soils, by conducting a 1 m grid walk and inspecting all eleven (23) test bores across the site revealed that no ACM was present. The soil sampling and analysis program indicated that there exists no residual TPH or PAH (or other priority compounds) contamination that would exceed the appropriate guidelines to a degree requiring remediation, with the exception of a hot spot in near surface soils (to 1.4 m BGL at the north western end of the site; this latter fact is established by this report.

7.3 IDENTIFY THE DECISION

The objectives of the soils validation, implemented as in this report, are to identify the extent of contamination that may be on site following known contamination that existed west of the site.

7.4 IDENTIFY THE INPUTS TO THE DECISION

The site specific information available for the site, based upon a review of reports includes:

- Detailed history of the site and surroundings;
- Site physiology and features;
- Geological and hydrological parameters and conditions; and
- The results and findings of previous and current environmental investigations at the site.

Additional site specific information has been obtained through additional soil excavations and sampling across the site. In addition a site 1 m grid walk was conducted to establish if ACM was present – this was conducted in August 2013. The location of the site soil sampling points was based upon the desire to obtain an extensive view of the site. Samples were collected from soil borings to adequately characterize the nature and extent of any subsurface impacts.

The field work included physical observations in relation to the soil ie:

- Staining or discolouration;
- Odour.

The field work also included field screening as follows:

SOILS:

- PID meter assessment.

7.5 DEFINE THE BOUNDARIES OF THE STUDY

The investigation area, at 14 – 22 Frith Street Mayfield NSW, has been identified as:

- The soils in and around the self storage facility, employment administration building and former bowling green;

- The groundwater entering and leaving the site

7.6 DEVELOP A DECISION RULE

The current and previous investigations leave no room for a decision other than that the current sub-surface and surface soils may be potentially contaminated by previous site activities or the activities of the site on the western side of Frith Street.

The achieving of a validation of the site soils has been achieved by collecting enough data to recommend a no remediation strategies as appropriate to the site.

7.7 SPECIFY ACCEPTABLE LIMITS ON DECISION ERRORS

There are a number of types of error with respect to identifying the physical limits of metals and Polyaromatic Hydrocarbon contamination, these are:

- Concluding that concentrations of contaminants are greater than guideline levels, when they are not and concluding that concentrations are below guidelines levels when they are above;
- Concluding that sufficient test pits have been placed to delineate the extent of contamination when in fact insufficient test pits have been placed or placing more test pits than is required;
- Adopt a method of remediation which is unsuitable either because it cannot contain and remediate all of the contamination or to propose one that is more intrusive and expensive than is reasonably required.

As the consequences of all errors are significant the investigation incorporated sufficient test bores at an appropriate spacing and location to adequately delineate the extent of soil contamination. This has lead to a more accurate assessment of the potential for remediation methods that may or may not be needed to be implemented.

The limits of decision errors have been defined by the DQIs which take into account sampling and laboratory errors.

7.8 OPTIMIZE THE DESIGN FOR OBTAINING DATA

The rationale for the selection of further soil sampling locations is based upon the data obtained from the previous investigations and the gaps in the data left.

The decision on the analysis parameters is based upon the findings of the site history and contamination NEPM HILs detailed in the NEPM and EPA Guidelines.

The analysis parameters chosen are:

- TPH; BTEX;
- Lead;

- PAH screen, specifically B(a)P and cacogenic TEQ as B(a)P;
- Heavy metals being As, Cu, Cr, Ni, Zn and Hg;
- OC and OP pesticides.

The criteria adopted are:

Site soils

- National Environment Protection Measure (NEPM) for residential Development with access to soils Table 1a(1) HILs NEPM A (May 2013);

- National Environment Protection Measure (NEPM) for Industrial/Commercial Development Table 1a(1) HILs NEPM D (May 2013;

8.0 SOIL SAMPLING

Three (3) soil samples were taken in August 2013 to obtain a preliminary assessment of the soil contamination levels at the eastern and western ends of the site. These were taken at depths ranging from 1.0 to 1.9 m BGL. Twenty Three (23)) soil samples of the site soils were taken in February 2014, plus three (3) field duplicates. Samples were taken at various depths, in the silty clay. These were taken to assess the likelihood of contamination with a range of contaminants recommended by the NSW EPA; these depths were: 0.3 to 2.2 m BGL. The depth of soil samples was limited by the proximity of groundwater at the site as sampling in VENM but at any potential smear zone was considered as most appropriate – groundwater was found to be at 1.3 to 1.5 m BGL. The location of soil samples is detailed at the attached site plan. All sampling was conducted in accordance with NSW EPA's "Guidelines for Consultants Reporting on Contaminated Sites – November 1997". No asbestos fragments were noted at the site, nor was there any evidence of asbestos contamination at the site. The sampling methodology is attached as ***Appendix D – SAMPLING METHODOLOGY.***

9.0 HYDROLOGY, TOPOGRAPHY & GEOLOGY

9.1 HYDROLOGY

There is a concrete drain immediately east of the site and another some 30m south of the site. The drains pass to Throsby Creek. The groundwater at the site has been identified by PE investigations to vary from 1.3 to 1.5 M BGL. The groundwater in the area has been identified by the NSW Department of Water as a shale or siltstone aquifer with a low potential for movement. The potential for contaminant movement is considered low and fracture dependant. The groundwater uncovered at site investigations is a perched upper groundwater that flows in weathered profiles. Based on the location and depth of the concrete drains the perched groundwater flow is in an easterly direction. The regional groundwater bores indicate that the groundwater has a low salinity.

9.2 TOPOGRAPHY

The site is located in a broad shallow valley south of the Hunter River, with runoff generally draining in an easterly direction. The eastern side of the site has been filled with refractory

ash and brick then covered with sand and either concrete, asphalt or topsoil. The site slopes gently to the east. The land to the west has been extensively filled and is some 1.0m above the subject site. Surface run-off from the western site is directed to storm water drainage and by-passes the subject site.

9.3 GEOLOGY

The geology of the site is identified on the 1:250,0090 Newcastle Geological Series Sheets as shale, mudstone, sandstone, Tuff and coal of the Tomago Coal Measures. The site soils found in the investigation bores consisted of silty clay under the silty loam topsoil and grass/concrete.

The site has a low site slope, less than 2%, and falls to the east. The site is not subject to flooding and is not impacted by a 1 in 100 year flood event.

10.0 ACID SULPHATE SOILS

The soil horizons in the test holes all exhibited a pH in excess of the pH of acidic sulphate soils. No sulphurous odours were present in any of the samples taken.

11.0 SITE CONDITION & SURROUNDING ENVIRONMENT

The is occupied by several buildings that are in all in good order.

The site soils are not exhibiting any indication of significant contamination across the site.

Surface water pathways do not indicate any chemical stains or odours, similarly the site soils did not exhibit same.

The property to the west of Frith Street has a history of soil and groundwater contamination by PAH and heavy metals. Groundwater movement from this site would pass under the north western corner of the subject site.

There exists no significant amount of detritus at the rear of the site, although several vehicles are stored in the open at the eastern end of the site.

12.0 RESULTS OF SOIL ANALYSIS & TESTING

The NATA Certified laboratory analysis of the site soils reveals that the analysised contaminants all fall below the maximum recommended by and do not exceed the following criteria:

- **"**Guidelines for Assessing Service Station Sites" - NSW EPA December 1994. Updated 21st February 2008;
- National Environment Protection Measure – NEPM A for Residential Development – May 2013;
- National Environment Protection Measure –NEPM D for Commercail/Industrail Development May 2013;

With the following exceptions:

- **Bore S15 0.9 BGL**
  - **TRH** at 0.9m BGL at 2,100mg/kg exceeds apparent NSW EPA TPH acceptable level of 1,000 mg/kg;
  - **PAH** at 0.9 m BGL at 98 mg/kg exceeds EPA criteria of 20 mg/kg, but is acceptable for NEPM A and D;
  - **B(a)P TEQ** at 8.4 mg/kg exceeds NEPM A criteria of 3 mg/kg, but is in compliance with NEPM D of 40 mg/kg;
  - **Total Cr** at 260 mg/kg is potentially in excess of NEPM A if the chromium level is Cr6+, which is unlikely given the soil raised pH. The level does not exceed the NEPM D criteria.

- **Bore S17 0.3 BGL**
  - **PAH** at 0.3 m BGL at 1,200mg/kg exceeds the NEPM A criteria of 300 mg/kg, but is within the NEPM D criteria of 4,000 mg;
  - **B(a)P TEQ** at 110 mg/kg exceeds NEPM A criteria of 3 mg/kg and exceeds the NEPM D criteria of 40 mg/kg;

The two sampling bores detailed above indicate a hot spot in the soils at the north western rend of the site - both are to be found in the vicinity of the former bowling green and the former heavy application of irrigation is thought to have brought contaminants up from the former contaminated groundwater. This hot spot area does not restrict the use of the site for commercial/industrial purposes, unless major building works are envisaged then it is recommended to be removed.

13.0 RESULST OF GROUNDWATER SAMPLING AND ANALYSIS

The NATA Certified laboratory analysis of the site soils reveals that the analysised contaminants all fall below the maximum recommended by and do not exceed the following criteria:

- "Guidelines for Assessing Service Station Sites" - NSW EPA December 1994. Updated 21st February 2008;

- National Environment Protection Measure – NEPM for Fresh Water Groundwater GILs – May 2013;

With the following exceptions:

- **Bore S4**, located at the north western corner of the site:
  - Heavy metals Cadmium at 0.3 ug/L exceeds NEPM GIL of 0.3 ug/L which is less than a 250% differential;
  - Copper at 5 ug/L exceeds NEPM GIL of 1.4 ug/L;
  - Nickel 31 ug/L exceeds the NEPM GIL at 11 ug/L;
  - Lead at 13 ug/L exceeds the NEPM GIL at 3.5 ug/L;
  - Zinc at 90 ug/L exceeds the NEPM GIL at 8 ug/L.

Nickel, Nickel, Lead and Zinc groundwater concentrations all exceed 250% of the NEPM GIL criteria. This indicates that the groundwater that has passed from the site west of Frith

Street has still high levels of metal contaminants present. The groundwater sampling at the eastern end of the site indicates that the contamination has not passed through the site but to the site north of the subject site.

14.0 FIELD DUPLICATE ASSESSMENT

Table 12.1 Field Duplicate Assessment

	S11	**S11(1)**	RPD%	LOR mg/kg	10 X LOR
Arsenic	5	7	33.3	3	30
Cadmium	<0.3	<0.3	0	0.3	3
Chromium	13	8.4	42.2	0.3	3
Copper	13	15	14.3	0.5	5
Lead	10	10	0	1	10
Nickel	11	8.9	21.1	0.5	5
Zinc	43	50	15.05	0.5	5
Mercury	<0.01	0.02	22.22	0.05	0.5
Alkalinity	56	41	30.1	1	10
TRH C10-C36	240	<110	***74.4***	110	1,100
TRH C6-C9	<20	<20	0	20	250
PAH	19	9.1	*70.46*	0.8	8.0
B(a)P TEQ	2.0	1.1	0	0.1	1.0
Benzene	<0.1	<0.1	0	0.1	1
Toluene	<0.1	<0.1	0	0.1	1
Ethylbenzene	<0.1	<0.1	0	0.1	1
Xylene	<0.3	<0.3	0	0.3	3
pH	6.2	6.6	0.06		

*Note: RPD = (Reading 1 – Reading 2)/ (mean of 1 &2) x 100%

Table 12.2 Field Duplicate Assessment

	S15	**S15(1)**	RPD%	LOR mg/kg	10 X LOR
Arsenic	<3	<3	0	3	30
Cadmium	<0.3	<0.3	0	0.3	3
Chromium	260	270	3.77	0.3	3
Copper	12	11	8.69	0.5	5
Lead	17	16	6.06	1	10
Nickel	310	340	9.23	0.5	5
Zinc	36	29	21.5	0.5	5
Mercury	0.01	0.01	0	0.05	0.5
Alkalinity	1200	1400	15.4	1	10
TRH C10-C36	2100	2700	25.0	110	1,100
TRH C6-C9	<20	<20	0	20	250
PAH	98	3.4	***186.6***	0.8	8.0
B(a)P TEQ	8.4	0.5	***177.5***	0.1	1.0
Benzene	<0.1	<0.1	0	0.1	1
Toluene	<0.1	<0.1	0	0.1	1
Ethylbenzene	<0.1	<0.1	0	0.1	1
Xylene	<0.3	<0.3	0	0.3	3
pH	9.0	7.8	14.29		

*Note: RPD = (Reading 1 – Reading 2)/ (mean of 1 &2) x 100%

Table 12.3 Field Duplicate Assessment

	S22	**S22(1)**	RPD%	LOR mg/kg	10 X LOR
Arsenic	<3	<3	0	3	30

Cadmium	<0.3	<0.3	0	0.3	3
Chromium	14	15	6.90	0.3	3
Copper	3.3	4.9	39.02	0.5	5
Lead	8	12	40.0	1	10
Nickel	3.5	7.1	67.92	0.5	5
Zinc	17	52	***101.45***	0.5	5
Mercury	<0.01	<0.01	0	0.05	0.5
Alkalinity	89	130	37.44	1	10
TRH C10-C36	<110	<110	0	110	1,100
TRH C6-C10	<20	<20	0	20	250
PAH	1.3	2.4	59.45	0.8	8.0
B(a)P TEQ	<0.2	0.3	40	0.1	1.0
Benzene	<0.1	<0.1	0	0.1	1
Toluene	<0.1	<0.1	0	0.1	1
Ethylbenzene	<0.1	<0.1	0	0.1	1
Xylene	<0.3	<0.3	0	0.3	3
pH	8.3	8.3	0		

*Note: RPD = (Reading 1 – Reading 2)/ (mean of 1 &2) x 100%

The results of the field duplicate analysis, indicate no unacceptable match when compared to acceptable criteria except for:

- PAH in samples S11 and S11(1);
- PAH and B(a)P TEQ in samples S15 and S15(1);
- Zinc in samples S22 and SS22(1).

As the PAH differences are significant only the higher results are included in the site assessment to negate any under estimation of the impact. Both results were obtained within the fill material on site and reflect the non-homogeneous nature of the fill. None of the duplicates were mixed on site to obtain a split sample (to avoid loss of volatiles), but rather split during sampling.

15.0 LABORATORY SPIKES AND BLANKS

The NATA Certified laboratory testing of spikes and blanks indicate that the PE holding and transportation of samples has not impacted upon the samples.

16.0 LABORATORY PERFORMANCE

The laboratory QA indicates that the sample analysis program is within acceptable criteria.

16.1 CHAIN OF CUSTODY FORMS

The COC forms were counter signed by the laboratory when the samples were delivered to the laboratory.

16.2 HOLDING TIMES

SGS Laboratories record the holding times for each method and they are all within acceptable limits.

16.3 ANALYTICAL METHODS

The analytical methods utilized by the laboratory are specified at the Certificate of Analysis. The methods utilized are compatible with the requirements of the NSW EPA Guidelines for Laboratory Testing Techniques.

16.4 LABORATORY ACCREDITATION

The laboratory utilized is NATA Certified, number 2562. Similarly the laboratory is accredited for each of the metrologies used, as detailed in their Certificate of Analysis.

16.5 LABORATORY PERFORMANCE

Pacific Environmental batches duplicate samples to an alternative laboratory on a bi-annual basis to ensure quality control between laboratories. Pacific Environmental also rotates the main laboratory with the duplicate sample laboratory to also check consistency. Since October 2003 the laboratories utilized have been MGT Labmark Laboratories Mayfield (now Eurofins mgt) and SGS laboratories Alexandria. Both laboratories have shown consistency within acceptable limits (70 –130%), except when sample test results are at or close to the limits of detection. This minor inconstancy is not considered significant.

