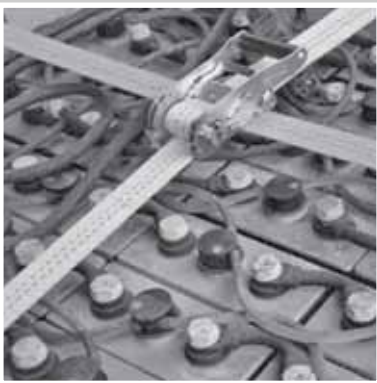


Preliminary Contamination Assessment

Appendix K



Appendix K — Preliminary Contamination Assessment

K



Preliminary Contamination Assessment

Battery Recycling Facility

129 Mitchell Avenue Kurri Kurri

Prepared for Pymore Recyclers International Pty Ltd | 28 October 2016





Preliminary Contamination Assessment

Battery Recycling Facility
129 Mitchell Avenue Kurri Kurri

Prepared for Pymore Recyclers International Pty Ltd | 28 October 2016

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065

T+61 2 9493 9500

F+61 2 9493 9599

Einfo@emmconsulting.com.au

www.emmconsulting.com.au

Preliminary Contamination Assessment

Final

Report J15156RP1 | Prepared for Pymore Recyclers International Pty Ltd | 28 October 2016

Prepared by **Nina Baulch**

Approved by **Brett McLennan**

Position Senior Hydrogeologist

Position Director

Signature



Signature



Date 28 October 2016

Date 28 October 2016

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

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Document Control

Version	Date	Prepared by	Reviewed by
V1	28 October 2016	N Baulch	L. Jordstad (Geosyntec Consultants) B. McLennan



T +61 (0)2 9493 9500 | F +61 (0)2 9493 9599

Ground Floor | Suite 01 | 20 Chandos Street | St Leonards | New South Wales | 2065 | Australia

www.emmconsulting.com.au

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1 Introduction

Pymore Recyclers International Pty Ltd (Pymore) engaged EMM Consulting Pty Ltd (EMM) to undertake a preliminary contamination assessment of 129 Mitchell Avenue, Kurri Kurri (the site).

The site is approximately 40 km northwest of Newcastle and is located within an industrial area (Figure 1.1). The site comprises the eastern part of Lot 796 in Deposited Plan (DP) 39877 and the majority of Lot 797 in DP 39877, which are owned by Weston Aluminium Pty Ltd (Weston). Weston currently uses the site (also referred to as project area in this report) for the storage of disused industrial equipment. The site had also been previously used for the storage of bonded ceramics used in brick refractories.

Pymore intend to construct and operate a used lead acid battery (ULAB) recycling facility at the site (the project, see Figure 1.2). The recycling facility would have four main processes – crushing, screening and separation; desulphurisation; crystallisation; and lead recovery. The entire process converts a ULAB into materials which are recycled for use in new products. Lead and plastics recovered are used in the production of new batteries. Sodium sulphate crystals, a by-product of ULAB recycling, can be readily used in other industries.

The project is State significant development (SSD) which requires development consent under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). An application for SSD is required to be accompanied by an environmental impact statement (EIS). This preliminary contamination assessment will be appended to the EIS for the project.

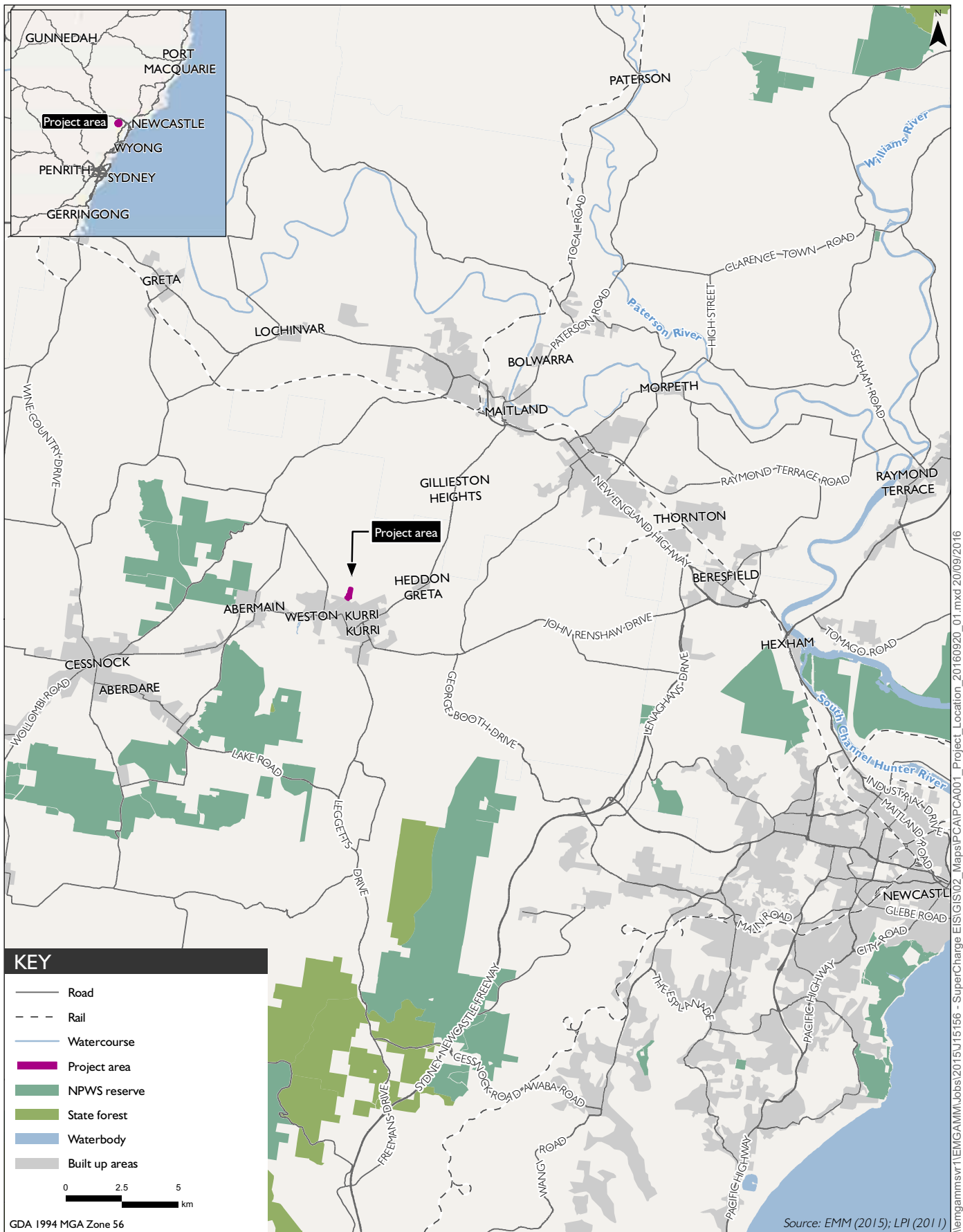
This preliminary contamination assessment aims to identify any potential site contamination issues that could preclude the project.

1.1 State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) provides a state wide planning approach to the remediation of contaminated land, and aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human and environmental health.