16.6 SURROGATES, DUPLICATES AND SPIKES/PERCENT RECOVERIES

The laboratory surrogates, duplicates and spike/percentage recoveries recorded data are attached at Appendix F – LABORATORY TEST DATA . All recorded data is within acceptable limits.

16.7 METHOD/INSTRUMENT & LIMITS OF RECOVERY

The method/instrument and Limits of Recovery are recorded on the QA/QC sheets for each analyte. These limits are well below the levels of concern recorded in the relevant Guidelines.

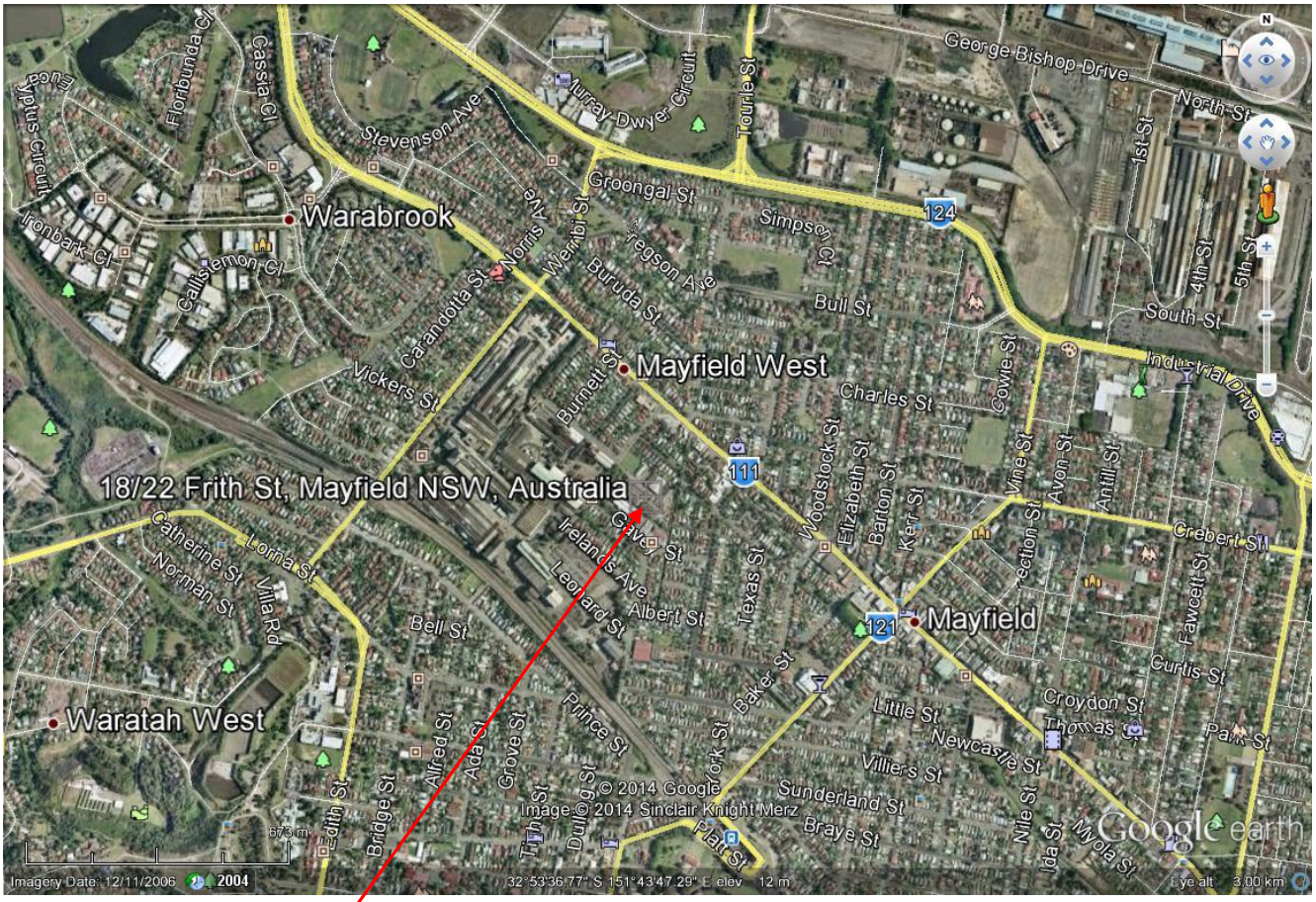
17.0 CONCLUSIONS

After a review of the site in accordance with the NSW EPA (formerly NSW OEH) "Guidelines for Consultants Reporting on Contaminated Sites – November 1997" the following findings are applicable:

- The site soils have no significant history or visible evidence that would preclude the development or use of the site for the accepted criteria for residential development with access to soils or industrial development, with the exception of two hot spots (for PAH and TRH) at the north western corner of the site (located in the former bowling green area).
- It is recommended that if future development is considered in the bowling green area that the two hot spots be removed to a depth of 1.0 m BGL and to a radius of 5m. This recommendation is to be validated by a delineation of the hot spots before removal to a NSW EPA licensed landfill. .

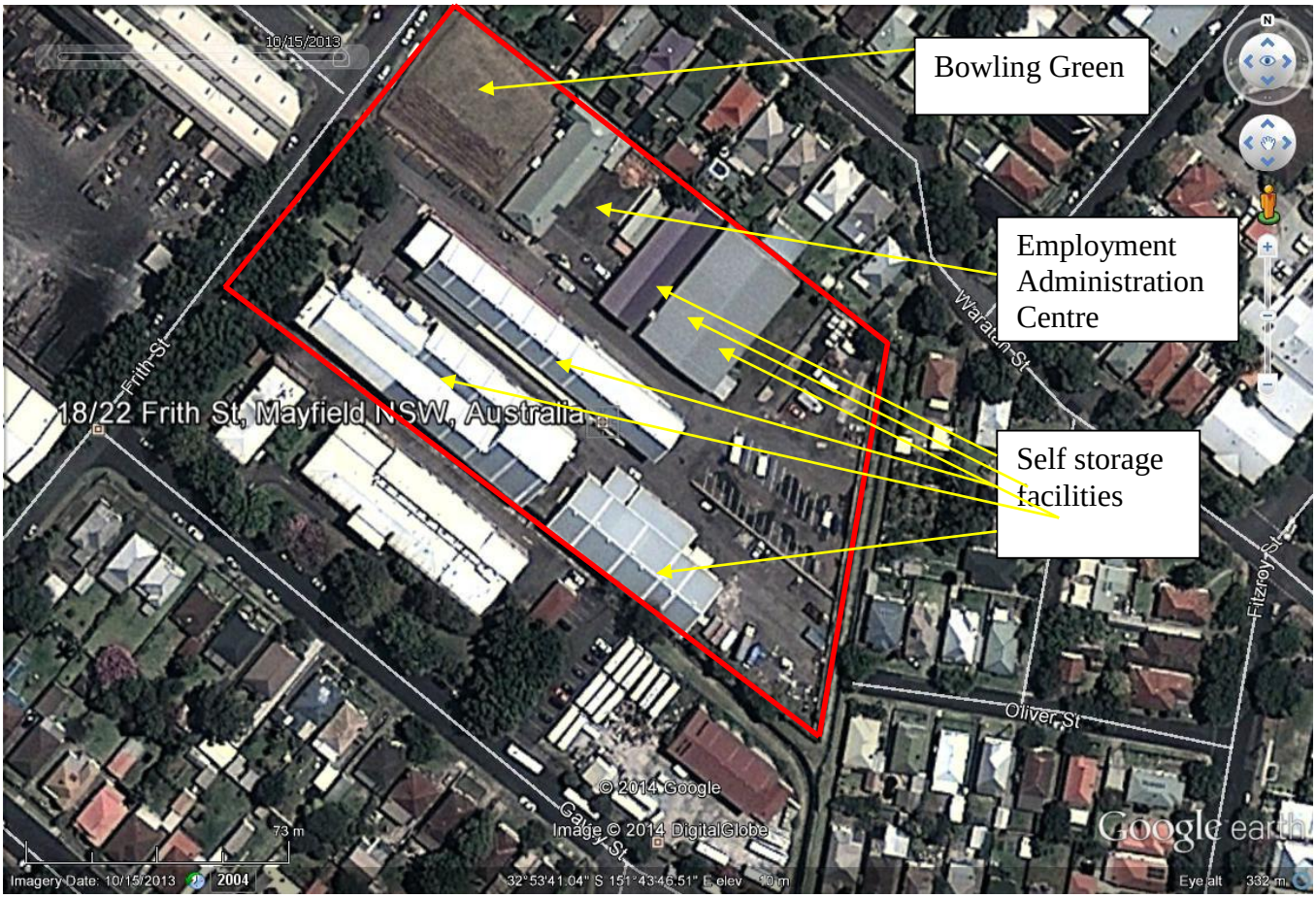
- No remediation action is recommended at this stage.

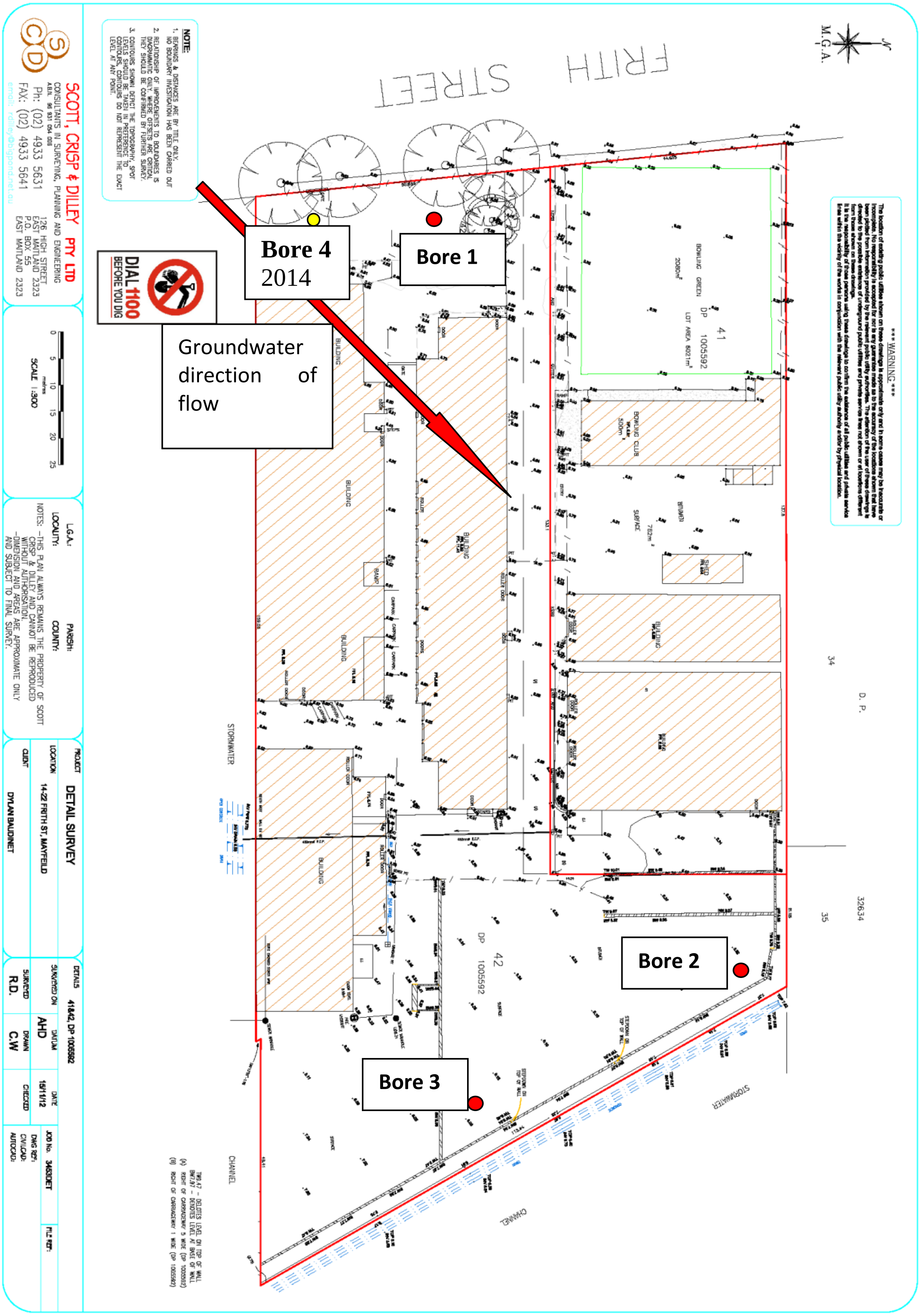
APPENDIX A SITE LOCATION



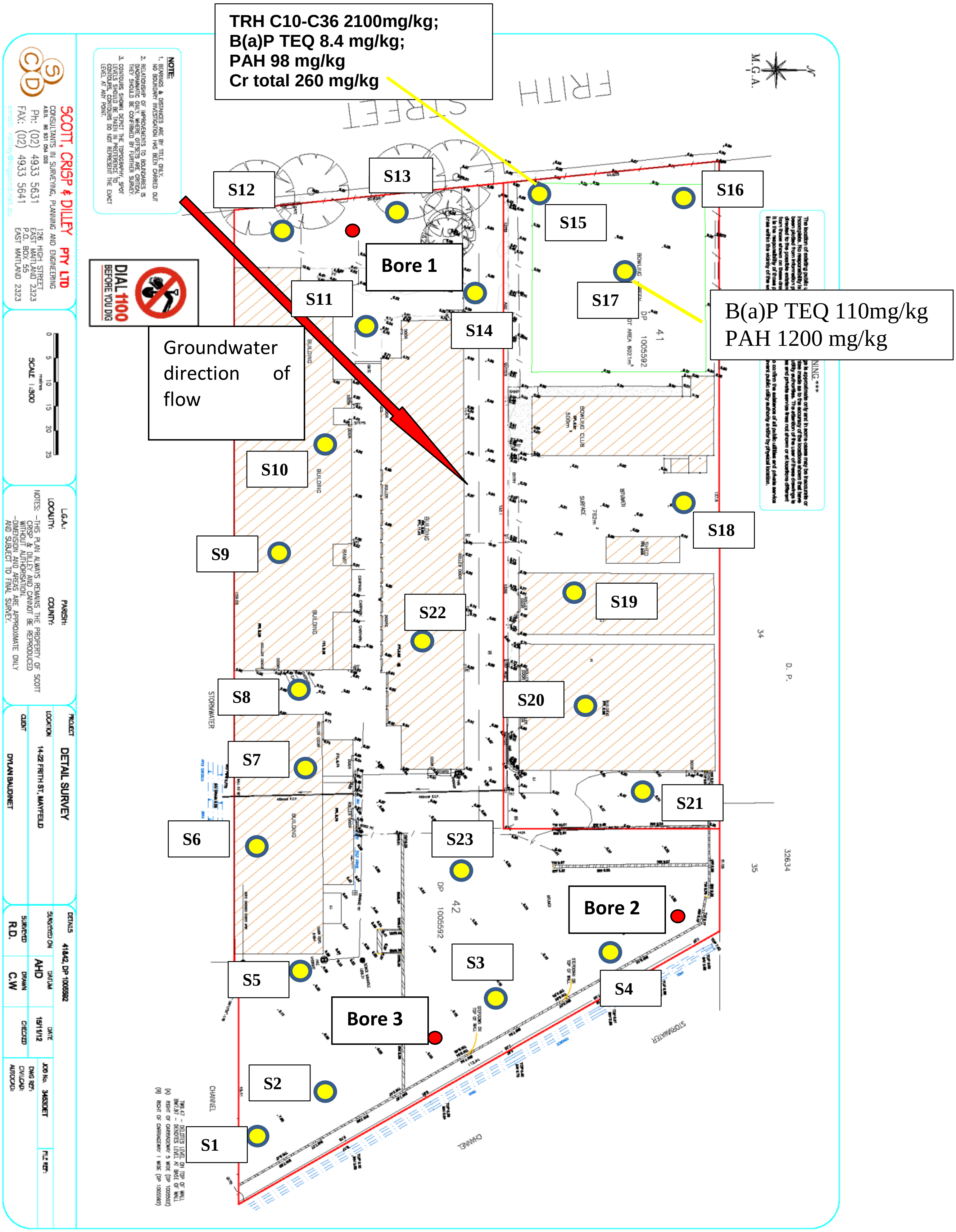
Site Location

APPENDIX B – SITE PLAN & 2013/14 BORE LOCATIONS




Bore 4
2014
Bore 1
Groundwater direction of flow
Bore 2
Bore 3
FRITH STREET
DIAL 1100 BEFORE YOU DIG
SCOTT, CRISP & DILLEY PTY LTD
DETAIL SURVEY
14-22 FRITH ST, MAYFIELD

APPENEDIX C- 2014 SOIL TEST BORES


TRH C10-C36 2100mg/kg;
B(a)P TEQ 8.4 mg/kg;
PAH 98 mg/kg
Cr total 260 mg/kg
B(a)P TEQ 110mg/kg
PAH 1200 mg/kg
Groundwater direction of flow
FRITH STREET
Bore 1
Bore 2
Bore 3
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
DIAL 1100 BEFORE YOU DIG
SCOTT, CRISP & DILLEY PTY LTD
DETAIL SURVEY
14-22 FRITH ST, MAYFIELD
DYLAN BAUDINET

APPENDIX D –

D1 - SAMPLING METHODOLOGY - SOILS

All samples were taken direct from the middle of the soil on the auger head immediately it was raised. All samples were immediately removed from the auger head by hand with a stainless trowel. All samples were placed in a laboratory prepared clean glass bottle with no air space after placement of the lid. Each bottle was immediately sealed with a screw cap lid incorporating a Teflon insert as a seal. All sample jars were immediately filled from the soil collected on the stainless steel trowel. All jars were filled to capacity, leaving no pockets of free space for vapours to collect in.

All samples collected at the site were assigned an individual identification number marked on the lid as well as the exterior label. Each label was marked with the Pacific Environmental name, the date as well as the name of the person taking the samples. The sample Chain of Custody Form was commenced in the field by immediately entering the sample number at the time of sampling. The site field bore logs were not undertaken at each hole, as the site soils were relatively uniform.

Sampling personnel used single use PVC-nitrile gloves when handling all samples. All samples were place in a 12 volt fridge at 4^0C and kept away from direct sun light or heat sources. Samples were transported to the NATA Certified laboratory directly by the sampler in the same day. No additional preservation was considered necessary. The laboratory notified this office immediately the samples were received.

The auger shaft and head and sampling trowel used to drill and samples the test bores and obtain samples were cleaned by high pressure washing, decontamination with a 2% Decon-90 solution, followed by rinse with clean potable water, then a rinse with de-ionized water. This procedure was undertaken prior to the auguring at each sample location and before each sample was obtained.

HANDLING, CONTAINMENT & TRANSPORTATION

- All daily activities were recorded, including significant events, sampling locations and numbers, observations, measurements and weather conditions.
- Sample containers were as detailed above Sample containers were marked with an indelibly code including sample number, date and PE name.
- Handling and transportation of the sample from one authorized individual or place to another was accomplished through Chain-of-Custody procedures involving a form, similar to Appendix H of AS4482.1 – 1997.
- The sample was kept in a portable 12 volt 4^0C fridge during the sampling period. It was then transferred to the laboratory. The fridge was kept away from sources of heat.
- Holding times did not exceed 24 hours, and in any event comply with Table 4 of AS 4482.1 – 1997.

DECONTAMINATION OF SAMPLING EQUIPMENT

- All sampling equipment was thoroughly washed with Decontam 5% (phosphorus free detergent) and then triple rinsed with demineralized water before use at each sampling location

D2 - SAMPLING METHODOLOGY GROUNDWATER

1.0 SAMPLING EQUIPMENT - MATERIALS

The sample containers were:

 Sealed 250mL laboratory prepared clean borosilicate opaque glass jars with HDPE seals to the lids, with no preservative added to the jar;
 Sealed 100Ml laboratory prepared clean borosilicate glass jars with HDPE seals to the lids, with no preservative added to the jar for volatiles

2.0 APPARATUS – PUMPS

Sampling from the sample bores was via a micro purge kit (MP15), which had been checked and certified by the supplier prior to use. The CO2 operated pump was pre-set so as not exceed the required pump rate such that the draw down in the well did not exceed 100mm.
The bores in question recharged at 50mm in 30 seconds; thus the pump rate selected is 0.12L/min (less than the required 0.196L/min. During purging the pump rate was checked to ensure that it is still valid.

3.0 PURGING

The wells were purged between 24 hours prior to sampling. Purging took place for a minimum of three (3) well volumes of water and until the groundwater parameters (dissolved oxygen, pH, temperature, Total Dissolved Solids (in place of electrical conductivity) and redox potential) had stabilized to within approximately 10% over three consecutive readings. The well groundwater level was monitored continuously during purging to ensure levels it did not drop below 100mm from commencement level. A TPS 90FLMV water quality meter (calibrated prior to use by the supplier) was utilized to monitor the groundwater field parameters. All purge water was disposed of at an appropriate NSW EPA licensed waste depot.

4.0–SAMPLING

The following procedures were employed in obtaining pumped water samples:
 Samples were collected as close as possible to the exit from the borehole.
 Sampling commenced 24 hours following purging, as detailed at Section 2.3 above;
 Sample parameters were measured in the field prior to sampling being: pH, temperature, dissolved oxygen, Total Dissolved Solids (in place of electrical conductivity) and redox potential.
 Sampling from the desired-screened area was achieved by slowly lowering the pump and discharge hose before into the borehole and air locking the hose.
 On-site filtration of samples was undertaken, utilizing glass fibre filters in the 0.4 to 0.5um pore size range;
 A low flow micro-purge sampler was utilized to fill the laboratory prepared containers with groundwater extracted from the wells. All sample containers were completely filled to eliminate headspace;
 All sample containers were placed immediately upon filling into a 40C portable fridge for transport to the analytical laboratory utilizing Chain of Custody (COC) documentation.

5.0– HANDLING, CONTAINMENT & TRANSPORTATION

 All daily activities were recorded, including significant events, sampling locations and numbers, observations, measurements and weather conditions.
 Sample containers were as detailed above sample containers were marked with an indelibly code including sample number, date and PE name.
 Handling and transportation of the samples from one authorized individual or place to another was accomplished through Chain-of-Custody procedures involving a form, similar to Appendix H of AS4482.1 – 1997.
 Samples were kept in a portable 12 volt 40C fridge during sampling periods. They were then transferred to the laboratory. The fridge was kept away from sources of heat.
 Holding times did not exceed 24 hours, and in any event comply with Table 4 of AS 4482.1 – 1997.

5.0 - DECONTAMINATION OF SAMPLING EQUIPMENT

 All debris and sullage from sampling and purging was not be allowed to contaminate the site and was collected and disposed of appropriately as J120 waste.
 All sampling equipment was thoroughly washed with Decontam 5% (phosphorus free detergent) and then triple rinsed with demineralized water before use at each sampling location.

5.1 - PUMP AND HOSE SAMPLING EQUIPMENT

The following procedure was adopted for sampling equipment:
 Remove debris, soil or water adhering to the pump and delivery pipe work by scraping, brushing or wiping with disposal towels.
 Wash the pump thoroughly in a bucket with phosphate-free detergent using brushes and disposal towels.
 Rinse the pump thoroughly in a second bucket with grade 3 water as defined in ISO 3696
 Repeat of steps above if required
 Rinse with Grade 3 water.
 Collect the rinsate blank and preserve in accordance with AS 203.1
 Pump two sample hose volumes of Grade 3 water through the sampling hose.
 Dry the equipment with clean disposable towels or air-dry.
 Organic solvents were not be utilized for decontamination purposes.

APPENDIX E – COMPARISON OF SAMPLE ANALYSIS WITH RELEVANT GUIDELINES

Page 1 - Soil Samples – Laboratory Results August 2013

ANALYTE Soil	UNITS	LOR		BH1(2) 1.9	BH2(2) 1.4	BH3(2) 1.0		NEPM A*	NEPM D**	EPA# Criteria		Units	LOR	BH1(2) 1.9	BH2(2) 1.4	BH3(2) 1.0		NEPM A*	NEPM D**	EPA# Criteria
TRH –C6-C9	mg/kg	20		<20	<20	<20				65#	As	mg/kg	3	5	<3	7		100	3000	
C10-C14	mg/kg	20		<20	25	<20				1,000#	Cd	mg/kg	0.3	0.8	.<0.3	<0.3		20	900	
C15-C28	mg/kg	45		<45	***2200***	<45					Cr (total)	mg/kg	0.3	5.2	25	13		100(Cr6+)	3600(Cr6+)	
C29-C36	mg/kg	45		<45	***1100***	<45					Cu	mg/kg	0.5	17	14	5.4		6,000	240000	
C10-C36	mg/kg	110			***3,300***															
Benzene	mg/kg	0.1		<0.1	<0.1	<0.1			-	1#	Ni	mg/kg	0.5	6.1	13	1.0		400	6000	
Toluene	mg/kg	0.1		<0.1	<0.1	<0.1			-	130#	Pb	mg/kg	1	28	6	29		300	1500	300
Ethylbenzene	mg/kg	0.1		<0.1	<0.1	<0.1			-	50#	Zn	mg/kg	0.5	59	26	73		7,4000	400000	
Xylene	mg/kg	0.3		<0.3	<0.3	<0.3			-	25#	Hg	mg/kg	0.01	0.01	<0.01	0.03		50 (10)	180(910)	
B(a)P	mg/kg	0.1		0.2	***110***	0.3				1#										
B(a)P TEQ	mg/kg.	0.2		0.2	***160***	0.4		3	40											
PAH (TOTAL)	mg/kg	0.8		2.4	***1700***	3.1		300	4,000	20#										

Note: Locations of soil samples are identified by reference to Appendix A

- NSW EPA Service Station Guidelines; NEPM A –Residential with access to soils – May 2013;** NEPM D – Industrial/Commercial soils.

Exceedance of NSW EPA service Station Guidelines for Sensitive sites. marked thus with bold and italics.

Exceedances of NEPM A Guidelines marked with bold and italics

Exceedance of NEPM D Guidelines marked with bold and italics.

Page 2 -Groundwater Samples Contaminants – August 2013 (BH1, BH2 & BH3)/February 2014 (B4)

Analyte Groundwater	Units	LOR	BH1(2)	BH2(2)	BH3(2)	B4(2014)	NEPM Fresh Water HSL	EPA#
								Criteria
TRH –C6-C9	ug/L	40	<40	<40	<40			10,000
C10-C14	ug/L	100	<100	200	<100			
C15-C28	ug/L	200	<200	320	<200			
C29-C36	ug/L	200	<200	<200	<200			
Benzene	ug/L	0.5	<0.5	6.7	<0.5		950	300#
Toluene	ug/L	0.5	<0.5	<0.5	<0.5		-	300#
Ethylbenzene	ug/L	0.5	<0.5	<0.5	<0.5		-	140#
Xylene	ug/L	1.5	<1.5	<1.5	<1.5		550	380#
B(a)P	ug/L	**0.1**	**<0.1**	**<0.1**	**<0.1**		-	-
		-	-					-
PAH (TOTAL)	ug/L	**1**	**<1**	**<1**	<1			3#
Naphthalene	ug/L	0.1	<0.1	<0.1	<0.1		16	

Analyte Groundwater	Units	LOR	BH1	BH2	BH3	B4	NEPM Fresh Waters**	NSW EPA#
As	ug/L	1				**1**	**24(111) 13(V)**	
Cd	ug/L	0.1				***0.3***	**0.2**	
Cr (total)	ug/L	1				**1**	**1**	
Cu	ug/L	1				***5***	**1.4**	
Ni	ug/L	1				***31***	**11**	
Pb	ug/L	1	<1	<1	<1	***13***	3.4	1-5
Zn	ug/L	5				***90***	8	
Hg	ug/L	0.0001				<0.0001	0.06	

Note: Locations of soil samples are identified by reference to Appendix B

- NSW EPA Service Station Guidelines;

Exceedances of NSW EPA service Station Guidelines for Sensitive sites. marked thus with bold and italics.

Exceedance of NEPM Groundwater GILs.

Page 3 - Soil Contaminants – February 2014

ANALYTE Soil	UNITS	LOR	S1 0.6	S2 0.8	S3 0.6	S4 1.4	S5 1.5	S6 0.9	S7 1.5	S8 2.0	NEPM A	NEPM D	EPA# Criteria
TRH –C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20	<20	<20			65#
													1,000#
TRH C10-C36	mg/kg	110	<110	<110	<110	<110	180	140	<110	<110			
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		-	1#
Toluene	mg/kg	0.1	<0.1	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1		-	130#
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		-	50#
Xylene	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		-	25#
Carcinogenic PAH as B(a)P TEQ	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	2.1	0.4	<0.2	<0.2		3	
PAH (TOTAL)	mg/kg	0.8	<0.8	2.5	<0.8	<0.8	15	1.7	<0.8	<0.8		300	20#

	Units	LOR	S1 0.6	S2 0.8	S3 0.6	S4 1.4	S5 1.5	S6 0.9	S7 1.5	S8 2.0	NEPM A*	EPA# Criteria
As	mg/kg	3	<3	<3	<3	<3	<3	<3	4	<3	100	
Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	20	
Cr (total)	mg/kg	0.3	6.7	5.7	14	5.7	6.3	9.0	16	17	100(Cr6+)	
Cu	mg/kg	0.5	7.5	4.4	0.9	1.9	18	4.2	1.4	1.6	6,000	
Ni	mg/kg	0.5	7.2	5.3	1.0	0.8	9.3	5.3	1.5	1.9	400	
Pb	mg/kg	1	7	5	13	6	7	9	11	12	300	300
Zn	mg/kg	0.5	31	17	3.7	4.7	35	12	3.7	50	7,4000	
Hg	mg/kg	0.01	0.14	0.28	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	50 (10)	

Note: Locations of soil samples are identified by reference to Appendix B

March 2014

- NSW EPA Service Station Guidelines; * Guidelines for NSW Site Auditor Scheme; NEPM A –Residential with access to soils – May 2013; ** NEPM B – Residential with restricted access to soils.

Exceedance of NSW EPA service Station Guidelines for Sensitive sites. marked thus with bold and italics.

Exceedances of NEPM A Guidelines marked with bold and italics

Exceedance of NEPM B Guidelines marked with bold and italics..

Note NSW EPA Guideline Investigation Levels have not been applicable since April 2014 and NEPM Guidelines now apply in their place.