Clause 7 of SEPP 55 states that:

- (1) A consent authority must not consent to the carrying out of any development on land unless:
 - (a) it has considered whether the land is contaminated, and
 - (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
 - (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.
- (2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

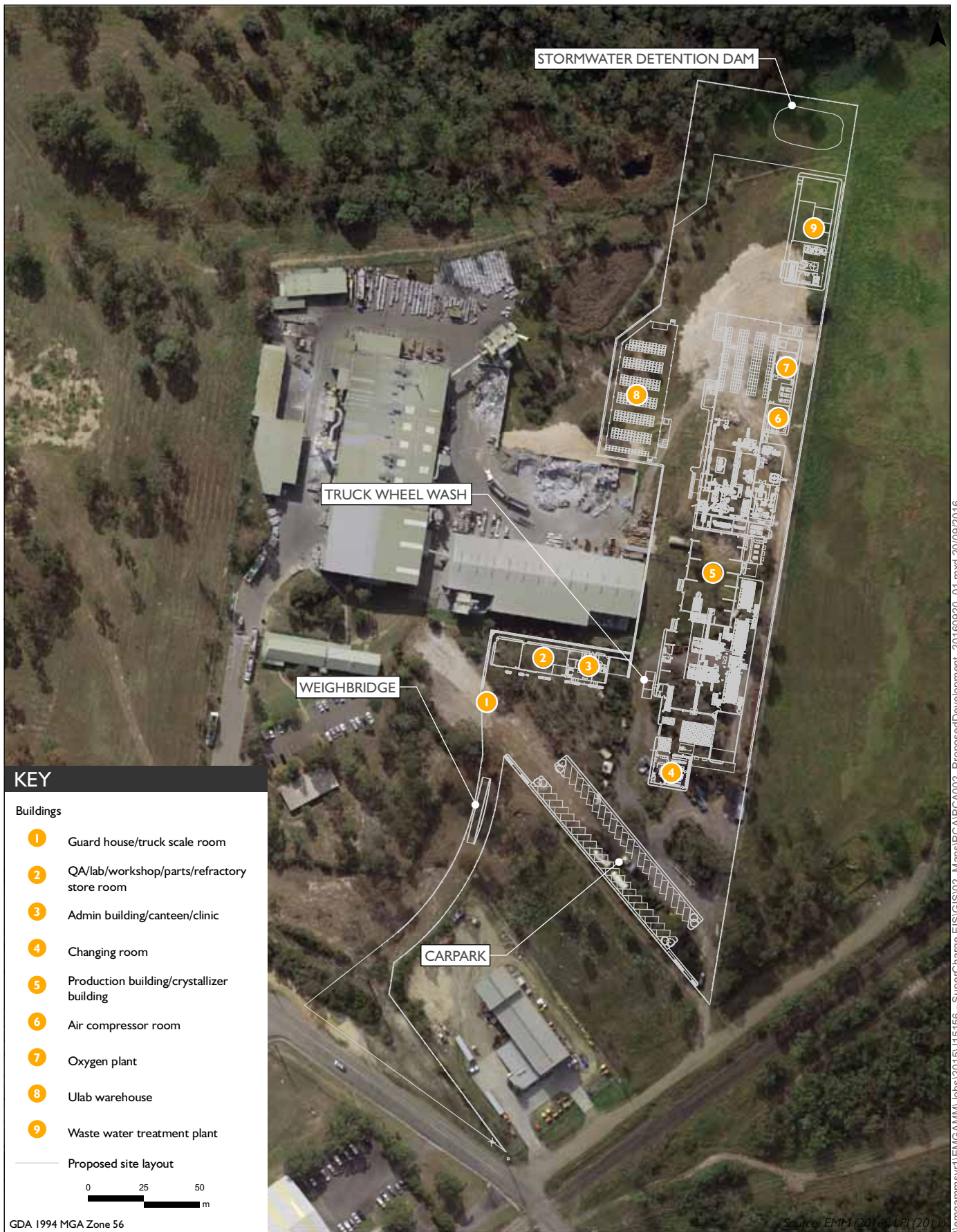


Project location

Kurri Kurri Battery Recycling Facility
 Preliminary contamination assessment

Figure 1.1





- (3) The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.
- (4) The land concerned is:
 - (a) land that is within an investigation area,
 - (b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,
 - (c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or child care purposes, or for the purposes of a hospital—land:
 - (i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and
 - (ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).

In relation to clause 7(4)(b) of SEPP 55, Table 1 of the contaminated land planning guidelines, *Managing Land Contamination Planning Guidelines: SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning (DUAP) 1998) is entitled *Some Activities that may Cause Contamination*. It lists 'scrap yards' and 'smelting and refining' as purposes (or activities) which is potentially cause contamination.

Accordingly, given that the site is currently used for the storage of disused industrial equipment and was previously used for the storage of bonded ceramics used in brick refractories, clause 7 of SEPP 55 requires that a report specifying the findings of a preliminary investigation of the site, carried out in accordance with the contaminated land planning guidelines, be prepared to accompany Pymore's application for the project. The preliminary contamination assessment, which details the results of the preliminary contamination investigation, provides the consent authority with the information it needs to carry out its planning functions under SEPP 55.

1.2 Scope of works

The scope of works comprised the completion of a preliminary desktop and field based site contamination assessment. This assessment was completed in general accordance with the following guidelines made or approved by the NSW Environment Protection Authority (EPA) under the *NSW Contaminated Land Management Act 1997* (CLM Act), including:

- *Managing Land Contamination Planning Guidelines: SEPP 55 – Remediation of Land* (DUAP 1998);
- *Guidelines for consultants reporting on contaminated sites* (Office of Environment and Heritage (OEH) 2011); and
- *National Environment Protection (Assessment of Site Contamination) Measure 2013*.

The preliminary contamination assessment comprised:

- identification of the owner of the project area and its zoning;
- review of the project area's history based on publicly available information sources, including historical aerial photographs;
- discussion of the project area's environment, including topography, geology, surface water, groundwater and land use based on review of publicly available information sources;
- identification of land uses surrounding the project area;
- identification of past and present potentially contaminating activities on the project area based on a review of publically available contaminated land registers;
- collection of 29 soil samples with subsequent laboratory analysis to assess potential soil contamination;
- collection of quality assurance/quality control (QA/QC) samples to assess laboratory precision and accuracy; and
- preliminary assessment of the contamination status of the project area.

1.3 Methodology

The desktop based appraisal of the site history was undertaken and all relevant, publicly available information about the project area was reviewed and assessed, including:

- NSW Land and Property Information (LPI) databases;
- the *Cessnock Local Environmental Plan 2011* (Cessnock LEP);
- a section 149 certificate under the EP&A Act from Cessnock City Council (CCC);
- historical aerial photographs;
- geologic and topographic maps,
- CCCs acid sulphate soils (ASS) database;
- Department of Primary Industries - Water (DPI Water) PINNEENA bore register; and
- EPA's contamination databases.

As previously stated, the field based soil investigation comprised the collection and laboratory analysis of 29 soil samples and QA/QC samples.

2 Project area identification and history

2.1 Project area

The project area is 3.24 hectares (ha) and comprises predominantly disturbed, but undeveloped land used for the above ground storage of unused industrial equipment.

The project area's details are included in Table 2.1.