Page 4 - Soil Contaminants – February 2014

ANALYTE Soil	UNITS	LOR	S9 2.0	S10 1.2	S11 1.5	S12 1.1	S13 1.0	S14 0.9	S15 0.9	S16 1.0	NEPM A	NEPM D	EPA# Criteria
TRH –C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20	<20	<20			65#
													1,000#
TRH C10-C36	mg/kg	110	120	300	240	270	410	<110	***2100***	<110			
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		-	1#
Toluene	mg/kg	0.1	<0.1	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1		-	130#
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		-	50#
Xylene	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		-	25#
Carcinogenic PAH as B(a)P TEQ	mg/kg	0.2	<0.2	1.3	2.0	<0.2	1.1	0.2	***8.4***	1.1	40	3	
PAH (TOTAL)	mg/kg	0.8	0.9	11	19	0.9	10	2.0	***98***	10	4000	300	20#

	Units	LOR	S9 2.0	S10 1.2	S11 1.5	S12 1.1	S13 1.0	S14 0.9	S15 0.9	S16 1.0	NEPM A*	NEPM D	EPA# Criteria
As	mg/kg	3	<3	10	5	<3	10	<3	<3	9	100	3000	
Cd	mg/kg	0.3	<0.3	0.5	<0.3	<0.3	0.4	<0.3	<0.3	0.3	20	900	
Cr (total)	mg/kg	0.3	9.8	28	13	4.2	19	5.9	***260***	43	100 (Cr6+)	3600 (Cr6+)	
Cu	mg/kg	0.5	1.5	31	13	8.3	480	17	12	14	6,000	240000	
Ni	mg/kg	0.5	1..2	14	11	1.3	40	4.5	310	14	400	6000	
Pb	mg/kg	1	11	71	10	6	29	16	17	26	300	1500	300
Zn	mg/kg	0.5	3.9	140	43	9.3	350	44	36	57	7,4000	400000	
Hg	mg/kg	0.01	0.14	0.28	<0.01	<0.01	0.01	<0.01	0.01	<0.02	50 (10)	730 (180)	

Note: Locations of soil samples are identified by reference to Appendix B

March 2014

- NSW EPA Service Station Guidelines; * Guidelines for NSW Site Auditor Scheme; NEPM A –Residential with access to soils – May 2013;
** NEPM B – Residential with restricted access to soils.

Exceedances of NSW EPA service Station Guidelines for Sensitive sites. marked thus with bold and italics.

Exceedances of NEPM A Guidelines marked with bold and italics

Exceedance of NEPM D Guidelines marked with bold and italics.

Note NSW EPA Guideline Investigation Levels have not been applicable since April 2014 and NEPM Guidelines now apply in their place.

Page 5 - Soil Contaminants – February 2014

ANALYTE Soil	UNITS	LOR	S17 0.3	S18 1.7	S19 0.6	S20 2.2	S21 0.7	S22 0.7	S23 1.8		NEPM A	NEPM D	EPA# Criteria		Units	LOR	S17 0.3	S18 1.7	S19 0.6	S20 2.2	S21 0.7	S22 0.7	S23 1.8		NEPM A*	NEPM D	EPA# Criteria
TRH –C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20	<20				65#	As	mg/kg	3	8	5	<3	<3	<3	<3	9		100	3000	
													1,000#	Cd	mg/kg	0.3	0.4	0.3	<0.3	<0.3	<0.3	<0.3	<0.3		20	900	
														Cr (total)	mg/kg	0.3	50	22	7.2	7.6	7.4	14	23		100 (Cr6+)	3600 (Cr6+)	
TRH C10-C36	mg/kg	110	<110	<110	<110	<110	<110	<110	<110					Cu	mg/kg	0.5	16	4.2	8.0	0.5	6.2	3.3	17		6,000	240000	
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			-	1#	Ni	mg/kg	0.5	1.4	1.8	11	0.7	2.8	3.5	32		400	6000	
Toluene	mg/kg	0.1	<0.1	<0.1	0.6	<0.1	<0.1	<0.1	<0.1			-	130#	Pb	mg/kg	1	8	15	4	5	11	8	16		300	1500	300
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			-	50#	Zn	mg/kg	0.5	48	7.0	32	28	38	17	74		7,4000	400000	
Xylene	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3			-	25#	Hg	mg/kg	0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01	0.01		50 (10)	730 (180)	
Carcinogenic PAH as B(a)P TEQ	mg/kg	0.2	***110***	1.3	2.0	<0.2	1.1	0.2	***8.4***		3	40															
PAH (TOTAL)	mg/kg	0.8	***1200***	3.7	1.7	<0.8	<0.8	1.3	***69***		300	4000	20#														

Note: Locations of soil samples are identified by reference to Appendix B

March 2014

- NSW EPA Service Station Guidelines; * Guidelines for NSW Site Auditor Scheme; NEPM A –Residential with access to soils – May 2013; ** NEPM B – Residential with restricted access to soils.

Exceedance of NSW EPA service Station Guidelines for Sensitive sites. marked thus with bold and italics.

Exceedances of NEPM A Guidelines marked with bold and italics

Exceedance of NEPM D Guidelines marked with bold and italics..

Note NSW EPA Guideline Investigation Levels have not been applicable since April 2014 and NEPM Guidelines now apply in their place.

APPENDIX E – QUALITY CONTROL

E 1.0 field quality control

The field use of the PID meter indicated that the laboratory analysis results for TRH and BTEX were at levels compatible with PID meter readings (+/- 5%).

E 2.0 LABORATORY QA/QC

2.1 CHAIN OF CUSTODY FORMS

The COC forms were counter signed by the laboratory when the samples were delivered to the laboratory.

2.2 HOLDING TIMES

SGS Laboratories record the holding times for each method and they are all within acceptable limits.

2.3ANALYTICAL METHODS

The analytical methods utilized by the laboratory are specified at the Certificate of Analysis. The methods utilized are compatible with the requirements of the NSW EPA Guidelines for Laboratory Testing Techniques.

2.4 LABORATORY ACCREDITATION

The laboratory utilized is NATA Certified, number 2562. Similarly the laboratory is accredited for each of the metrologies used, as detailed in their Certificate of Analysis.

2.5 LABORATORY PERFORMANCE

Pacific Environmental batches duplicate samples to an alternative laboratory on a bi-annual basis to ensure quality control between laboratories. Pacific Environmental also rotates the main laboratory with the duplicate sample laboratory to also check consistency. Since October 2003 the laboratories utilized have been Eurofins MGT Laboratories Mayfield (formerly MGT Labmark) and SGS laboratories Mascot. Both laboratories have shown consistency within acceptable limits (70 –130%), except when sample test results are at or close to the limits of detection. This minor inconstancy is not considered significant.

2.6 SURROGATES, DUPLICATES AND SPIKES/PERCENT RECOVERIES

The recorded data is attached at ***Appendix F – SURROGATE & SPIKE QA/QC***. All recorded data is within acceptable limits.

2.7 METHOD/INSTRUMENT & LIMITS OF RECOVERY

The method/instrument and Limits of Recovery are recorded on the QA/QC sheets for each analyte. These limits are well below the levels of concern recorded in the relevant Guidelines.

APPENDIX F - SITE PHOTOGRAPHS

View looking north west across former bowling green

View looking north east across yard at rear of former bowling green club building, now employment administration office.

View looking south east down access lane adjoining the central self storage building

APPENDIX G - LABORATORY TEST DATA

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS		LABORATORY DETAILS	
Contact	STEPHEN SMITH	Manager	Huong Crawford
Client	PACIFIC ENVIRONMENTAL AUSTRALIA PTY LTD	Laboratory	SGS Alexandria Environmental
Address	PO BOX 4045 ILLAWONG NSW 2234	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	61 2 95432825	Telephone	+61 2 8594 0400
Facsimile	(Not specified)	Facsimile	+61 2 8594 0499
Email	decontam@bigpond.net.au	Email	au.environmental.sydney@sgs.com
Project	**Soil Samples**	SGS Reference	**SE119988 R0**
Order Number	(Not specified)	Report Number	0000063867
Samples	3	Date Reported	27 Aug 2013
		Date Received	20 Aug 2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE119988.001 Soil 19/8/13 14:20 BH1(2)	SE119988.002 Soil 19/8/13 15:10 BH2(2)	SE119988.003 Soil 19/8/13 16:10 BH3(2)
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1		<0.1	<0.1	<0.1
Toluene	mg/kg	0.1		<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1		<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2		<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1		<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1		<0.1	**0.7**	**0.1**
Surrogates						
Dibromofluoromethane (Surrogate)	%	-		**87**	**90**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-		**92**	**99**	**92**
d8-toluene (Surrogate)	%	-		**78**	**81**	**77**
Bromofluorobenzene (Surrogate)	%	-		**78**	**90**	**82**
Totals						
Total Xylenes*	mg/kg	0.3		<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6		<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25		<25	<25	<25
TRH C6-C9	mg/kg	20		<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-		**87**	**90**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-		**92**	**99**	**92**
d8-toluene (Surrogate)	%	-		**78**	**81**	**77**
Bromofluorobenzene (Surrogate)	%	-		**78**	**90**	**82**
VPH F Bands						
Benzene (F0)	mg/kg	0.1		<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25		<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20		<20	**25**	<20
TRH C15-C28	mg/kg	45		**50**	**2200**	<45
TRH C29-C36	mg/kg	45		<45	**1100**	<45
TRH C37-C40	mg/kg	100		<100	**210**	<100
TRH C10-C36 Total	mg/kg	110		<110	**3300**	<110
TRH C10-C40 Total	mg/kg	210		<210	**3500**	<210
TRH F Bands						
TRH >C10-C16 (F2)	mg/kg	25		<25	**77**	<25
TRH >C16-C34 (F3)	mg/kg	90		<90	**3000**	<90
TRH >C34-C40 (F4)	mg/kg	120		<120	**390**	<120

Parameter	Units	LOR	Sample Number: SE119988.001 Sample Matrix: Soil Sample Date: 19/8/13 14:20 Sample Name: BH1(2)	SE119988.002 Soil 19/8/13 15:10 BH2(2)	SE119988.003 Soil 19/8/13 16:10 BH3(2)
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420					
Naphthalene	mg/kg	0.1	<0.1	**1.5**	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	**0.8**	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	**1.4**	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	**3.5**	<0.1
Acenaphthene	mg/kg	0.1	<0.1	**11**	<0.1
Fluorene	mg/kg	0.1	<0.1	**12**	<0.1
Phenanthrene	mg/kg	0.1	**0.3**	**240**	**0.3**
Anthracene	mg/kg	0.1	<0.1	**43**	<0.1
Fluoranthene	mg/kg	0.1	**0.5**	**370**	**0.6**
Pyrene	mg/kg	0.1	**0.4**	**330**	**0.5**
Benzo(a)anthracene	mg/kg	0.1	**0.2**	**120**	**0.2**
Chrysene	mg/kg	0.1	**0.2**	**95**	**0.2**
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.2**	**140**	**0.4**
Benzo(k)fluoranthene	mg/kg	0.1	**0.1**	**47**	**0.1**
Benzo(a)pyrene	mg/kg	0.1	**0.2**	**110**	**0.3**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.1**	**91**	**0.3**
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	**7.6**	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.1**	**74**	**0.2**
Total PAH	mg/kg	0.8	**2.4**	**1700**	**3.1**
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	**0.2**	**160**	**0.4**
Surrogates					
d5-nitrobenzene (Surrogate)	%	-	**94**	**100**	**108**
2-fluorobiphenyl (Surrogate)	%	-	**94**	**98**	**100**
d14-p-terphenyl (Surrogate)	%	-	**102**	**98**	**108**
OC Pesticides in Soil Method: AN400/AN420					
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1
Surrogates					
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**106**	**110**	**103**
OP Pesticides in Soil Method: AN400/AN420					

Parameter	Units	LOR	Sample Number: SE119988.001 Sample Matrix: Soil Sample Date: 19/8/13 14:20 Sample Name: BH1(2)	SE119988.002 Soil 19/8/13 15:10 BH2(2)	SE119988.003 Soil 19/8/13 16:10 BH3(2)
OP Pesticides in Soil Method: AN400/AN420 (continued)					
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2
Surrogates					
2-fluorobiphenyl (Surrogate)	%	-	**94**	**98**	**100**
d14-p-terphenyl (Surrogate)	%	-	**102**	**98**	**108**
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320					
Arsenic, As	mg/kg	3	**5**	<3	**7**
Cadmium, Cd	mg/kg	0.3	**0.8**	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	**5.2**	**25**	**13**
Copper, Cu	mg/kg	0.5	**17**	**14**	**54**
Lead, Pb	mg/kg	1	**28**	**6**	**29**
Nickel, Ni	mg/kg	0.5	**6.1**	**13**	**10**
Zinc, Zn	mg/kg	0.5	**59**	**26**	**73**
Mercury in Soil Method: AN312					
Mercury	mg/kg	0.01	**0.01**	<0.01	**0.03**
Moisture Content Method: AN002					
% Moisture	%	0.5	**22**	**12**	**20**

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Mercury in Soil **Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB043684	mg/kg	0.01	<0.01	0 - 3%	101%	96%

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Hexachlorobenzene (HCB)	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Alpha BHC	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Lindane	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Heptachlor	LB043561	mg/kg	0.1	<0.1	0%	110%	130%
Aldrin	LB043561	mg/kg	0.1	<0.1	0%	110%	115%
Beta BHC	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Delta BHC	LB043561	mg/kg	0.1	<0.1	0%	100%	120%
Heptachlor epoxide	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDE	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Endosulfan	LB043561	mg/kg	0.2	<0.2	0%	NA	NA
Gamma Chlordane	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Chlordane	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
trans-Nonachlor	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDE	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Dieldrin	LB043561	mg/kg	0.2	<0.2	0%	105%	125%
Endrin	LB043561	mg/kg	0.2	<0.2	0%	110%	125%
o,p'-DDD	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDT	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Beta Endosulfan	LB043561	mg/kg	0.2	<0.2	0%	NA	NA
p,p'-DDD	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDT	LB043561	mg/kg	0.1	<0.1	0%	100%	65%
Endosulfan sulphate	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Aldehyde	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Methoxychlor	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Ketone	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Isodrin	LB043561	mg/kg	0.1	<0.1	0%	NA	NA
Mirex	LB043561	mg/kg	0.1	<0.1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB043561	%	-	97%	1 - 2%	97%	111%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

OP Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dichlorvos	LB043561	mg/kg	0.5	0	0%	85%	81%
Dimethoate	LB043561	mg/kg	0.5	0	0%	NA	NA
Diazinon (Dimpylate)	LB043561	mg/kg	0.5	0	0%	96%	105%
Fenitrothion	LB043561	mg/kg	0.2	0	0%	NA	NA
Malathion	LB043561	mg/kg	0.2	0	0%	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB043561	mg/kg	0.2	0	0%	92%	96%
Parathion-ethyl (Parathion)	LB043561	mg/kg	0.2	0	0%	NA	NA
Bromophos Ethyl	LB043561	mg/kg	0.2	0	0%	NA	NA
Methidathion	LB043561	mg/kg	0.5	0	0%	NA	NA
Ethion	LB043561	mg/kg	0.2	0	0%	86%	120%
Azinphos-methyl (Guthion)	LB043561	mg/kg	0.2	0	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2-fluorobiphenyl (Surrogate)	LB043561	%	-	110%	4 - 6%	98%	84%
d14-p-terphenyl (Surrogate)	LB043561	%	-	112%	3 - 4%	106%	92%

PAH (Polynuclear Aromatic Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB043561	mg/kg	0.1	0	0%	109%	115%
2-methylnaphthalene	LB043561	mg/kg	0.1	0	0%	NA	NA
1-methylnaphthalene	LB043561	mg/kg	0.1	0	0%	NA	NA
Acenaphthylene	LB043561	mg/kg	0.1	0	0%	111%	118%
Acenaphthene	LB043561	mg/kg	0.1	0	0%	123%	124%
Fluorene	LB043561	mg/kg	0.1	0	0%	NA	NA
Phenanthrene	LB043561	mg/kg	0.1	0	0 - 38%	112%	105%
Anthracene	LB043561	mg/kg	0.1	0	0%	110%	123%
Fluoranthene	LB043561	mg/kg	0.1	0	0 - 20%	121%	109%
Pyrene	LB043561	mg/kg	0.1	0	0 - 20%	121%	110%
Benzo(a)anthracene	LB043561	mg/kg	0.1	0	0 - 5%	NA	NA
Chrysene	LB043561	mg/kg	0.1	0	0 - 5%	NA	NA
Benzo(b&j)fluoranthene	LB043561	mg/kg	0.1	0	0 - 14%	NA	NA
Benzo(k)fluoranthene	LB043561	mg/kg	0.1	0	0 - 7%	NA	NA
Benzo(a)pyrene	LB043561	mg/kg	0.1	0	0 - 12%	120%	115%
Indeno(1,2,3-cd)pyrene	LB043561	mg/kg	0.1	0	0 - 38%	NA	NA
Dibenzo(a&h)anthracene	LB043561	mg/kg	0.1	0	0%	NA	NA
Benzo(ghi)perylene	LB043561	mg/kg	0.1	0	0 - 43%	NA	NA
Total PAH	LB043561	mg/kg	0.8	0	0 - 1%	NA	NA
Carcinogenic PAHs (as BaP TEQ)*	LB043561	TEQ	0.2	0	0 - 12%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB043561	%	-	112%	2 - 6%	102%	94%
2-fluorobiphenyl (Surrogate)	LB043561	%	-	110%	4 - 6%	98%	84%
d14-p-terphenyl (Surrogate)	LB043561	%	-	112%	3 - 4%	106%	92%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest **Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB043681	mg/kg	3	<3	4 - 15%	98%	88%
Cadmium, Cd	LB043681	mg/kg	0.3	<0.3	0 - 10%	98%	81%
Chromium, Cr	LB043681	mg/kg	0.3	<0.3	0 - 16%	99%	88%
Copper, Cu	LB043681	mg/kg	0.5	<0.5	5 - 6%	97%	33%
Lead, Pb	LB043681	mg/kg	1	<1	3 - 7%	100%	76%
Nickel, Ni	LB043681	mg/kg	0.5	<0.5	2 - 11%	96%	81%
Zinc, Zn	LB043681	mg/kg	0.5	<0.5	0 - 2%	99%	70%

TRH (Total Recoverable Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C10-C14	LB043561	mg/kg	20	0	0%	78%
TRH C15-C28	LB043561	mg/kg	45	0	0%	93%
TRH C29-C36	LB043561	mg/kg	45	0	0%	78%
TRH C37-C40	LB043561	mg/kg	100	0	0%	NA
TRH C10-C36 Total	LB043561	mg/kg	110	0	0%	NA
TRH C10-C40 Total	LB043561	mg/kg	210	0	0%	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH >C10-C16 (F2)	LB043561	mg/kg	25	0	0%	83%
TRH >C16-C34 (F3)	LB043561	mg/kg	90	0	0%	88%
TRH >C34-C40 (F4)	LB043561	mg/kg	120	0	0%	80%

VOC's in Soil **Method: ME-(AU)-[ENV]AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB043527	mg/kg	0.1	<0.1	0%	79%	82%
Toluene	LB043527	mg/kg	0.1	<0.1	0%	69%	84%
Ethylbenzene	LB043527	mg/kg	0.1	<0.1	0%	78%	84%
m/p-xylene	LB043527	mg/kg	0.2	<0.2	0%	84%	91%
o-xylene	LB043527	mg/kg	0.1	<0.1	0%	79%	87%

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB043527	mg/kg	0.1	<0.1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dibromofluoromethane (Surrogate)	LB043527	%	-	104%	2 - 6%	102%	91%
d4-1,2-dichloroethane (Surrogate)	LB043527	%	-	111%	4 - 8%	108%	99%
d8-toluene (Surrogate)	LB043527	%	-	84%	4 - 6%	104%	98%
Bromofluorobenzene (Surrogate)	LB043527	%	-	88%	3 - 6%	120%	125%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Xylenes*	LB043527	mg/kg	0.3	<0.3	0%	NA	NA
Total BTEX*	LB043527	mg/kg	0.6	<0.6	0%	NA	NA

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Volatile Petroleum Hydrocarbons in Soil **Method: ME-(AU)-[ENV]AN433/AN434/AN410**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C10	LB043527	mg/kg	25	<25	0%	88%	96%
TRH C6-C9	LB043527	mg/kg	20	<20	0%	82%	90%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dibromofluoromethane (Surrogate)	LB043527	%	-	104%	2 - 6%	102%	91%
d4-1,2-dichloroethane (Surrogate)	LB043527	%	-	111%	4 - 8%	108%	99%
d8-toluene (Surrogate)	LB043527	%	-	96%	4 - 6%	104%	98%
Bromofluorobenzene (Surrogate)	LB043527	%	-	88%	3 - 6%	120%	125%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene (F0)	LB043527	mg/kg	0.1	<0.1	0%	NA	NA
TRH C6-C10 minus BTEX (F1)	LB043527	mg/kg	25	<25	0%	110%	120%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependant on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

ANALYTICAL REPORT

CLIENT DETAILS		LABORATORY DETAILS	
Contact	STEPHEN SMITH	Manager	Huong Crawford
Client	PACIFIC ENVIRONMENTAL AUSTRALIA PTY LTD	Laboratory	SGS Alexandria Environmental
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Email	decontam@bigpond.net.au	Email	au.environmental.sydney@sgs.com
Project	**Frith St**	SGS Reference	**SE124189 R0**
Order Number	(Not specified)	Report Number	0000074728
Samples	29	Date Reported	05 Feb 2014
		Date Received	24 Jan 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

PAH/OP - The Limit of Reporting (LOR) has been raised due to interferences from the sample matrix.

SIGNATORIES

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Senior Organic Chemist

Deanne Norris
Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Ly Kim Ha
Organic Section Head

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.001 Water 22/1/14 6:30 B4	SE124189.002 Soil 22/1/14 6:45 FWS1	SE124189.003 Soil 22/1/14 7:05 FWS2	SE124189.004 Soil 22/1/14 7:20 FWS3
VOC's in Soil Method: AN433/AN434							
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1		-	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2		-	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Polycyclic VOCs							
Naphthalene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	**108**	**109**	**84**
d4-1,2-dichloroethane (Surrogate)	%	-		-	**112**	**112**	**89**
d8-toluene (Surrogate)	%	-		-	**122**	**81**	**103**
Bromofluorobenzene (Surrogate)	%	-		-	**103**	**100**	**118**
Totals							
Total Xylenes*	mg/kg	0.3		-	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6		-	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410							
TRH C6-C10	mg/kg	25		-	<25	<25	<25
TRH C6-C9	mg/kg	20		-	<20	<20	<20
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	**108**	**109**	**84**
d4-1,2-dichloroethane (Surrogate)	%	-		-	**112**	**112**	**89**
d8-toluene (Surrogate)	%	-		-	**122**	**81**	**103**
Bromofluorobenzene (Surrogate)	%	-		-	**103**	**100**	**118**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.001 Water 22/1/14 6:30 B4	SE124189.002 Soil 22/1/14 6:45 FWS1	SE124189.003 Soil 22/1/14 7:05 FWS2	SE124189.004 Soil 22/1/14 7:20 FWS3
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)							
VPH F Bands							
Benzene (F0)	mg/kg	0.1		-	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25		-	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403							
TRH C10-C14	mg/kg	20		-	<20	<20	<20
TRH C15-C28	mg/kg	45		-	<45	<45	<45
TRH C29-C36	mg/kg	45		-	<45	<45	<45
TRH C37-C40	mg/kg	100		-	<100	<100	<100
TRH C10-C36 Total	mg/kg	110		-	<110	<110	<110
TRH C10-C40 Total	mg/kg	210		-	<210	<210	<210
TRH F Bands							
TRH >C10-C16 (F2)	mg/kg	25		-	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90		-	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120		-	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420							
Naphthalene	mg/kg	0.1		-	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1		-	**0.1**	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1		-	**0.1**	<0.1	<0.1
Acenaphthylene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1		-	**0.4**	<0.1	<0.1
Anthracene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1		-	**0.4**	<0.1	<0.1
Pyrene	mg/kg	0.1		-	**0.4**	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1		-	**0.3**	<0.1	<0.1
Chrysene	mg/kg	0.1		-	**0.2**	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1		-	**0.3**	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1		-	**0.1**	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1		-	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.8		-	**2.5**	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2		-	<0.2	<0.2	<0.2

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.001 Water 22/1/14 6:30 B4	SE124189.002 Soil 22/1/14 6:45 FWS1	SE124189.003 Soil 22/1/14 7:05 FWS2	SE124189.004 Soil 22/1/14 7:20 FWS3
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)							
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		-	**106**	**100**	**100**
2-fluorobiphenyl (Surrogate)	%	-		-	**92**	**86**	**98**
d14-p-terphenyl (Surrogate)	%	-		-	**108**	**100**	**102**
OC Pesticides in Soil Method: AN400/AN420							
Hexachlorobenzene (HCB)	mg/kg	0.1		-	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1		-	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1		-	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1		-	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1		-	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1		-	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1		-	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1		-	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1		-	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2		-	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1		-	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1		-	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		-	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1		-	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2		-	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2		-	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1		-	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1		-	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2		-	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1		-	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1		-	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1		-	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1		-	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1		-	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1		-	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		-	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1		-	<0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.001 Water 22/1/14 6:30 B4	SE124189.002 Soil 22/1/14 6:45 FWS1	SE124189.003 Soil 22/1/14 7:05 FWS2	SE124189.004 Soil 22/1/14 7:20 FWS3
OC Pesticides in Soil Method: AN400/AN420 (continued)							
Surrogates							
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-		-	**93**	**96**	**102**
OP Pesticides in Soil Method: AN400/AN420							
Dichlorvos	mg/kg	0.5		-	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5		-	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5		-	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2		-	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2		-	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2		-	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2		-	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2		-	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5		-	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2		-	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2		-	<0.2	<0.2	<0.2
Surrogates							
2-fluorobiphenyl (Surrogate)	%	-		-	**92**	**86**	**98**
d14-p-terphenyl (Surrogate)	%	-		-	**108**	**100**	**102**
pH in soil (1:5) Method: AN101							
pH	pH Units	-		-	**6.2**	**5.3**	**5.8**
Alkalinity in Soil Method: AN002/AN135							
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25		-	-	-	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5		-	-	-	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25		-	-	-	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25		-	**26**	<25	<25
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320							
Arsenic, As	mg/kg	3		-	<3	<3	<3
Cadmium, Cd	mg/kg	0.3		-	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3		-	**6.7**	**5.7**	**14**
Copper, Cu	mg/kg	0.5		-	**7.5**	**4.4**	**0.9**
Lead, Pb	mg/kg	1		-	**7**	**5**	**13**
Nickel, Ni	mg/kg	0.5		-	**7.2**	**5.3**	**1.0**
Zinc, Zn	mg/kg	0.5		-	**31**	**17**	**3.7**

Parameter	Units	LOR	Sample Number: SE124189.001 Sample Matrix: Water Sample Date: 22/1/14 6:30 Sample Name: B4	SE124189.002 Soil 22/1/14 6:45 FWS1	SE124189.003 Soil 22/1/14 7:05 FWS2	SE124189.004 Soil 22/1/14 7:20 FWS3
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	-	**0.14**	**0.26**	<0.01
Moisture Content Method: AN002						
% Moisture	%	0.5	-	**2.3**	**1.3**	**19**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318						
Arsenic, As	µg/L	1	**1**	-	-	-
Cadmium, Cd	µg/L	0.1	**0.3**	-	-	-
Chromium, Cr	µg/L	1	**1**	-	-	-
Copper, Cu	µg/L	1	**5**	-	-	-
Lead, Pb	µg/L	1	**13**	-	-	-
Nickel, Ni	µg/L	1	**31**	-	-	-
Zinc, Zn	µg/L	5	**90**	-	-	-
Mercury (dissolved) in Water Method: AN311/AN312						
Mercury	mg/L	0.0001	<0.0001	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE124189.005 Soil 22/1/14 7:50 FWS4	SE124189.006 Soil 22/1/14 8:30 FWS5	SE124189.007 Soil 22/1/14 9:10 FWS6	SE124189.008 Soil 22/1/14 9:40 FWS7
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**98**	**85**	**94**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-	**102**	**90**	**100**	**96**
d8-toluene (Surrogate)	%	-	**118**	**88**	**95**	**97**
Bromofluorobenzene (Surrogate)	%	-	**122**	**106**	**89**	**90**
Totals						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**98**	**85**	**94**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-	**102**	**90**	**100**	**96**
d8-toluene (Surrogate)	%	-	**118**	**88**	**95**	**97**
Bromofluorobenzene (Surrogate)	%	-	**122**	**106**	**89**	**90**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE124189.005 Soil 22/1/14 7:50 FWS4	SE124189.006 Soil 22/1/14 8:30 FWS5	SE124189.007 Soil 22/1/14 9:10 FWS6	SE124189.008 Soil 22/1/14 9:40 FWS7
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)						
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	**87**	**61**	<45
TRH C29-C36	mg/kg	45	<45	**88**	**76**	**49**
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	**180**	**140**	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	**160**	**130**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	**0.1**	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	**1.0**	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	**0.2**	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	**2.4**	**0.1**	<0.1
Pyrene	mg/kg	0.1	<0.1	**3.0**	**0.1**	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	**1.5**	**0.1**	<0.1
Chrysene	mg/kg	0.1	<0.1	**1.0**	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	**1.7**	**0.1**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	**0.5**	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	**1.5**	**0.1**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	**1.1**	**0.4**	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	**0.7**	**0.3**	<0.1
Total PAH	mg/kg	0.8	<0.8	**15**	**1.7**	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	**2.1**	**0.4**	<0.2

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.005 Soil 22/1/14 7:50 FWS4	SE124189.006 Soil 22/1/14 8:30 FWS5	SE124189.007 Soil 22/1/14 9:10 FWS6	SE124189.008 Soil 22/1/14 9:40 FWS7
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)							
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		**94**	**92**	**88**	**80**
2-fluorobiphenyl (Surrogate)	%	-		**88**	**86**	**88**	**82**
d14-p-terphenyl (Surrogate)	%	-		**92**	**90**	**124**	**114**
OC Pesticides in Soil Method: AN400/AN420							
Hexachlorobenzene (HCB)	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number: SE124189.005 Sample Matrix: Soil Sample Date: 22/1/14 7:50 Sample Name: FWS4	SE124189.006 Soil 22/1/14 8:30 FWS5	SE124189.007 Soil 22/1/14 9:10 FWS6	SE124189.008 Soil 22/1/14 9:40 FWS7
OC Pesticides in Soil Method: AN400/AN420 (continued)						
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**101**	**100**	**104**	**97**
OP Pesticides in Soil Method: AN400/AN420						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**88**	**86**	**88**	**82**
d14-p-terphenyl (Surrogate)	%	-	**92**	**90**	**124**	**114**
pH in soil (1:5) Method: AN101						
pH	pH Units	-	**5.6**	**6.0**	**5.9**	**5.9**
Alkalinity in Soil Method: AN002/AN135						
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	-	-	-	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5	-	-	-	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	-	-	-	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	**62**	**39**	**110**	**90**
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320						
Arsenic, As	mg/kg	3	<3	<3	<3	**4**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	**5.7**	**6.3**	**9.0**	**16**
Copper, Cu	mg/kg	0.5	**1.9**	**18**	**4.2**	**1.4**
Lead, Pb	mg/kg	1	**6**	**7**	**9**	**11**
Nickel, Ni	mg/kg	0.5	**0.8**	**9.3**	**5.3**	**1.5**
Zinc, Zn	mg/kg	0.5	**4.7**	**35**	**12**	**3.7**