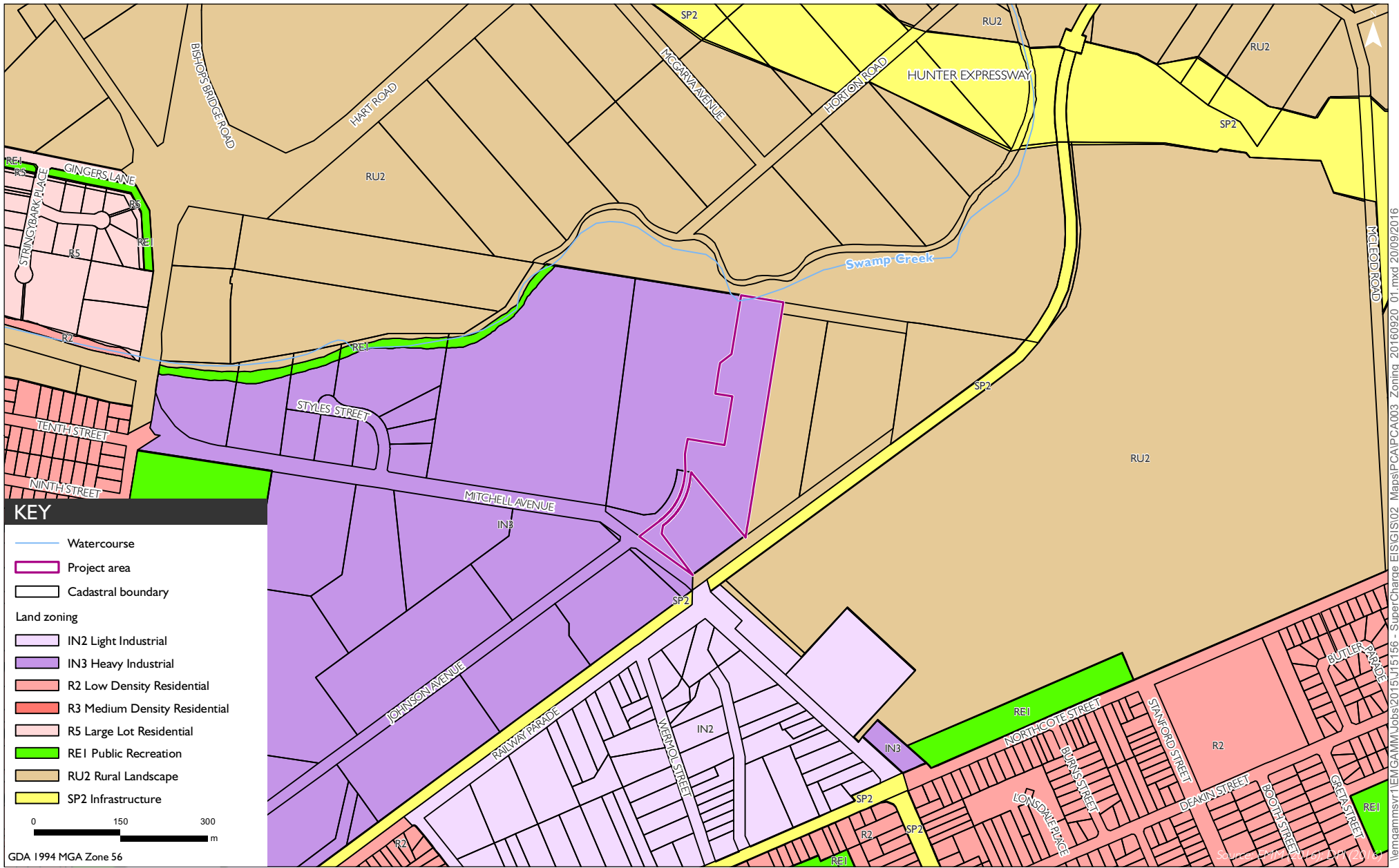
Table 2.1 Project area details

Site particulars	
Street number, name and suburb	129 Mitchell Avenue, Kurri Kurri in the NSW Hunter Region
Lot and DP	Part of Lot 796 of DP 39877 and Lot 797 of DP 39877
Area	3.24 ha
Local council	CCC
Parish, County	Heddon, Northumberland
Coordinates	0357434 E, 6369295 N
Owner	Weston Aluminium Pty Ltd
Occupier	Weston Aluminium Pty Ltd
Current zoning	IN3 Heavy Industrial under Cessnock LEP
Current land use	Disturbed, but undeveloped land used for storage of industrial equipment

2.2 Land zoning

The project area is zoned IN3 Heavy Industrial under the Cessnock LEP (Figure 2.1). The land use table for the IN3 Heavy Industrial zone is as follows:

1. Objectives of zone:
 - To provide suitable areas for those industries that need to be separated from other land uses;
 - To encourage employment opportunities;
 - To minimise any adverse effect of heavy industry on other land uses; and
 - To support and protect industrial land for industrial uses.
2. Permitted without consent
Nil
3. Permitted with consent
Depots; freight transport facilities; general industries; hazardous storage establishments; heavy industries; neighbourhood shops; offensive storage establishments; roads; timber yards; warehouse or distribution centres; any other development not specified in item 2 or 4.



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Land zoning
 Kurri Kurri Battery Recycling Facility
 Preliminary contamination assessment
 Figure 2.1

4. Prohibited

Agriculture; airstrips; amusement centres; animal boarding or training establishments; boat launching ramps; boat sheds; camping grounds; caravan parks; cemeteries; charter and tourism boating facilities; child care centres; commercial premises; community facilities; correctional centres; eco-tourist facilities; educational establishments; entertainment facilities; exhibition homes; exhibition villages; farm buildings; function centres; health services facilities; helipads; highway service centres; home-based child care; home businesses; home industries; home occupations; home occupations (sex services); industrial training facilities; information and education facilities; jetties; marinas; mooring pens; moorings; mortuaries; open cut mining; places of public worship; public administration buildings; recreation facilities (indoor); recreation facilities (major); recreation facilities (outdoor); registered clubs; residential accommodation; respite day care centres; service stations; tourist and visitor accommodation; veterinary hospitals; water recreation structures; wharf or boating facilities; wholesale supplies.

As such, the IN3 Heavy Industrial zone allows for a range of heavy industrial uses with the consent of the consent authority, including heavy industries and storage establishments deemed to be hazardous and offensive.

2.3 Section 149 Certificate

Section 59(1) of the CLM Act states that

The EPA must, as soon as practicable after the occurrence of any of the following in relation to land, inform the local authority for the area in which land is situated of that matter:

- (a) the land being declared to be significantly contaminated land or ceasing to be significantly contaminated land,
- (b) a management order in relation to the land being served on a person or being revoked,
- (c) the EPA giving its approval or withdrawing its approval for a voluntary management proposal in relation to the land or a voluntary management proposal in relation to the land being completed to the satisfaction of the EPA,
- (d) an ongoing maintenance order in relation to the land being served on a person or being revoked.

Section 53(2) of the CLM Act states:

For the purposes of section 149 of the *Environmental Planning and Assessment Act 1979*, the following matters are prescribed in addition to any other matters, prescribed by the regulations under that section, to be specified in a certificate under that section:

- (a) that the land to which the certificate relates is significantly contaminated land—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,
- (b) that the land to which the certificate relates is subject to a management order—if it is subject to such an order at the date when the certificate is issued,
- (c) that the land to which the certificate relates is the subject of an approved voluntary management proposal—if it is the subject of such an approved proposal at the date when the certificate is issued,

- (d) that the land to which the certificate relates is subject to an ongoing maintenance order—if it is subject to such an order at the date when the certificate is issued,
- (e) that the land to which the certificate relates is the subject of a site audit statement—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

As such, section 149 certificates must prescribe whether, in the EPA's knowledge, a site is significantly contaminated, is subject to a contamination management order, or has been contaminated and subsequently remediated to the satisfaction of an EPA accredited site auditor.

The section 149 certificate for Lot 797 DP 39877 (number 1910, dated 20 August 2015) reports that the project area:

- a. Is not significantly contaminated land within the meaning of the *Contaminated Land Management Act 1997*;
- b. Is not subject to a management order within the meaning of the *Contaminated Land Management Act 1997*;
- c. Is not the subject of an approved voluntary management proposal within the meaning of *Contaminated Land Management Act 1997*;
- d. Is not the subject of an ongoing maintenance order within the meaning of the *Contaminated Land Management Act 1997*; and
- e. Is not the subject of a site audit statement within the meaning of the *Contaminated Land Management Act 1997*.

Accordingly, in the EPA's knowledge, the site is not significantly contaminated, is not subject to a contamination management order, or has not been contaminated and required to be subsequently remediated to the satisfaction of an EPA accredited site auditor.

2.4 Project area land use

The site adjoins Weston's aluminium recycling facility which commenced operations as a pilot plant in 1998 with one rotary furnace. Since then Weston's facility has progressively grown, with a reverberatory furnace commissioned in 2001 and a briquetting plant commissioned in 2011 to process the ash by-product generated in the recycling plant (Weston 2015).

Since 1998, the project area has generally been used to store industrial equipment and drums from the aluminium recycling facility. The industrial equipment and drums have been cleaned prior to storage. Some concrete waste and unused lime has also been stored on the project area.

Since about 2010, fill comprising bricks, bonded ceramics, lime (scrubbing media used in the aluminium recycling facility) and refractories from brick rotary furnaces at the aluminium recycling facility was placed periodically (ie during furnace relines or minor repairs) in a shallow excavated area in the northern end of the project area. The surface area of the fill was approximately 500 m², with a depth up to 2 m. In April 2016, the fill material was removed from site and the excavated area re-filled with natural material from the south-eastern end of the project area.

Weston has advised that there have not been any records of spills or contaminating activities on the project area. There are no septic tanks in the project area, nor has the area been used to store any pesticides or fuels. There are no sewer lines or gas mains underlying the project area. Minor application of a weed killer (Roundup) has been used sporadically in the project area.