Parameter	Units	LOR	Sample Number: SE124189.005 Sample Matrix: Soil Sample Date: 22/1/14 7:50 Sample Name: FWS4	SE124189.006 Soil 22/1/14 8:30 FWS5	SE124189.007 Soil 22/1/14 9:10 FWS6	SE124189.008 Soil 22/1/14 9:40 FWS7
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01
Moisture Content Method: AN002						
% Moisture	%	0.5	**14**	**21**	**18**	**17**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311/AN312						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE124189.009 Sample Matrix: Soil Sample Date: 22/1/14 10:10 Sample Name: FWS8	SE124189.010 Soil 22 Jan 2014 FWS9	SE124189.011 Soil 22 Jan 2014 FWS10	SE124189.012 Soil 22 Jan 2014 FWS11
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**109**	**98**	**98**	**94**
d4-1,2-dichloroethane (Surrogate)	%	-	**114**	**101**	**102**	**94**
d8-toluene (Surrogate)	%	-	**112**	**100**	**100**	**106**
Bromofluorobenzene (Surrogate)	%	-	**108**	**84**	**92**	**108**
Totals						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**109**	**98**	**98**	**94**
d4-1,2-dichloroethane (Surrogate)	%	-	**114**	**101**	**102**	**94**
d8-toluene (Surrogate)	%	-	**112**	**100**	**100**	**106**
Bromofluorobenzene (Surrogate)	%	-	**108**	**84**	**92**	**108**

Parameter	Units	LOR	Sample Number: SE124189.009 Sample Matrix: Soil Sample Date: 22/1/14 10:10 Sample Name: FWS8	SE124189.010 Soil 22 Jan 2014 FWS9	SE124189.011 Soil 22 Jan 2014 FWS10	SE124189.012 Soil 22 Jan 2014 FWS11
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)						
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	**64**	**140**	**170**
TRH C29-C36	mg/kg	45	<45	**55**	**160**	**66**
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	**120**	**300**	**240**
TRH C10-C40 Total	mg/kg	210	<210	<210	**300**	**240**
TRH F Bands						
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	**110**	**260**	**230**
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	**0.1**	**0.1**
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.2↑	<0.1
Phenanthrene	mg/kg	0.1	<0.1	**0.1**	**0.9**	**1.4**
Anthracene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.2**
Fluoranthene	mg/kg	0.1	<0.1	**0.1**	**2.4**	**4.1**
Pyrene	mg/kg	0.1	<0.1	**0.1**	**2.1**	**3.7**
Benzo(a)anthracene	mg/kg	0.1	<0.1	**0.1**	**1.1**	**2.6**
Chrysene	mg/kg	0.1	<0.1	<0.1	**0.6**	**1.0**
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	**1.0**	**1.9**
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.5**	**0.5**
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	**0.9**	**1.3**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	**0.7**	**1.1**
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	**0.1**	**0.1**
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	**0.5**	**0.8**
Total PAH	mg/kg	0.8	<0.8	**0.9**	**11**	**19**
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	<0.2	**1.3**	**2.0**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.009 Soil 22/1/14 10:10 FWS8	SE124189.010 Soil 22 Jan 2014 FWS9	SE124189.011 Soil 22 Jan 2014 FWS10	SE124189.012 Soil 22 Jan 2014 FWS11
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)							
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		**78**	**88**	**90**	**84**
2-fluorobiphenyl (Surrogate)	%	-		**86**	**90**	**98**	**86**
d14-p-terphenyl (Surrogate)	%	-		**122**	**118**	**116**	**106**
OC Pesticides in Soil Method: AN400/AN420							
Hexachlorobenzene (HCB)	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number: SE124189.009 Sample Matrix: Soil Sample Date: 22/1/14 10:10 Sample Name: FWS8	SE124189.010 Soil 22 Jan 2014 FWS9	SE124189.011 Soil 22 Jan 2014 FWS10	SE124189.012 Soil 22 Jan 2014 FWS11
OC Pesticides in Soil Method: AN400/AN420 (continued)						
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**101**	**100**	**101**	**99**
OP Pesticides in Soil Method: AN400/AN420						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**86**	**90**	**98**	**86**
d14-p-terphenyl (Surrogate)	%	-	**122**	**118**	**116**	**106**
pH in soil (1:5) Method: AN101						
pH	pH Units	-	**5.4**	**5.6**	**5.9**	**6.2**
Alkalinity in Soil Method: AN002/AN135						
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	-	-	-	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5	-	-	-	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	-	-	-	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	**32**	**71**	**79**	**56**
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320						
Arsenic, As	mg/kg	3	**3**	<3	**10**	**5**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	**0.5**	<0.3
Chromium, Cr	mg/kg	0.3	**17**	**9.8**	**28**	**13**
Copper, Cu	mg/kg	0.5	**1.6**	**1.5**	**31**	**13**
Lead, Pb	mg/kg	1	**12**	**11**	**71**	**10**
Nickel, Ni	mg/kg	0.5	**1.9**	**1.2**	**14**	**11**
Zinc, Zn	mg/kg	0.5	**4.3**	**3.9**	**140**	**43**

Parameter	Units	LOR	Sample Number: SE124189.017 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS15	SE124189.018 Soil 22 Jan 2014 FWS15(1)	SE124189.019 Soil 22 Jan 2014 FWS16	SE124189.020 Soil 22 Jan 2014 FWS17
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	**0.01**	**0.01**	**0.02**	**0.02**
Moisture Content Method: AN002						
% Moisture	%	0.5	**9.6**	**14**	**15**	**13**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311/AN312						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE124189.021 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS18	SE124189.022 Soil 22 Jan 2014 FWS19	SE124189.023 Soil 22 Jan 2014 FWS20	SE124189.024 Soil 22 Jan 2014 FWS21
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**89**	**82**	**89**	**93**
d4-1,2-dichloroethane (Surrogate)	%	-	**97**	**98**	**90**	**109**
d8-toluene (Surrogate)	%	-	**95**	**79**	**99**	**104**
Bromofluorobenzene (Surrogate)	%	-	**83**	**70**	**109**	**98**
Totals						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**89**	**82**	**89**	**93**
d4-1,2-dichloroethane (Surrogate)	%	-	**97**	**98**	**90**	**109**
d8-toluene (Surrogate)	%	-	**95**	**79**	**99**	**104**
Bromofluorobenzene (Surrogate)	%	-	**83**	**70**	**109**	**98**

Parameter	Units	LOR	Sample Number: SE124189.021 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS18	SE124189.022 Soil 22 Jan 2014 FWS19	SE124189.023 Soil 22 Jan 2014 FWS20	SE124189.024 Soil 22 Jan 2014 FWS21
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)						
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**0.4**	**0.2**	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.5**	**0.3**	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.4**	**0.2**	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	**0.4**	**0.2**	<0.1	<0.1
Chrysene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.3**	**0.1**	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.5**	**0.2**	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.4**	**0.1**	<0.1	<0.1
Total PAH	mg/kg	0.8	**3.7**	**1.7**	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	**0.5**	**0.2**	<0.2	<0.2

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.021 Soil 22 Jan 2014 FWS18	SE124189.022 Soil 22 Jan 2014 FWS19	SE124189.023 Soil 22 Jan 2014 FWS20	SE124189.024 Soil 22 Jan 2014 FWS21
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)							
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		**88**	**86**	**92**	**86**
2-fluorobiphenyl (Surrogate)	%	-		**84**	**82**	**86**	**82**
d14-p-terphenyl (Surrogate)	%	-		**124**	**116**	**122**	**114**
OC Pesticides in Soil Method: AN400/AN420							
Hexachlorobenzene (HCB)	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number: SE124189.021 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS18	SE124189.022 Soil 22 Jan 2014 FWS19	SE124189.023 Soil 22 Jan 2014 FWS20	SE124189.024 Soil 22 Jan 2014 FWS21
OC Pesticides in Soil Method: AN400/AN420 (continued)						
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**101**	**97**	**93**	**103**
OP Pesticides in Soil Method: AN400/AN420						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**84**	**82**	**86**	**82**
d14-p-terphenyl (Surrogate)	%	-	**124**	**116**	**122**	**114**
pH in soil (1:5) Method: AN101						
pH	pH Units	-	**4.4**	**9.1**	**4.5**	**7.8**
Alkalinity in Soil Method: AN002/AN135						
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	-	-	-	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5	-	-	-	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	-	-	-	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	<25	**290**	<25	**72**
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320						
Arsenic, As	mg/kg	3	**5**	<3	<3	<3
Cadmium, Cd	mg/kg	0.3	**0.3**	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	**22**	**7.2**	**7.6**	**7.4**
Copper, Cu	mg/kg	0.5	**4.2**	**8.0**	**0.5**	**6.2**
Lead, Pb	mg/kg	1	**15**	**4**	**5**	**11**
Nickel, Ni	mg/kg	0.5	**1.8**	**11**	**0.7**	**2.8**
Zinc, Zn	mg/kg	0.5	**7.0**	**32**	**2.6**	**38**

Parameter	Units	LOR	Sample Number: SE124189.021 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS18	SE124189.022 Soil 22 Jan 2014 FWS19	SE124189.023 Soil 22 Jan 2014 FWS20	SE124189.024 Soil 22 Jan 2014 FWS21
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	**0.01**	<0.01	<0.01	<0.01
Moisture Content Method: AN002						
% Moisture	%	0.5	**21**	**21**	**17**	**6.4**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311/AN312						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE124189.025 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS22	SE124189.026 Soil 22 Jan 2014 FWS22(1)	SE124189.027 Soil 22 Jan 2014 FWS23	SE124189.028 Soil 22 Jan 2014 Trip Spike
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	[89%]
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	[97%]
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	[94%]
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	[88%]
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	[87%]
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	95	95	103	99
d4-1,2-dichloroethane (Surrogate)	%	-	93	101	113	99
d8-toluene (Surrogate)	%	-	113	99	105	118
Bromofluorobenzene (Surrogate)	%	-	118	93	93	111
Totals						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	-
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25	<25	<25	<25	-
TRH C6-C9	mg/kg	20	<20	<20	<20	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	95	95	103	-
d4-1,2-dichloroethane (Surrogate)	%	-	93	101	113	-
d8-toluene (Surrogate)	%	-	113	99	105	-
Bromofluorobenzene (Surrogate)	%	-	118	93	93	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE124189.025 Soil 22 Jan 2014 FWS22	SE124189.026 Soil 22 Jan 2014 FWS22(1)	SE124189.027 Soil 22 Jan 2014 FWS23	SE124189.028 Soil 22 Jan 2014 Trip Spike
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)						
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	-
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20	<20	<20	<20	-
TRH C15-C28	mg/kg	45	<45	<45	**86**	-
TRH C29-C36	mg/kg	45	<45	<45	**53**	-
TRH C37-C40	mg/kg	100	<100	<100	<100	-
TRH C10-C36 Total	mg/kg	110	<110	<110	**140**	-
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	-
TRH F Bands						
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	-
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	**130**	-
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420						
Naphthalene	mg/kg	0.1	<0.1	<0.1	**0.2**	-
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	**0.1**	-
Acenaphthene	mg/kg	0.1	<0.1	<0.1	**0.3**	-
Fluorene	mg/kg	0.1	<0.1	<0.1	**0.4**	-
Phenanthrene	mg/kg	0.1	<0.1	**0.1**	**7.4**	-
Anthracene	mg/kg	0.1	<0.1	<0.1	**1.3**	-
Fluoranthene	mg/kg	0.1	**0.2**	**0.4**	**15**	-
Pyrene	mg/kg	0.1	**0.2**	**0.4**	**13**	-
Benzo(a)anthracene	mg/kg	0.1	**0.1**	**0.3**	**9.1**	-
Chrysene	mg/kg	0.1	<0.1	**0.1**	**3.0**	-
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.1**	**0.2**	**5.4**	-
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	**0.1**	**2.3**	-
Benzo(a)pyrene	mg/kg	0.1	**0.1**	**0.2**	**4.7**	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.1**	**0.2**	**3.7**	-
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	**0.4**	-
Benzo(ghi)perylene	mg/kg	0.1	<0.1	**0.2**	**2.7**	-
Total PAH	mg/kg	0.8	**1.3**	**2.4**	**69**	-
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	**0.3**	**7.2**	-

Parameter	Units	LOR	Sample Number: SE124189.025 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS22	SE124189.026 Soil 22 Jan 2014 FWS22(1)	SE124189.027 Soil 22 Jan 2014 FWS23	SE124189.028 Soil 22 Jan 2014 Trip Spike
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)						
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**90**	**88**	**86**	-
2-fluorobiphenyl (Surrogate)	%	-	**86**	**84**	**88**	-
d14-p-terphenyl (Surrogate)	%	-	**122**	**120**	**112**	-
OC Pesticides in Soil Method: AN400/AN420						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	-
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	-
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	-
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	-
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	-

Parameter	Units	LOR	Sample Number: SE124189.025 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS22	SE124189.026 Soil 22 Jan 2014 FWS22(1)	SE124189.027 Soil 22 Jan 2014 FWS23	SE124189.028 Soil 22 Jan 2014 Trip Spike
OC Pesticides in Soil Method: AN400/AN420 (continued)						
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**95**	**94**	**95**	-
OP Pesticides in Soil Method: AN400/AN420						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	-
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	-
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**86**	**84**	**88**	-
d14-p-terphenyl (Surrogate)	%	-	**122**	**120**	**112**	-
pH in soil (1:5) Method: AN101						
pH	pH Units	-	**8.3**	**8.3**	**8.7**	-
Alkalinity in Soil Method: AN002/AN135						
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	-	-	-	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5	-	-	-	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	-	-	-	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	**89**	**130**	**83**	-
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320						
Arsenic, As	mg/kg	3	<3	<3	**9**	-
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	-
Chromium, Cr	mg/kg	0.3	**14**	**15**	**23**	-
Copper, Cu	mg/kg	0.5	**3.3**	**4.9**	**17**	-
Lead, Pb	mg/kg	1	**8**	**12**	**16**	-
Nickel, Ni	mg/kg	0.5	**3.5**	**7.1**	**32**	-
Zinc, Zn	mg/kg	0.5	**17**	**52**	**74**	-