2.5 Historical aerial imagery

Historical aerial imagery was obtained from the LPI, and overview is provided in Table 2.2, with the images included in Appendix A.

Table 2.2 Review of historical aerial imagery

Year	Project area	Surrounds
1951	Undeveloped comprising native vegetation and a minor unsealed track.	Undeveloped comprising native vegetation and minor unsealed tracks. Land to the east is cleared, with minor buildings and assumed to be used for night soil disposal.
1984	Undeveloped comprising native vegetation and cleared land to the north. Minor unsealed tracks.	Largely as above, with addition of three large buildings/warehouses to the south and some smaller properties to the north. Tracks visible to the east associated with night soil disposal.
1991	Unchanged from 1984.	Unchanged from 1984.
1998	Some minor land clearing in the north, exposed soil.	Aluminium recycling plant constructed to the west, with two dams to the north-east. Additional large buildings/warehouses to the south-west and residential properties to the south.
2004	Vegetation to the north has covered previously cleared land.	West dams contracted in size. Land cleared for landfill site to the west. Additional warehouses constructed to south-west with associated clearing of trees.
2007	Vegetation in the south has been thinned, machinery is being stored in the middle of the project area and there is some fill material is stockpiled in the mid-north.	The area of the landfill to the west has increased slightly.
2010	Unchanged from 2007.	The trees to the west of the aluminium plant have been thinned. A sealed road has been constructed into the landfill to the west, which has also expanded slightly.
2015	The area of fill material to the mid-north has increased slightly. Machinery storage is present at the southern end of the project area, now accessed by gravel tracks.	Unchanged from 2010.

Notes: Source: LPI

3 Environmental setting and surrounding environment

3.1 Environmental setting

The elevation of the project area is between 10 and 16 metres (m) Australia Height Datum (AHD). The site slopes from south to north in a gentle downwards gradient towards a creek identified as Swamp Creek. Swamp Creek forms the northern boundary to the project area. The broader landscape is dominated by low density industrial facilities interspersed between remnant native vegetation and cleared land.

The closest surface water feature to the project area is Swamp Creek, located approximately 5 m to the north of the northern boundary of the project area. Swamp Creek flows to the north-east, joining the Hunter River after approximately 12 km. Shallow groundwater flow is expected to follow a muted reflection of topography, with an assumed flow direction to the north. Some shallow groundwater is expected to discharge into Swamp Creek, along with any water that moves through the unsaturated zone.

The project area is in the northern end of the Permo-Triassic Sydney Geological Basin. This basin comprises Permian and Triassic sedimentary units, overlain by Quaternary alluvium associated with watercourses. Reference to the *1:100 000 Newcastle Coalfield Regional Geology map sheet* (Hawley et al 1995) confirms Quaternary alluvial soils and unconsolidated sands are deposited adjacent to Swamp Creek.

The Quaternary deposits are underlain by Early Permian, Dalwood Group, comprising silty sandstone and siltstone. Weathering of this unit produces sandy, silty clay and the depth to competent rock is 7 m below ground level (BGL). There is no reportable presence of acid sulfate soils (potential or actual) at the project area or in the surrounding area (OEH 2015 and section 149 certificate).

The closest registered groundwater bores are approximately 2.2 km to the north of the project area (DPI Water) online groundwater bore database). These bores are monitoring bores associated with the Hydro Aluminium Smelter. No information on water bearing zones, standing water levels or geology is provided in the bore summaries.

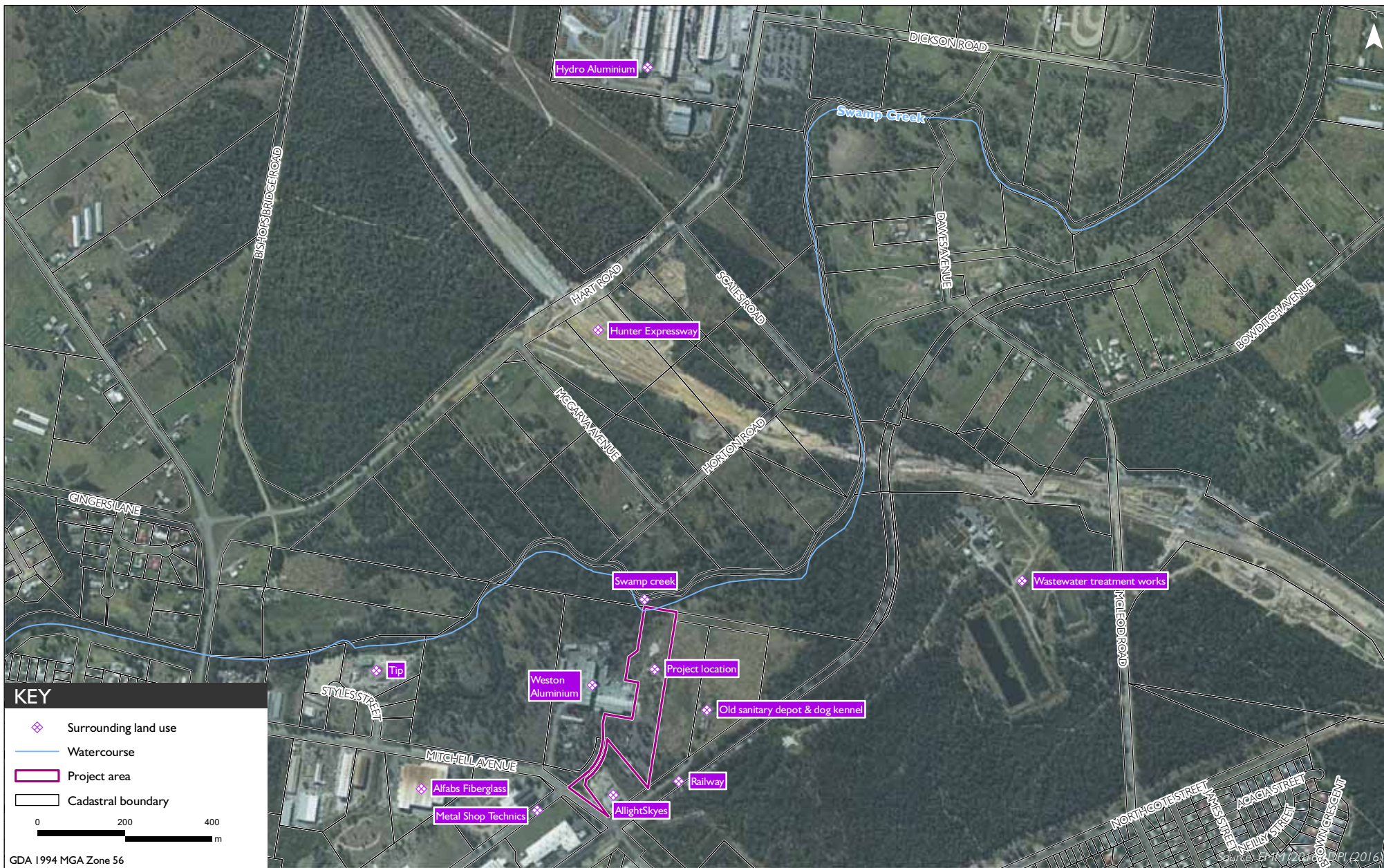
There are no actual or potential groundwater dependent ecosystems in the project area or surrounds (ie the whole suburb of Kurri Kurri) listed in the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009* or in the Bureau of Meteorology's *Groundwater Dependent Ecosystem Atlas*.

3.2 Surrounding land uses

The surrounding land uses are described below. The closest residential area is about 700 m to the south of project area. The surrounding land uses are identified in Figure 3.1.

3.2.1 North

To the immediate north is Swamp Creek and native bushland. Approximately 400 m north of Swamp Creek is the newly constructed Hunter Expressway. Native bushland is adjacent to the expressway, and this native bushland forms the buffer zone for the Hydro Aluminium Smelter. The smelter is around 1.5 km north of the project area.



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Surrounding land uses
 Kurri Kurri Battery Recycling Facility
 Preliminary contamination assessment
 Figure 3.1

3.2.2 East

To the east of the site is a cleared, vacant block approximately 6 ha in area. This was used to dispose of human sanitary waste (also known as night soil) by CCC from the 1950s to 2001. More recently this area has been used as a dog kennel; however the land has been unused since 2012. A *Preliminary Contamination Investigation* (Coffey 2011) of this site, which comprised a desktop investigation and field sampling event, concluded:

- Night soil placement, which occurred until 2001, was focused in the northern part of the site but may not always have been placed within the site boundary, although there is no evidence to suggest this material has left the site. The night soil pans were sprayed with coal tar until 1986.
- A diesel underground storage tank (UST) (approximately 5,000 litres (L) containing diesel) and possibly a former oil store are present in the centre of the site.
- A septic tank and building rubble associated with a burnt down cottage are at the south-eastern end of the site.
- Dog kennels were located in the south-eastern part of the site were on site from 2002 - 2012. An associated amenities building discharges detergent and bleach effluent used to clean the dog kennels to a subsurface trench.
- The south-western part of the site has only been used for cattle grazing.

Eight areas of environmental concern were identified where levels of benzo(a)pyrene, total petroleum hydrocarbons (TPHs) (light fractions), polycyclic aromatic hydrocarbons (PAHs) and faecal coliforms exceed the applicable guideline limits. This result relates to the historical use of the site as a sanitary depot (with use of coal tar) and small scale leakage of the effluent disposal system (septic tank). There is a risk that groundwater is impacted with faecal coliforms, nutrients, TPHs and PAHs. However, the shallow groundwater flow direction is anticipated to be towards the north, and not towards the project area.

Further north-east (approximately 800 m) is Hunter Water's, Kurri Kurri Wastewater Treatment Works. This has up to eight sealed settling ponds and treatment ponds, with associated above ground infrastructure.

3.2.3 South

Adjacent to the southern project area boundary is Allight Skyes, a mining and construction equipment hire and sales showroom with an unsealed stockyard. Further south is the sealed Mitchell Avenue and a single track train line. On the far side of Mitchell Avenue is an engineering and steel manufacture workshop, Metal Shop Technics. This site has two large storerooms/workshops and an unsealed stockyard. A fibreglass workshop (Alfabs Fibreglass) is located to the southwest, on the far side of Mitchell Ave. To the far southwest is a hazardous waste recycling facility, Worth Recycling Pty Ltd. This recycling facility is contained in a building with no evidence of any stockpiling or outside storages.

3.2.4 West

The aluminium recycling facility is located to the immediate west of the project area. The plant recovers aluminium from dross, a by-product of the aluminium smelting process, and also recycles scrap aluminium metal products for use in various industries. The plant has approval to process up to 40,000 t of aluminium dross and 35,000 t of scrap aluminium.

Further west is native bushland, and beyond this, approximately 400 m to the west of the aluminium recycling facility, is an open, excavated tip owned by Australian Demolition and Scrap Recovery Pty Limited. This tip accepts general waste for non-thermal treatment.

4 Desktop assessment of contamination

4.1 NSW EPA contaminated land record of notices

NSW EPA's contaminated land public record of notices contains a publically available list of sites for which the EPA has issued regulatory notices under section 58 of the CLM Act, and includes the details of current and former regulatory notices issued. A site will only be listed on the contaminated land record of notices if the EPA has issued a regulatory notice under the CLM Act.

A search of the EPA's contaminated land public record of notice did not return any information on reported contamination or any regulatory notices issued for the project area.

A service station in Lang Street, Kurri Kurri and Ayrefield coal processing facility in Main Road, North Rothbury are two listed properties with records of notices for the Cessnock LGA. The service station is approximately 2 km to the south and the coal processing facility is 25 km to the north-west of the project area. These properties are not located in close proximity to the project area and are not considered to pose a contamination risk.

4.2 NSW EPA contaminated land sites notified

NSW EPA's list of sites notified to the EPA under section 60 of the CLM Act provides an indication of the management status of that particular site. Properties are required to be notified to the EPA under section 60 of the CLM Act if there is reason to suspect the land is contaminated, and one or more of the notification triggers in the Duty to Report guidelines exist at the site. Upon receipt of a section 60 notification, the EPA assesses the contamination status of the site to determine whether the contamination is significant enough to warrant regulation by the EPA (ie under section 58 of the CLM Act).

A search of this public register (dated 14 September 2016) for the project area did not return any information on reported contamination or any regulatory notices.

The service station in Lang Street, Kurri Kurri is listed as '*contamination currently regulated under the Contaminated Lands Management (CLM) Act.*' The Hydro aluminium smelter (north of the project area) is listed as '*regulation under the CLM Act not required.*' These properties are not located in close proximity to the project area and are not considered to pose a contamination risk.

4.3 NSW EPA environmental protection licences

The NSW EPA's public register, under section 308 of the *NSW Protection of the Environment Operations Act 1997* (POEO Act), contains information on environmental protection licences (EPLs). These licences are issued by the EPA to owners or operators of various industrial premises where the site activities are indicated as potential polluting activities under Schedule 1 of the POEO Act. An EPL typically includes conditions that relate to pollution prevention, monitoring and reporting. A search of the register (dated 14 September 2016) reported the following applicable EPLs for Kurri Kurri.

- Weston Aluminium's EPL (number 6423) is listed with the following allowable activities: aluminium production (from scrap metal), recovery of hazardous and other wastes, scrap metal processing and waste storage (hazardous, restricted solid, liquid, clinical and related waste and asbestos waste).

- Central Waste Plant Pty Ltd EPL (13013) to the east of the project area is listed with the following allowable activities: transport of waste, waste storage (other types of waste) and non-thermal treatment of general waste.
- Worth Recycling Pty Ltd EPL (20676) to the south of the project area has the following allowable activities: waste storage of hazardous, restricted solid, liquid, clinical and related waste and asbestos waste.
- The Hunter Water Corporation, Kurri Kurri Wastewater Treatment Works (EPL 1767) to the east of the project area comprises sewage treatment processing by small plants.

4.4 Summary

There are no known contamination issues on site, however there are potentially contaminating activities in the vicinity of the site. In particular, the activities allowable for the aluminium recycling facility (ie filling of bonded ceramics used in brick refractories) initiated the site soil sampling program to further investigate contamination potential.

Potential contamination from the surrounding land uses could potentially be mobilised via groundwater, however the majority of the potentially contaminating activities are above ground in contained buildings. The exception is land immediately to the east which was used to dispose of night soil by CCC from the 1950s to 2001; however groundwater flow is expected to be to the north towards Swamp Creek, and not towards the project area.

5 Field contamination investigation method

Soil samples from the project area were collected to assess the potential for contamination related to the historical use of the land. The field investigation was undertaken on 26 April 2016 by a qualified and experienced environmental scientist.

5.1 Possible contamination sources and areas of concern

The possible contamination sources and areas of concern include:

- phosphorous associated with lime and refractories in the fill material that was excavated and removed from the project area. The area down gradient of the old fill could also have high phosphorous mobilised through rainfall runoff;
- petroleum hydrocarbons, fuels, oils, grease associated with the disused machinery;
- pesticides associated weed control;
- spent pot liners waste products, including cyanide and fluoride, typically associated with primary aluminium smelting vessels. Spent pot liners are regulated as hazardous waste by a Chemical Control Order under the NSW *Environmentally Hazardous Chemicals Act 1985*. Although such contaminants are considered unlikely as Weston Aluminium is an aluminium recycler; and
- nutrients nitrogen and phosphorus associated with the night soil activity on land to the east.

5.2 Method

Shallow soil samples (ie less than 0.5 m BGL) were collected using a hand auger. The majority of samples were collected at 0.1 m BGL, the maximum sample depth was 1 m BGL. A total of 29 soil samples were collected from 16 locations (Figure 5.1). A description and coordinates of the sample locations are included in Table 5.1.

The sampling pattern was both random and judgmental. The random sampling approach aimed to provide broad coverage of the site, while the judgmental sampling locations were selected on the basis of suspected contamination sources. The judgmental sampling sites included the area where the fill was removed and down gradient of the fill, the eastern site boundary adjacent to the night soil site, and areas near disused machinery and drums. The sample collected from Soil-1 was considered a control location as it was within native vegetation and undisturbed soil, with no equipment or drums nearby.