Parameter	Units	LOR	Sample Number: SE124189.025 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS22	SE124189.026 Soil 22 Jan 2014 FWS22(1)	SE124189.027 Soil 22 Jan 2014 FWS23	SE124189.028 Soil 22 Jan 2014 Trip Spike
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	<0.01	<0.01	**0.01**	-
Moisture Content Method: AN002						
% Moisture	%	0.5	**2.3**	**3.6**	**3.7**	-
Trace Metals (Dissolved) in Water by ICPMS Method: AN318						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311/AN312						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE124189.009 Sample Matrix: Soil Sample Date: 22/1/14 10:10 Sample Name: FWS8	SE124189.010 Soil 22 Jan 2014 FWS9	SE124189.011 Soil 22 Jan 2014 FWS10	SE124189.012 Soil 22 Jan 2014 FWS11
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	<0.01	<0.01	**0.04**	**0.02**
Moisture Content Method: AN002						
% Moisture	%	0.5	**22**	**19**	**31**	**26**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311/AN312						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE124189.013 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS11(1)	SE124189.014 Soil 22 Jan 2014 FWS12	SE124189.015 Soil 22 Jan 2014 FWS13	SE124189.016 Soil 22 Jan 2014 FWS14
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**83**	**85**	**85**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-	**85**	**87**	**87**	**86**
d8-toluene (Surrogate)	%	-	**88**	**101**	**95**	**96**
Bromofluorobenzene (Surrogate)	%	-	**90**	**99**	**96**	**102**
Totals						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**83**	**85**	**85**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-	**85**	**87**	**87**	**86**
d8-toluene (Surrogate)	%	-	**88**	**101**	**95**	**96**
Bromofluorobenzene (Surrogate)	%	-	**90**	**99**	**96**	**102**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE124189.013 Soil 22 Jan 2014 FWS11(1)	SE124189.014 Soil 22 Jan 2014 FWS12	SE124189.015 Soil 22 Jan 2014 FWS13	SE124189.016 Soil 22 Jan 2014 FWS14
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)						
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**100**	**94**	**210**	**55**
TRH C29-C36	mg/kg	45	<45	**180**	**200**	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	**270**	**410**	<110
TRH C10-C40 Total	mg/kg	210	<210	**270**	**410**	<210
TRH F Bands						
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**140**	**210**	**340**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.3↑	<0.1
Phenanthrene	mg/kg	0.1	**0.4**	<0.1	**0.8**	**0.2**
Anthracene	mg/kg	0.1	<0.1	<0.1	**0.2**	<0.1
Fluoranthene	mg/kg	0.1	**1.7**	**0.1**	**2.2**	**0.4**
Pyrene	mg/kg	0.1	**1.6**	**0.1**	**2.1**	**0.3**
Benzo(a)anthracene	mg/kg	0.1	**1.2**	<0.1	**1.2**	**0.3**
Chrysene	mg/kg	0.1	**0.5**	<0.1	**0.5**	**0.1**
Benzo(b&j)fluoranthene	mg/kg	0.1	**1.1**	<0.1	**0.9**	**0.2**
Benzo(k)fluoranthene	mg/kg	0.1	**0.3**	<0.1	**0.3**	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.7**	<0.1	**0.7**	**0.1**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.7**	**0.1**	**0.5**	**0.1**
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.5**	<0.1	**0.4**	**0.1**
Total PAH	mg/kg	0.8	**9.1**	**0.9**	**10**	**2.0**
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	**1.1**	<0.2	**1.1**	**0.2**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.013 Soil 22 Jan 2014 FWS11(1)	SE124189.014 Soil 22 Jan 2014 FWS12	SE124189.015 Soil 22 Jan 2014 FWS13	SE124189.016 Soil 22 Jan 2014 FWS14
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)							
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		**90**	**86**	**88**	**86**
2-fluorobiphenyl (Surrogate)	%	-		**90**	**84**	**86**	**82**
d14-p-terphenyl (Surrogate)	%	-		**110**	**106**	**110**	**112**
OC Pesticides in Soil Method: AN400/AN420							
Hexachlorobenzene (HCB)	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number: SE124189.013 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS11(1)	SE124189.014 Soil 22 Jan 2014 FWS12	SE124189.015 Soil 22 Jan 2014 FWS13	SE124189.016 Soil 22 Jan 2014 FWS14
OC Pesticides in Soil Method: AN400/AN420 (continued)						
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**100**	**101**	**102**	**95**
OP Pesticides in Soil Method: AN400/AN420						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**90**	**84**	**86**	**82**
d14-p-terphenyl (Surrogate)	%	-	**110**	**106**	**110**	**112**
pH in soil (1:5) Method: AN101						
pH	pH Units	-	**6.6**	**5.9**	**5.9**	**8.1**
Alkalinity in Soil Method: AN002/AN135						
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	-	-	-	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5	-	-	-	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	-	-	-	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	**41**	**48**	**52**	**240**
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320						
Arsenic, As	mg/kg	3	**7**	<3	**10**	<3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	**0.4**	<0.3
Chromium, Cr	mg/kg	0.3	**8.4**	**4.2**	**19**	**5.9**
Copper, Cu	mg/kg	0.5	**15**	**8.3**	**480**	**17**
Lead, Pb	mg/kg	1	**10**	**5**	**29**	**16**
Nickel, Ni	mg/kg	0.5	**8.9**	**1.3**	**40**	**4.5**
Zinc, Zn	mg/kg	0.5	**50**	**9.3**	**350**	**44**

Parameter	Units	LOR	Sample Number: SE124189.013 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS11(1)	SE124189.014 Soil 22 Jan 2014 FWS12	SE124189.015 Soil 22 Jan 2014 FWS13	SE124189.016 Soil 22 Jan 2014 FWS14
Mercury in Soil Method: AN312						
Mercury	mg/kg	0.01	**0.02**	<0.01	**0.01**	<0.01
Moisture Content Method: AN002						
% Moisture	%	0.5	**27**	**23**	**26**	**21**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311/AN312						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE124189.017 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS15	SE124189.018 Soil 22 Jan 2014 FWS15(1)	SE124189.019 Soil 22 Jan 2014 FWS16	SE124189.020 Soil 22 Jan 2014 FWS17
VOC's in Soil Method: AN433/AN434						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.3**
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**100**	**97**	**80**	**87**
d4-1,2-dichloroethane (Surrogate)	%	-	**101**	**115**	**82**	**99**
d8-toluene (Surrogate)	%	-	**97**	**116**	**102**	**97**
Bromofluorobenzene (Surrogate)	%	-	**88**	**108**	**104**	**93**
Totals						
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**100**	**97**	**80**	**87**
d4-1,2-dichloroethane (Surrogate)	%	-	**101**	**115**	**82**	**99**
d8-toluene (Surrogate)	%	-	**97**	**116**	**102**	**97**
Bromofluorobenzene (Surrogate)	%	-	**88**	**108**	**104**	**93**

Parameter	Units	LOR	Sample Number: SE124189.017 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS15	SE124189.018 Soil 22 Jan 2014 FWS15(1)	SE124189.019 Soil 22 Jan 2014 FWS16	SE124189.020 Soil 22 Jan 2014 FWS17
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410 (continued)						
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**1300**	**1700**	**80**	<45
TRH C29-C36	mg/kg	45	**750**	**970**	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	**2100**	**2700**	<110	<110
TRH C10-C40 Total	mg/kg	210	**2100**	**2700**	<210	<210
TRH F Bands						
TRH >C10-C16 (F2)	mg/kg	25	**25**	**26**	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**1900**	**2500**	**110**	<90
TRH >C34-C40 (F4)	mg/kg	120	**190**	**230**	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420						
Naphthalene	mg/kg	0.1	**0.1**	<0.1	<0.1	**1.4**
2-methylnaphthalene	mg/kg	0.1	**0.1**	<0.1	<0.1	<1.0↑
1-methylnaphthalene	mg/kg	0.1	**0.1**	<0.1	<0.1	<1.0↑
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	**1.5**
Acenaphthene	mg/kg	0.1	**1.5**	<0.1	<0.1	**5.6**
Fluorene	mg/kg	0.1	**0.8**	<0.1	<0.1	**7.1**
Phenanthrene	mg/kg	0.1	**19**	**0.3**	**0.9**	**210**
Anthracene	mg/kg	0.1	**3.9**	<0.1	**0.2**	**34**
Fluoranthene	mg/kg	0.1	**21**	**0.6**	**2.2**	**270**
Pyrene	mg/kg	0.1	**16**	**0.5**	**1.9**	**220**
Benzo(a)anthracene	mg/kg	0.1	**10**	**0.4**	**1.5**	**160**
Chrysene	mg/kg	0.1	**3.9**	**0.2**	**0.5**	**46**
Benzo(b&j)fluoranthene	mg/kg	0.1	**7.5**	**0.3**	**1.0**	**87**
Benzo(k)fluoranthene	mg/kg	0.1	**2.0**	**0.1**	**0.3**	**34**
Benzo(a)pyrene	mg/kg	0.1	**5.4**	**0.3**	**0.7**	**71**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**3.9**	**0.3**	**0.5**	**52**
Dibenzo(a&h)anthracene	mg/kg	0.1	**0.5**	<0.1	<0.1	**5.5**
Benzo(ghi)perylene	mg/kg	0.1	**2.6**	**0.2**	**0.4**	**37**
Total PAH	mg/kg	0.8	**98**	**3.4**	**10**	**1200**
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	**8.4**	**0.5**	**1.1**	**110**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE124189.017 Soil 22 Jan 2014 FWS15	SE124189.018 Soil 22 Jan 2014 FWS15(1)	SE124189.019 Soil 22 Jan 2014 FWS16	SE124189.020 Soil 22 Jan 2014 FWS17
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)							
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		86	106	94	80
2-fluorobiphenyl (Surrogate)	%	-		84	102	86	100
d14-p-terphenyl (Surrogate)	%	-		112	114	120	100
OC Pesticides in Soil Method: AN400/AN420							
Hexachlorobenzene (HCB)	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number: SE124189.017 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: FWS15	SE124189.018 Soil 22 Jan 2014 FWS15(1)	SE124189.019 Soil 22 Jan 2014 FWS16	SE124189.020 Soil 22 Jan 2014 FWS17
OC Pesticides in Soil Method: AN400/AN420 (continued)						
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**100**	**97**	**97**	**108**
OP Pesticides in Soil Method: AN400/AN420						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<5.0↑
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<5.0↑
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<5.0↑
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<2.0↑
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<2.0↑
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<2.0↑
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<2.0↑
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<2.0↑
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<5.0↑
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<2.0↑
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<2.0↑
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**84**	**102**	**86**	**100**
d14-p-terphenyl (Surrogate)	%	-	**112**	**114**	**120**	**100**
pH in soil (1:5) Method: AN101						
pH	pH Units	-	**9.0**	**9.1**	**8.7**	**8.4**
Alkalinity in Soil Method: AN002/AN135						
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	-	-	-	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5	-	-	-	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	-	-	-	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	**1200**	**1400**	**230**	**140**
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320						
Arsenic, As	mg/kg	3	<3	<3	**9**	**8**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	**0.3**	**0.4**
Chromium, Cr	mg/kg	0.3	**260**	**270**	**43**	**50**
Copper, Cu	mg/kg	0.5	**12**	**11**	**14**	**16**
Lead, Pb	mg/kg	1	**17**	**16**	**26**	**8**
Nickel, Ni	mg/kg	0.5	**310**	**340**	**14**	**14**
Zinc, Zn	mg/kg	0.5	**36**	**29**	**57**	**48**

Parameter	Units	LOR	Sample Number: SE124189.029 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: Trip Blank
VOC's in Soil Method: AN433/AN434			
Monocyclic Aromatic Hydrocarbons			
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
Polycyclic VOCs			
Naphthalene	mg/kg	0.1	<0.1
Surrogates			
Dibromofluoromethane (Surrogate)	%	-	**100**
d4-1,2-dichloroethane (Surrogate)	%	-	**99**
d8-toluene (Surrogate)	%	-	**118**
Bromofluorobenzene (Surrogate)	%	-	**121**
Totals			
Total Xylenes*	mg/kg	0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410			
TRH C6-C10	mg/kg	25	-
TRH C6-C9	mg/kg	20	-
Surrogates			
Dibromofluoromethane (Surrogate)	%	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-
d8-toluene (Surrogate)	%	-	-
Bromofluorobenzene (Surrogate)	%	-	-
VPH F Bands			
Benzene (F0)	mg/kg	0.1	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	-

Parameter	Units	LOR	Sample Number: SE124189.029 Sample Matrix: Soil Sample Date: 22 Jan 2014 Sample Name: Trip Blank
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403			
TRH C10-C14	mg/kg	20	-
TRH C15-C28	mg/kg	45	-
TRH C29-C36	mg/kg	45	-
TRH C37-C40	mg/kg	100	-
TRH C10-C36 Total	mg/kg	110	-
TRH C10-C40 Total	mg/kg	210	-
TRH F Bands			
TRH >C10-C16 (F2)	mg/kg	25	-
TRH >C16-C34 (F3)	mg/kg	90	-
TRH >C34-C40 (F4)	mg/kg	120	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420			
Naphthalene	mg/kg	0.1	-
2-methylnaphthalene	mg/kg	0.1	-
1-methylnaphthalene	mg/kg	0.1	-
Acenaphthylene	mg/kg	0.1	-
Acenaphthene	mg/kg	0.1	-
Fluorene	mg/kg	0.1	-
Phenanthrene	mg/kg	0.1	-
Anthracene	mg/kg	0.1	-
Fluoranthene	mg/kg	0.1	-
Pyrene	mg/kg	0.1	-
Benzo(a)anthracene	mg/kg	0.1	-
Chrysene	mg/kg	0.1	-
Benzo(b&j)fluoranthene	mg/kg	0.1	-
Benzo(k)fluoranthene	mg/kg	0.1	-
Benzo(a)pyrene	mg/kg	0.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-
Dibenzo(a&h)anthracene	mg/kg	0.1	-
Benzo(ghi)perylene	mg/kg	0.1	-
Total PAH	mg/kg	0.8	-
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	-

Parameter	Units	LOR	Sample Number SE124189.029 Sample Matrix Soil Sample Date 22 Jan 2014 Sample Name Trip Blank
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)			
Surrogates			
d5-nitrobenzene (Surrogate)	%	-	-
2-fluorobiphenyl (Surrogate)	%	-	-
d14-p-terphenyl (Surrogate)	%	-	-
OC Pesticides in Soil Method: AN400/AN420			
Hexachlorobenzene (HCB)	mg/kg	0.1	-
Alpha BHC	mg/kg	0.1	-
Lindane	mg/kg	0.1	-
Heptachlor	mg/kg	0.1	-
Aldrin	mg/kg	0.1	-
Beta BHC	mg/kg	0.1	-
Delta BHC	mg/kg	0.1	-
Heptachlor epoxide	mg/kg	0.1	-
o,p'-DDE	mg/kg	0.1	-
Alpha Endosulfan	mg/kg	0.2	-
Gamma Chlordane	mg/kg	0.1	-
Alpha Chlordane	mg/kg	0.1	-
trans-Nonachlor	mg/kg	0.1	-
p,p'-DDE	mg/kg	0.1	-
Dieldrin	mg/kg	0.2	-
Endrin	mg/kg	0.2	-
o,p'-DDD	mg/kg	0.1	-
o,p'-DDT	mg/kg	0.1	-
Beta Endosulfan	mg/kg	0.2	-
p,p'-DDD	mg/kg	0.1	-
p,p'-DDT	mg/kg	0.1	-
Endosulfan sulphate	mg/kg	0.1	-
Endrin Aldehyde	mg/kg	0.1	-
Methoxychlor	mg/kg	0.1	-
Endrin Ketone	mg/kg	0.1	-
Isodrin	mg/kg	0.1	-
Mirex	mg/kg	0.1	-

Parameter	Units	LOR	Sample Number SE124189.029 Sample Matrix Soil Sample Date 22 Jan 2014 Sample Name Trip Blank
OC Pesticides in Soil Method: AN400/AN420 (continued)			
Surrogates			
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-
OP Pesticides in Soil Method: AN400/AN420			
Dichlorvos	mg/kg	0.5	-
Dimethoate	mg/kg	0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-
Fenitrothion	mg/kg	0.2	-
Malathion	mg/kg	0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-
Bromophos Ethyl	mg/kg	0.2	-
Methidathion	mg/kg	0.5	-
Ethion	mg/kg	0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-
Surrogates			
2-fluorobiphenyl (Surrogate)	%	-	-
d14-p-terphenyl (Surrogate)	%	-	-
pH in soil (1:5) Method: AN101			
pH	pH Units	-	-
Alkalinity in Soil Method: AN002/AN135			
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	-
Carbonate Alkalinity as CO3 in Soil*	mg/kg	5	-
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	-
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	-

Parameter	Units	LOR	Sample Number SE124189.029 Sample Matrix Soil Sample Date 22 Jan 2014 Sample Name Trip Blank
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320			
Arsenic, As	mg/kg	3	-
Cadmium, Cd	mg/kg	0.3	-
Chromium, Cr	mg/kg	0.3	-
Copper, Cu	mg/kg	0.5	-
Lead, Pb	mg/kg	1	-
Nickel, Ni	mg/kg	0.5	-
Zinc, Zn	mg/kg	0.5	-
Mercury in Soil Method: AN312			
Mercury	mg/kg	0.01	-
Moisture Content Method: AN002			
% Moisture	%	0.5	<0.5
Trace Metals (Dissolved) in Water by ICPMS Method: AN318			
Arsenic, As	µg/L	1	-
Cadmium, Cd	µg/L	0.1	-
Chromium, Cr	µg/L	1	-
Copper, Cu	µg/L	1	-
Lead, Pb	µg/L	1	-
Nickel, Ni	µg/L	1	-
Zinc, Zn	µg/L	5	-
Mercury (dissolved) in Water Method: AN311/AN312			
Mercury	mg/L	0.0001	-

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Alkalinity in Soil **Method: ME-(AU)-[ENV]AN002/AN135**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Total Alkalinity as CaCO3 in Soil*	LB051575	mg/kg	25	<25	0 - 13%	94%
	LB051576	mg/kg	25	<25		94%