The samples for laboratory analysis were collected from the hand auger by hand (with the sampler wearing a new nitrile glove at each location) and were placed directly into laboratory supplied jars with Teflon-lined lids. The samples were transported to a NATA accredited laboratory, Australian Laboratory Service (ALS) in Sydney under chain of custody conditions. A photoionization gas detector was not used in the field, but all soil samples were analysed for benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN).

All soil samples underwent analysis for: total metals, PAH, TPH, total recoverable hydrocarbons (TRHs) and BTEXN. Select samples were also analysed for nutrients, polychlorinated biphenyls (PCB), organochlorine pesticides (OCP) and organophosphorus pesticides (OPP). The basis for the additional

analytical suite was the surrounding land use features and field observations, particularly odours, proximity to the adjacent eastern property and likelihood of pesticide use.

Table 5.1 Soil sample locations, and number and type of sample

ID	Description	Sample location	Depth of samples (m BGL)	Easting	Northing
S1	light brown sandy loam becoming red/brown compact clay	native vegetation, undisturbed soil	0.1, 0.5	357374	6369205
S2	dark brown soil	near disused machinery	0.1	357385	6369118
S3	light brown/grey clay	near disused machinery	0.1	357409	6369158
S4	light brown sandy loam	near disused machinery	0.1	357436	6369171
S5	light brown soil	near disused drums	0.1	357427	6369216
S6	light brown/grey sandy loam becoming clayey	adjacent to eastern boundary	0.1, 0.5	357459	6369220
S7	light grey/ blue gravel	near disused machinery	0.1	357439	6369291
S8	light grey sandy gravel	near old fill material	0.1	357430	6369329
S9	light brown/grey gravel becoming sandy	near old fill material	0.1, 0.35	357440	6369354
S12	light brown sand	adjacent to eastern boundary	0.1	357486	6369354
S13	dark brown organic matter, refusal at 0.65 m BGL	adjacent to eastern boundary	0.1, 0.5, 0.65	357494	6369393
S14	dark brown organic matter, moist at 0.4 m BGL	down gradient of old fill	0.1, 0.5	357483	6369420
S15	light yellow/brown sand	near disused drums	0.1	357400	6369327
S16	light brown organic matter	down gradient of old fill	0.1, 0.5, 1	357446	6369410
S17	light brown sand at 0.5 light grey clay	near old fill material	0.1, 0.5, 1	357448	6369370
S18	light grey clay becoming darker	near old fill material	0.1, 0.5, 1	357451	6369360



Sample locations

Kurri Kurri Battery Recycling Facility
Preliminary contamination assessment

Figure 5.1

5.2.1 Quality assurance and quality control measures

The field QA/QC measures included the following measures to ensure the integrity of the collected data:

- Record keeping: records of field activities, observations, sample locations (including duplicates) and field parameters.
- Sample collection, handing and preservation: the soil jars were appropriately labelled and stored in ice-cooled chests, and were delivered to the laboratory within the appropriate handling times and with completed chain of custody documentation.
- Dedicated equipment and decontamination: dedicated sampling equipment was decontaminated using Decon™ liquid detergent prior to sampling and was rinsed between sampling locations to avoid cross-contamination. A new pair of nitrile gloves was worn at each sampling location.
- Two blind duplicate intra-laboratory samples were collected to measure the precision of the analytical procedure:
 - QA1 was a blind duplicate of primary sample S1-0.5; and
 - QA2 was a blind duplicate of primary sample S12-0.1
- A trip blank and two trip spike samples were taken to site and included in the analytical suite to assess potential cross contamination and loss of volatiles during sampling and transport.

Laboratory precision using the duplicate samples was assessed via the relative percentage difference (RPD). The RPD is calculated by:

$$RPD = \frac{(C1 - C2)}{\left(\frac{C1+C2}{2}\right)} \times 100\%$$

where C1 is the primary sample concentration and C2 is the duplicate sample concentration

The *National Environmental Protection (Assessment of Site Contamination) Measure (ASC NEPM2013) Schedule B3: Guideline on Laboratory Analysis of Potentially Contaminated Soils* indicates that an RPD of 30% or less is considered to show acceptable agreement. If the RPD value exceeds 30%, a review should be conducted to assess the cause of the discrepancy.

In instances where either the primary or duplicate sample results were below the laboratory level of reporting (LOR), an RPD was not calculated. Only one instance was evident in the data set, with the primary sample reporting a concentration below the LOR, and the duplicate sample reporting a concentration at the LOR, which was considered to be immaterial from a data validation perspective.

5.3 Soil assessment criteria

The *ASC NEPM (2013) Schedule B1: Guideline on Investigation Levels for Soil and Groundwater* presents health-based and ecological investigation and screening levels for soil, groundwater and vapour. These guidelines are applied to assess the human health and ecological risks associated with the presence of contamination. Different soil investigation levels are provided for different land uses (with different contamination exposure assumptions). Investigation and screening levels are intended for use as Tier 1 screening levels, and to trigger consideration of an appropriate site-specific risk-based assessment approach or appropriate risk management options where they are exceeded.

The proposed land use is for a battery recycling facility, and the site is zoned IN3 Heavy Industrial. Accordingly, commercial/industrial assessment criteria were adopted for this investigation, as described in the following sections.

5.3.1 Health-based assessment criteria

The health-based soil assessment criteria adopted for the assessment of contamination within the site included the following:

- The ASC NEPM (2013) risk-based Health Investigation Levels (HIL) were adopted for selected organic and inorganic chemicals in Table 1A(1) of Schedule B(1) – 'Health investigation levels for soil contaminants'. Based on the land use zoning and proposed future land use, the commercial/industrial investigation levels (HIL-D) were adopted for assessing human health risk via the direct contact pathway.
- The ASC NEPM (2013) Health Screening Levels (HSL) in Table 1A(3) of Schedule B(1) – 'Soil HSLs for vapour intrusion' were adopted. Based on the land use zoning and proposed future land use, the commercial/industrial screening levels (HSL-D) were adopted for assessing human health risk via the inhalation pathway.

5.3.2 Ecological assessment criteria

The ecological soil assessment criteria adopted for the assessment of contamination within the site included the following:

- The ASC NEPM (2013) Ecological Investigation Levels (EIL) in Tables 1B(1) to 1B(5) of Schedule B(1) were adopted. For this assessment the 'Commercial and industrial' exposure criteria were adopted. A limited number of pH values were available from prior leaching analysis of soils at the site, all of which reported pH values >7.5 from a neutral leach. These pH values have been used as a proxy for selection of appropriate added contaminant limits (ACLs), whereas the most conservative values for cation exchange capacity and clay content were adopted in the absence of analytical data for the project area.
- The ASC NEPM (2013) Ecological Screening Levels (ESL) in Table 1B(6) of Schedule B(1) were adopted. For this assessment the ESL criteria for clay soil in an 'Commercial and industrial' exposure scenario was adopted.

6 Investigation results

6.1 Field observations

The project area is undeveloped and unsealed, and comprises: disturbed native vegetation, cleared land, fill, empty drums and disused, clean equipment. There was some manganese residue and small piles of lime scattered between the equipment. Photos of the project area are included in Appendix B.

There was no visible evidence of contamination and there was no surface staining or petroleum sheens. Weston Aluminium advised that all the equipment had been cleaned prior to storage.

6.1.1 Subsurface observations

The subsurface comprised light brown/grey, very fine to fine grained sandy loam with minor clay and organic matter. Fine grained light yellow/brown sand and organic matter was observed adjacent to Swamp Creek in the northern end of the project area. At this location the subsurface became moist at 0.4 m BGL, further south the depth to moisture is deeper, approximately 3 to 7 m BGL.

The thickness of the weathered material was variable. In the centre of the project area competent rock was encountered at 0.35 m BGL (at S9), while to the eastern site boundary this depth is greater at 7.3 m BGL.

6.2 Quality assurance and quality control

6.2.1 Field QA/QC

The following observations were made with respect to the laboratory-based QC measures:

- Appropriate field QA measures were completed during the investigation, including decontamination of sampling equipment and use of new nitrile gloves at each sampling location by the sampler.
- There were no RPD exceedances above 30% between the primary and blind duplicate samples (Summary Table Two, Appendix C).
- Trip blank results were all below the laboratory LOR.
- Trip spike recoveries were reported as absolute concentrations rather than spike recoveries. Accordingly, no conclusion could be made with regard to the appropriateness of the spike recoveries.

Overall the field QA/QC results were acceptable, and indicate that the reported data are suitable for interpretive use and as the basis for site management decisions.

6.2.2 Laboratory QA/QC

The following observations were made with respect to the laboratory-based QC measures:

- The laboratory duplicate analysis RPD values were all within the acceptance range with the following exception:

- An RPD of 37.4% for zinc was reported for the laboratory duplicate analysis of sample S8-0.1, which exceeded the laboratory LOR based acceptance range (0-20%), and marginally exceeded the 30% RPD criterion adopted for the field blind duplicates.
- Method blank results were all below the laboratory LOR.
- The Laboratory Control Spike (LCS) recoveries were all within the laboratory acceptance range.
- The matrix spike recoveries were all within the laboratory acceptance range with the following exception:
 - A matrix spike recovery was not determined for 'nitrate + nitrite as N' analysis for sample S1-0.5, due to the background concentration in the sample being greater than or equal to 4 times the spike concentration.
- The surrogate spike recoveries were all within the laboratory acceptance ranges, with the following exceptions:
 - 2-chlorophenol-D4 (59.9%), which was below the dynamic laboratory recovery range of 66-122%; and
 - 2,4,6-tribromophenol (33.4%), which was below the dynamic laboratory recovery range of 40-138%.

The laboratory QA/QC outliers were considered to be relatively minor with consideration of the typical heterogeneity encountered in soil samples. The low recover for the phenolic compound surrogate spikes are considered to be immaterial in the context of the site assessment, as phenolic compounds were not considered to be a contaminant of potential concern (COPC) for the site. Accordingly, the laboratory QA/QC results were considered to be acceptable, and indicate that the reported data are suitable for interpretive use and as the basis for site management decisions.

6.3 Laboratory results

The soil laboratory results are included in a Summary Table One in Appendix C, with laboratory reports included in Appendix D.

6.3.1 Metals and metalloids

The metals and metalloids results were all below the relevant health-based and ecological guideline criteria, with the exception of a single zinc concentration (S12-0.1, 461 milligrams per kilogram (mg/kg)), that marginally exceeded the EIL value of 435 mg/kg. However, the calculated 95% upper confidence limit value for zinc in soil was 124.8 mg/kg (calculated using ProUCL v5.1, adjusted gamma distribution), which was below the assessment criterion.

Aluminium results were two to three orders of magnitude higher than the other metals. Aluminium is an abundant mineral in soils, and the highest reported aluminium concentration (10,400 mg/kg at S1-0.5) was detected at a natural, undisturbed location considered to represent 'background' conditions. While there are no guideline values available for aluminium in soil, this analyte is not considered a COPC for the site.

6.3.2 Nutrients

There are no human or ecological health guidelines for nutrients in soil. The maximum total phosphorus concentration at sample location S1 (the control location) was 87 mg/kg; this is considered to be representative of ambient background conditions. In the vicinity of the old fill pit (S8, S9 and S18) total phosphorus results were higher, and were a maximum of 268 mg/kg. At sample location S8 the phosphorus result decreased with depth, at S9 the result increased with depth and at S18 the result was unchanged with depth. At sample location S13 (and to a lesser extent S16), which are down gradient of the old fill pit, the total phosphorus results exceeded the ambient background result. The maximum result was 720 mg/kg (S13-0.1); phosphorus concentrations decreased with depth.

All ammonia results were below the laboratory LOR, and nitrite results were low. Nitrate results ranged between 0.2 and 46.5 mg/kg, and the average was 13.4 mg/kg. The maximum result was observed at sample location S1-0.5, the ambient background location, however high results were also observed within and down gradient of the old pit. Nitrate is not considered a COPC for this site.

6.3.3 Cyanide and fluoride

Total cyanide results were typically below the laboratory LOR. The maximum result was 2 mg/kg at S18-1, and is not considered to represent a COPC. Fluoride is not a common COPC, however elevated concentrations were reported at sample locations within the former fill area (maximum 8,700 mg/kg). There are no Australian fluoride soil criteria and therefore reference was made to US regulatory criteria for fluoride in soil and leachability potential. The most conservative industrial land use assessment criterion for fluoride in soil was 10,000 mg/kg, while the soil guideline for groundwater protection (ie leachability potential) was 100 mg/kg (State of New Jersey, Department of Environment Protection). The fluoride results are discussed in further detail in Section 6.4.1.

6.3.4 Organic analytes

TRH was reported above the laboratory LOR in two soil samples: S5-0.1 and S14-0.1. Soil sample location S5 is near an old drum storage area; the singular laboratory LOR exceedance was for the $>C_{16}-C_{34}$ fraction (110 mg/kg). Sample location S14 is at the down gradient, northern end of the site. The maximum result at this location was 220 mg/kg, also for the $>C_{16}-C_{34}$ fraction, with concentrations below the LOR in the deeper sample (S14-0.5). While there are no HSLs for TRH fractions $>C_{16}$, the reported concentrations were below the applicable ESL, and were also below the commercial/industrial direct contact criterion (27,000 mg/kg) in Friebel, E & Nadebaum, P (2011), *Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical Development Document, CRC CARE Technical Report no.10, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia.*

All BTEXN, PAH, PCB, OCP and OPP results were below the laboratory LOR.

6.4 Site conceptualisation

The desktop and field based contamination investigations indicated a limited potential for the surrounding land uses to contribute to the contamination of the project area. The surrounding potentially contaminating activities do not produce mobile sources of contamination, with the possible exception of groundwater from the adjacent eastern night soil and possibly the far western tip plots. However groundwater is expected to flow to the north, towards Swamp Creek and not towards the project area. The properties to the south of the site (up hydraulic gradient) were considered to represent a low risk of off-site contamination sources.

The use of the project area for the storage of machinery, engines and empty drums has resulted in a couple minor TRH detections reported above the LOR. These results do not exceed the applicable health-based and ecological criteria and do not preclude the use of the project area for industrial purposes.

6.4.1 Fluoride

While the fluoride concentrations in soil were below the most conservative industrial land use soil criterion identified, they exceeded the 'protection of groundwater' criterion based on a leaching potential. However as the fill material that was considered to be the source of the elevated fluoride concentrations has been removed and a building will cover the former source area, which will prevent the potential leaching of residual fluoride in soil, this is considered to be a low risk that is not incompatible with a commercial/industrial land use.

The ecological value of groundwater is also considered to be low, with no actual or potential groundwater dependent ecosystems identified in close proximity to the site, and the potential groundwater contribution from the project area to the down gradient Swamp Creek is considered to be small in the context of the entire catchment area for Swamp Creek.

6.4.2 Phosphorus

Despite the removal of the fill material that was considered to be the source of elevated phosphorus concentrations at the site, there could be some residual phosphorous contamination at the project area as a result of previous mobilisation of phosphorous from the fill material. This appears to be highest down gradient of the fill, with high levels also observed at the location of the old fill pit. However this potential risk is low and is not incompatible with a commercial industrial land use.

The source of the phosphorus was likely to be a phosphate binder in the refractory bricks used in the aluminium recycling furnaces, and hence is expected to be present as an environmentally stable mineral phase rather than the more reactive (and environmentally mobile) orthophosphate. Residual total phosphorus concentrations above ambient background values are still present in some areas, however it is considered likely that these concentrations will have low mobility in soil (Ludwick 1998). Ludwick 1998 describes phosphorous as an immobile nutrient that precipitates rapidly, thus minimising the opportunity for mobilisation.

Soil phosphorous contamination is normally considered in the context of large scale fertiliser application in agricultural catchments, with environmental issues associated with diffuse source nutrient loading to watercourses from fertilized paddocks. This scenario is a discrete area that constitutes a very small portion of the Swamp Creek catchment; in addition the main fill source comprising the used refractories has now been removed.

The primary mobilisation method from the former fill area is likely to be surface transport via stormwater runoff. As the proposed recycling facility will cover the fill site (building footprint and road) stormwater runoff towards Swamp Creek will not interact with the potential residual phosphorus. Stormwater runoff will also be captured within the proposed stormwater management system. Accordingly, the presence of residual phosphorus in soil in the vicinity of the former fill area is considered to represent a low risk to the environment in the context of the proposal, particularly for its industrial land use.

7 Conclusions and recommendations

Pymore intends to construct and operate a battery recycling facility in the project area. Weston Aluminium operates an aluminium recycling facility to the immediate west of the project area. Industrial facilities are located in the surrounding vicinity.

The project area is largely disturbed land used by Weston for the storage of disused industrial equipment associated. Site information was collected to identify potential contaminants, potentially affected media and potential areas of contamination by reviewing the site history, the physical setting and site conditions. A field investigation comprising soil sampling supplemented the desktop investigation.

Soil sampling identified residual total phosphorous where old fill material had been removed, assumed to be related to the phosphate bonded ceramics used in some brick refractories. Elevated total phosphorus concentrations were also identified at down gradient locations. This potential risk is low and is not incompatible with an industrial land use. This scenario was a discrete fill area that has been removed and constitutes a very small portion of the Swamp Creek catchment. Soil phosphorous contamination is normally considered in the context of large scale fertiliser application in agricultural catchments.

There is a low risk that soil based fluoride can leach into groundwater. However as the bulk of the source material has been removed and the development will prevent ongoing leaching this is considered to be a low risk that is not incompatible with an industrial land use. The environmental value of groundwater is also considered to be low, and the potential groundwater contribution from the project area to the down gradient Swamp Creek is minimal in the context of the entire catchment area for Swamp Creek.

There were some localised detections of petroleum hydrocarbon compounds (TPH/TRH) within shallow soil in the project area. These results do not exceed the applicable guideline criteria and do not preclude the use of the site for industrial purposes.

There is limited evidence to suggest that surrounding land uses pose a contamination risk to the site. While there is the potential for groundwater to the east to be contaminated with nutrients, TPH/TRH and PAH (from historic land uses of the site) groundwater flow is considered unlikely to be towards the project area. Similarly to the far west, groundwater flow from a tip is also expected to be towards the north.

Accordingly, this preliminary contamination assessment did not identify significant contamination issues that would preclude the proposed future land use as an industrial facility. However the conclusions in this report are subject to the limitations and spatial constraints of the investigation, and no groundwater quality data were collected during this assessment. As discussed in this report, the analytes detected in soil at this site are considered to represent a low risk to groundwater quality, and the construction of the proposed recycling facility will further mitigate the potential for leaching of residual contaminants from soil in the former fill area, the most significant former contamination source.

It is recommended that a construction environmental management plan (CEMP) is prepared for the development of the site, which should include an unexpected finds protocol to ensure that as yet undiscovered contamination, if encountered, can be appropriately managed. If evidence of contamination is encountered during the construction phase of works (for example, stained or odorous soil or evidence of demolition debris, advice should be sought from an appropriately qualified environmental consultant. In addition the construction phase of works should ensure no contamination is introduced to the site.

8 References

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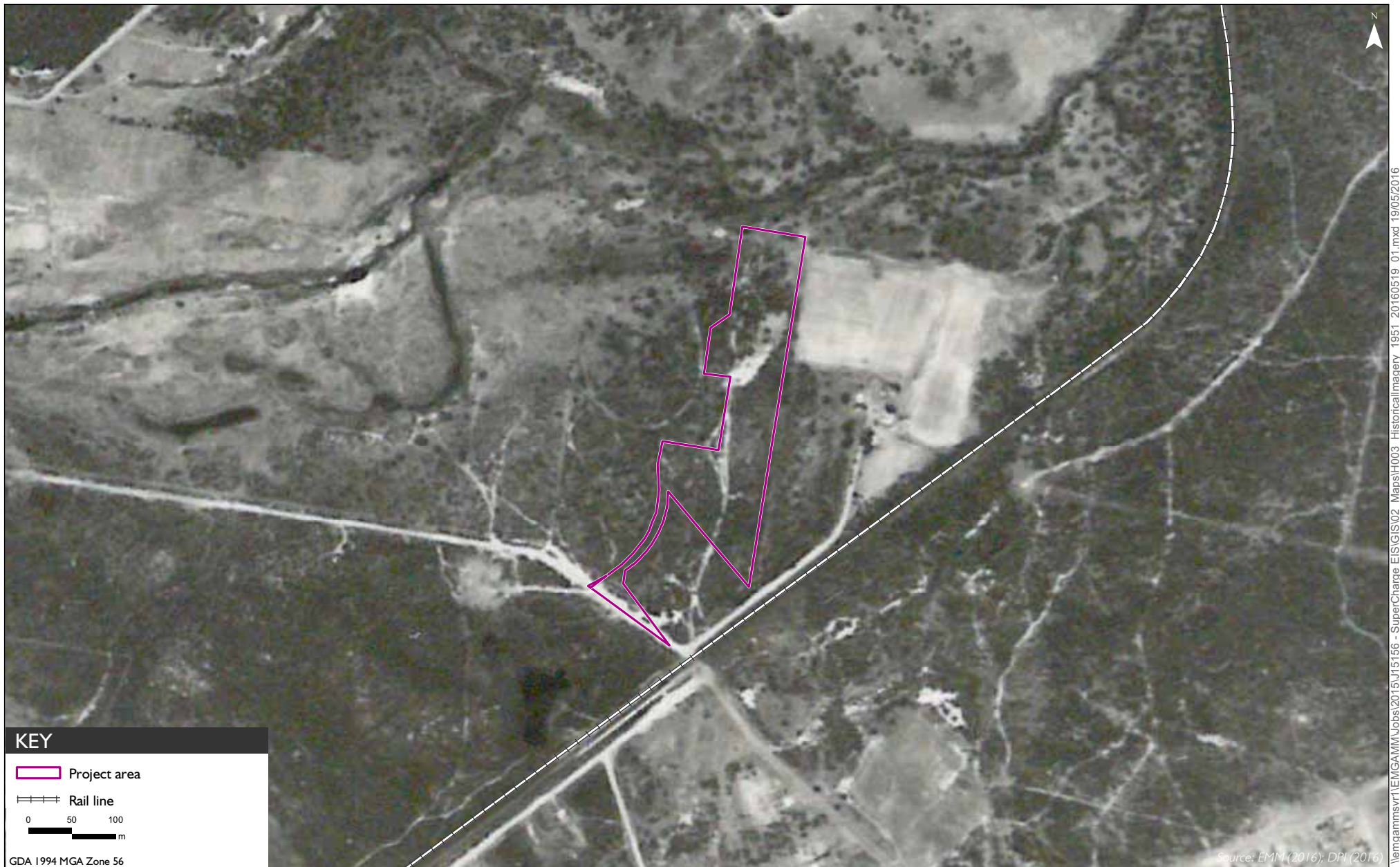
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Weston Aluminium 2015 *Application for Development Consent Modification Proposed Processing Trial of Pharmaceutical and Illicit Drug Wastes*, 12 March 2015

Appendix A

Historical aerial imagery



\\emgammvr11\EMGAMM\Jobs\2015\UJ15156 - SuperCharge EIS\GIS\02_Maps\H003_HistoricalImagery_1951_20160519_01.mxd 19/05/2016



Historical imagery - 1951
 Kurri Kurri Battery Recycling Facility
 Request for Secretary's Environmental Assessment Requirements
 Figure A-1



Historical imagery - 1984

Kurri Kurri Battery Recycling Facility
 Request for Secretary's Environmental Assessment Requirements

Figure A-2



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Historical imagery - 1991

Kurri Kurri Battery Recycling Facility
 Request for Secretary's Environmental Assessment Requirements

Figure A-2





Historical imagery - 1998

Kurri Kurri Battery Recycling Facility
Request for Secretary's Environmental Assessment Requirements

Figure A-3



\\emgammvr1\EMG\AMM\Jobs\2015\UJ15156 - SuperCharge EIS\GIS\02_Maps\H006_Historic\imagery_2004_20160519_01.mxd 19/05/2016



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KEY