Mercury (dissolved) in Water **Method: ME-(AU)-[ENV]AN311/AN312**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery	MS %Recovery
Mercury	LB051531	mg/L	0.0001	<0.0001	99%	85%

Mercury in Soil **Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB051552	mg/kg	0.01	<0.01	0 - 5%	105%	101%
	LB051594	mg/kg	0.01	<0.01	0 - 4%	108%	90%

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Hexachlorobenzene (HCB)	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Alpha BHC	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Lindane	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Heptachlor	LB051487	mg/kg	0.1	<0.1	0%	115%	130%	4%
	LB051489	mg/kg	0.1	<0.1	0%	120%		
Aldrin	LB051487	mg/kg	0.1	<0.1	0%	115%	130%	4%
	LB051489	mg/kg	0.1	<0.1	0%	120%		
Beta BHC	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Delta BHC	LB051487	mg/kg	0.1	<0.1	0%	105%	130%	4%
	LB051489	mg/kg	0.1	<0.1	0%	110%		
Heptachlor epoxide	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
o,p'-DDE	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Alpha Endosulfan	LB051487	mg/kg	0.2	<0.2	0%	NA	NA	NA
	LB051489	mg/kg	0.2	<0.2	0%	NA		
Gamma Chlordane	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Alpha Chlordane	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
trans-Nonachlor	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
p,p'-DDE	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Dieldrin	LB051487	mg/kg	0.2	<0.2	0%	105%	125%	0%
	LB051489	mg/kg	0.2	<0.2	0%	115%		
Endrin	LB051487	mg/kg	0.2	<0.2	0%	115%	130%	0%
	LB051489	mg/kg	0.2	<0.2	0%	120%		
o,p'-DDD	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
o,p'-DDT	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Beta Endosulfan	LB051487	mg/kg	0.2	<0.2	0%	NA	NA	NA
	LB051489	mg/kg	0.2	<0.2	0%	NA		
p,p'-DDD	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
p,p'-DDT	LB051487	mg/kg	0.1	<0.1	0%	95%	85%	6%

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420 (continued)**

				MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
p,p'-DDT	LB051489	mg/kg	0.1	<0.1	0%	85%		
Endosulfan sulphate	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Endrin Aldehyde	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Methoxychlor	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Endrin Ketone	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Isodrin	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		
Mirex	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA		

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB051487	%	-	95%	2%	97%	109%	3%
	LB051489	%	-	99%	2 - 3%	101%		

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

OP Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Dichlorvos	LB051487	mg/kg	0.5	<0.5	0%	70%	84%	10%
	LB051489	mg/kg	0.5	<0.5		70%	72%	2%
Dimethoate	LB051487	mg/kg	0.5	<0.5	0%	NA	NA	NA
	LB051489	mg/kg	0.5	<0.5		NA	NA	NA
Diazinon (Dimpylate)	LB051487	mg/kg	0.5	<0.5	0%	93%	112%	2%
	LB051489	mg/kg	0.5	<0.5		93%	96%	3%
Fenitrothion	LB051487	mg/kg	0.2	<0.2	0%	NA	NA	NA
	LB051489	mg/kg	0.2	<0.2		NA	NA	NA
Malathion	LB051487	mg/kg	0.2	<0.2	0%	NA	NA	NA
	LB051489	mg/kg	0.2	<0.2		NA	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB051487	mg/kg	0.2	<0.2	0%	86%	117%	5%
	LB051489	mg/kg	0.2	<0.2		86%	89%	2%
Parathion-ethyl (Parathion)	LB051487	mg/kg	0.2	<0.2	0%	NA	NA	NA
	LB051489	mg/kg	0.2	<0.2		NA	NA	NA
Bromophos Ethyl	LB051487	mg/kg	0.2	<0.2	0%	NA	NA	NA
	LB051489	mg/kg	0.2	<0.2		NA	NA	NA
Methidathion	LB051487	mg/kg	0.5	<0.5	0%	NA	NA	NA
	LB051489	mg/kg	0.5	<0.5		NA	NA	NA
Ethion	LB051487	mg/kg	0.2	<0.2	0%	110%	83%	7%
	LB051489	mg/kg	0.2	<0.2		110%	103%	0%
Azinphos-methyl (Guthion)	LB051487	mg/kg	0.2	<0.2	0%	NA	NA	NA
	LB051489	mg/kg	0.2	<0.2		NA	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
2-fluorobiphenyl (Surrogate)	LB051487	%	-	96%	0 - 2%	84%	94%	0%
	LB051489	%	-	96%		84%	86%	2%
d14-p-terphenyl (Surrogate)	LB051487	%	-	102%	0 - 2%	94%	106%	4%
	LB051489	%	-	102%		94%	106%	2%

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Naphthalene	LB051487	mg/kg	0.1	<0.1	0%	96%	94%	1%
	LB051489	mg/kg	0.1	<0.1	0%	96%	97%	1%
2-methylnaphthalene	LB051487	mg/kg	0.1	<0.1	0 - 10%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA	NA	NA
1-methylnaphthalene	LB051487	mg/kg	0.1	<0.1	0 - 26%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA	NA	NA
Acenaphthylene	LB051487	mg/kg	0.1	<0.1	0%	94%	97%	3%
	LB051489	mg/kg	0.1	<0.1	0 - 18%	94%	95%	2%
Acenaphthene	LB051487	mg/kg	0.1	<0.1	0%	94%	83%	4%
	LB051489	mg/kg	0.1	<0.1	0%	94%	99%	2%
Fluorene	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA	NA	NA
Phenanthrene	LB051487	mg/kg	0.1	<0.1	14 - 74%	101%	99%	5%
	LB051489	mg/kg	0.1	<0.1	29 - 109%	101%	101%	2%
Anthracene	LB051487	mg/kg	0.1	<0.1	0 - 29%	83%	108%	6%
	LB051489	mg/kg	0.1	<0.1	0 - 32%	83%	84%	2%
Fluoranthene	LB051487	mg/kg	0.1	<0.1	25 - 70%	103%	99%	11%
	LB051489	mg/kg	0.1	<0.1	30 - 141%	103%	118%	1%
Pyrene	LB051487	mg/kg	0.1	<0.1	20 - 71%	102%	118%	6%
	LB051489	mg/kg	0.1	<0.1	14 - 147%	102%	114%	3%
Benzo(a)anthracene	LB051487	mg/kg	0.1	<0.1	7 - 82%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	22 - 113%	NA	NA	NA
Chrysene	LB051487	mg/kg	0.1	<0.1	5 - 18%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	7 - 71%	NA	NA	NA
Benzo(b&j)fluoranthene	LB051487	mg/kg	0.1	<0.1	3 - 81%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	12 - 109%	NA	NA	NA
Benzo(k)fluoranthene	LB051487	mg/kg	0.1	<0.1	30 - 33%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0 - 4%	NA	NA	NA
Benzo(a)pyrene	LB051487	mg/kg	0.1	<0.1	26 - 79%	101%	111%	1%
	LB051489	mg/kg	0.1	<0.1	7 - 89%	101%	119%	1%
Indeno(1,2,3-cd)pyrene	LB051487	mg/kg	0.1	<0.1	20 - 63%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	12 - 71%	NA	NA	NA
Dibenzo(a&h)anthracene	LB051487	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	0%	NA	NA	NA
Benzo(ghi)perylene	LB051487	mg/kg	0.1	<0.1	14 - 57%	NA	NA	NA
	LB051489	mg/kg	0.1	<0.1	8 - 40%	NA	NA	NA
Total PAH	LB051487	mg/kg	0.8	<0.8	17 - 69%	NA	NA	NA
	LB051489	mg/kg	0.8	<0.8	17 - 122%	NA	NA	NA
Carcinogenic PAHs (as BaP TEQ)*	LB051487	TEQ	0.2	<0.2	20 - 61%	NA	NA	NA
	LB051489	TEQ	0.2	<0.2	8 - 57%	NA	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
d5-nitrobenzene (Surrogate)	LB051487	%	-	106%	4 - 6%	90%	102%	2%
	LB051489	%	-	106%	6 - 19%	90%	88%	2%
2-fluorobiphenyl (Surrogate)	LB051487	%	-	96%	0 - 2%	84%	94%	0%
	LB051489	%	-	96%	8 - 13%	84%	86%	2%
d14-p-terphenyl (Surrogate)	LB051487	%	-	102%	0 - 2%	94%	106%	4%
	LB051489	%	-	102%	4 - 19%	94%	106%	2%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

pH in soil (1:5) Method: ME-(AU)-[ENV]AN101

Parameter	QC Reference	Units	LOR	DUP %RPD	LCS %Recovery
pH	LB051626	pH Units	-	1 - 2%	100%
	LB051627	pH Units	-		100%

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB051514	mg/kg	3	<3	15 - 17%	106%	96%
	LB051592	mg/kg	3	<3	0 - 19%	98%	83%
Cadmium, Cd	LB051514	mg/kg	0.3	<0.3	0%	105%	93%
	LB051592	mg/kg	0.3	<0.3	0%	94%	87%
Chromium, Cr	LB051514	mg/kg	0.3	<0.3	10 - 36%	106%	94%
	LB051592	mg/kg	0.3	<0.3	10 - 15%	98%	86%
Copper, Cu	LB051514	mg/kg	0.5	<0.5	14 - 27%	105%	95%
	LB051592	mg/kg	0.5	<0.5	0 - 10%	100%	91%
Lead, Pb	LB051514	mg/kg	1	<1	26 - 33%	104%	92%
	LB051592	mg/kg	1	<1	13 - 39%	97%	82%
Nickel, Ni	LB051514	mg/kg	0.5	<0.5	10 - 32%	106%	94%
	LB051592	mg/kg	0.5	<0.5	8 - 16%	99%	87%
Zinc, Zn	LB051514	mg/kg	0.5	<0.5	20 - 35%	104%	107%
	LB051592	mg/kg	0.5	<0.5	1 - 17%	98%	72%

Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB051474	µg/L	1	<1		98%	95%
Cadmium, Cd	LB051474	µg/L	0.1	<0.1		107%	106%
Chromium, Cr	LB051474	µg/L	1	<1		102%	103%
Copper, Cu	LB051474	µg/L	1	<1		111%	110%
Lead, Pb	LB051474	µg/L	1	<1	0%	111%	110%
Nickel, Ni	LB051474	µg/L	1	<1		102%	102%
Zinc, Zn	LB051474	µg/L	5	<5		104%	103%

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
TRH C10-C14	LB051487	mg/kg	20	<20	0%	100%	NA
	LB051489	mg/kg	20	<20	0%	103%	NA
TRH C15-C28	LB051487	mg/kg	45	<45	0 - 6%	98%	NA
	LB051489	mg/kg	45	<45	0 - 5%	100%	NA
TRH C29-C36	LB051487	mg/kg	45	<45	0 - 17%	88%	NA
	LB051489	mg/kg	45	<45	0 - 8%	90%	NA
TRH C37-C40	LB051487	mg/kg	100	<100	0%	NA	NA
	LB051489	mg/kg	100	<100	0%	NA	NA
TRH C10-C36 Total	LB051487	mg/kg	110	<110	0 - 6%	NA	NA
	LB051489	mg/kg	110	<110	0 - 6%	NA	NA
TRH C10-C40 Total	LB051487	mg/kg	210	<210	0 - 6%	NA	NA
	LB051489	mg/kg	210	<210	0 - 6%	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
TRH >C10-C16 (F2)	LB051487	mg/kg	25	<25	0%	100%	NA
	LB051489	mg/kg	25	<25	0%	103%	NA
TRH >C16-C34 (F3)	LB051487	mg/kg	90	<90	0 - 2%	95%	NA
	LB051489	mg/kg	90	<90	0 - 4%	100%	NA
TRH >C34-C40 (F4)	LB051487	mg/kg	120	<120	0%	90%	NA
	LB051489	mg/kg	120	<120	0%	90%	NA

VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Benzene	LB051493	mg/kg	0.1	<0.1	0%	108%	85%	20%
	LB051494	mg/kg	0.1	<0.1		71%	73%	
Toluene	LB051493	mg/kg	0.1	<0.1	0%	101%	111%	16%
	LB051494	mg/kg	0.1	<0.1		93%	84%	
Ethylbenzene	LB051493	mg/kg	0.1	<0.1	0%	129%	135%	15%
	LB051494	mg/kg	0.1	<0.1		106%	92%	
m/p-xylene	LB051493	mg/kg	0.2	<0.2	0%	125%	126%	12%
	LB051494	mg/kg	0.2	<0.2		89%	104%	
o-xylene	LB051493	mg/kg	0.1	<0.1	0%	111%	85%	18%
	LB051494	mg/kg	0.1	<0.1		77%	90%	

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Naphthalene	LB051493	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051494	mg/kg	0.1	<0.1		NA	NA	

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Dibromofluoromethane (Surrogate)	LB051493	%	-	77%	3 - 23%	98%	105%	5%
	LB051494	%	-	91%		95%	90%	
d4-1,2-dichloroethane (Surrogate)	LB051493	%	-	79%	4 - 17%	97%	103%	6%
	LB051494	%	-	102%		104%	94%	
d8-toluene (Surrogate)	LB051493	%	-	84%	7 - 16%	100%	99%	4%
	LB051494	%	-	106%		91%	95%	
Bromofluorobenzene (Surrogate)	LB051493	%	-	92%	13 - 17%	96%	114%	18%
	LB051494	%	-	94%		104%	114%	

Totals

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434 (continued)

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Total Xylenes*	LB051493	mg/kg	0.3	<0.3	0%	NA	NA	NA
	LB051494	mg/kg	0.3	<0.3		NA	NA	
Total BTEX*	LB051493	mg/kg	0.6	<0.6	0%	NA	NA	NA
	LB051494	mg/kg	0.6	<0.6		NA	NA	

Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
TRH C6-C10	LB051493	mg/kg	25	<25	0%	107%	96%	0%
	LB051494	mg/kg	25	<25	0%	97%	94%	
TRH C6-C9	LB051493	mg/kg	20	<20	0%	95%	94%	1%
	LB051494	mg/kg	20	<20	0%	93%	94%	

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Dibromofluoromethane (Surrogate)	LB051493	%	-	77%	3 - 23%	98%	105%	5%
	LB051494	%	-	91%	22%	95%	90%	
d4-1,2-dichloroethane (Surrogate)	LB051493	%	-	79%	4 - 17%	97%	103%	6%
	LB051494	%	-	102%	21%	104%	94%	
d8-toluene (Surrogate)	LB051493	%	-	84%	7 - 16%	100%	99%	4%
	LB051494	%	-	106%	21%	91%	95%	
Bromofluorobenzene (Surrogate)	LB051493	%	-	92%	13 - 17%	96%	114%	18%
	LB051494	%	-	94%	17%	104%	114%	

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Benzene (F0)	LB051493	mg/kg	0.1	<0.1	0%	NA	NA	NA
	LB051494	mg/kg	0.1	<0.1	0%	NA	NA	
TRH C6-C10 minus BTEX (F1)	LB051493	mg/kg	25	<25	0%	85%	61%	18%
	LB051494	mg/kg	25	<25	0%	121%	102%	

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN002/AN135	Alkalinity (and forms of) by Titration: The sample is extracted 1to 5 in deionised water and the extract titrated with standard acid to pH 8.3 (P titre) and pH 4.5 (T titre) and permanent and/or total alkalinity calculated. The results are expressed as equivalents of calcium carbonate or recalculated as bicarbonate, carbonate and hydroxide. Reference APHA 2320. Internal Reference AN135
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN311/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependant on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
		QFL	QC result is below the lower tolerance
**	Indicative data, theoretical holding time exceeded.	-	The sample was not analysed for this analyte
^	Performed by outside laboratory.	NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf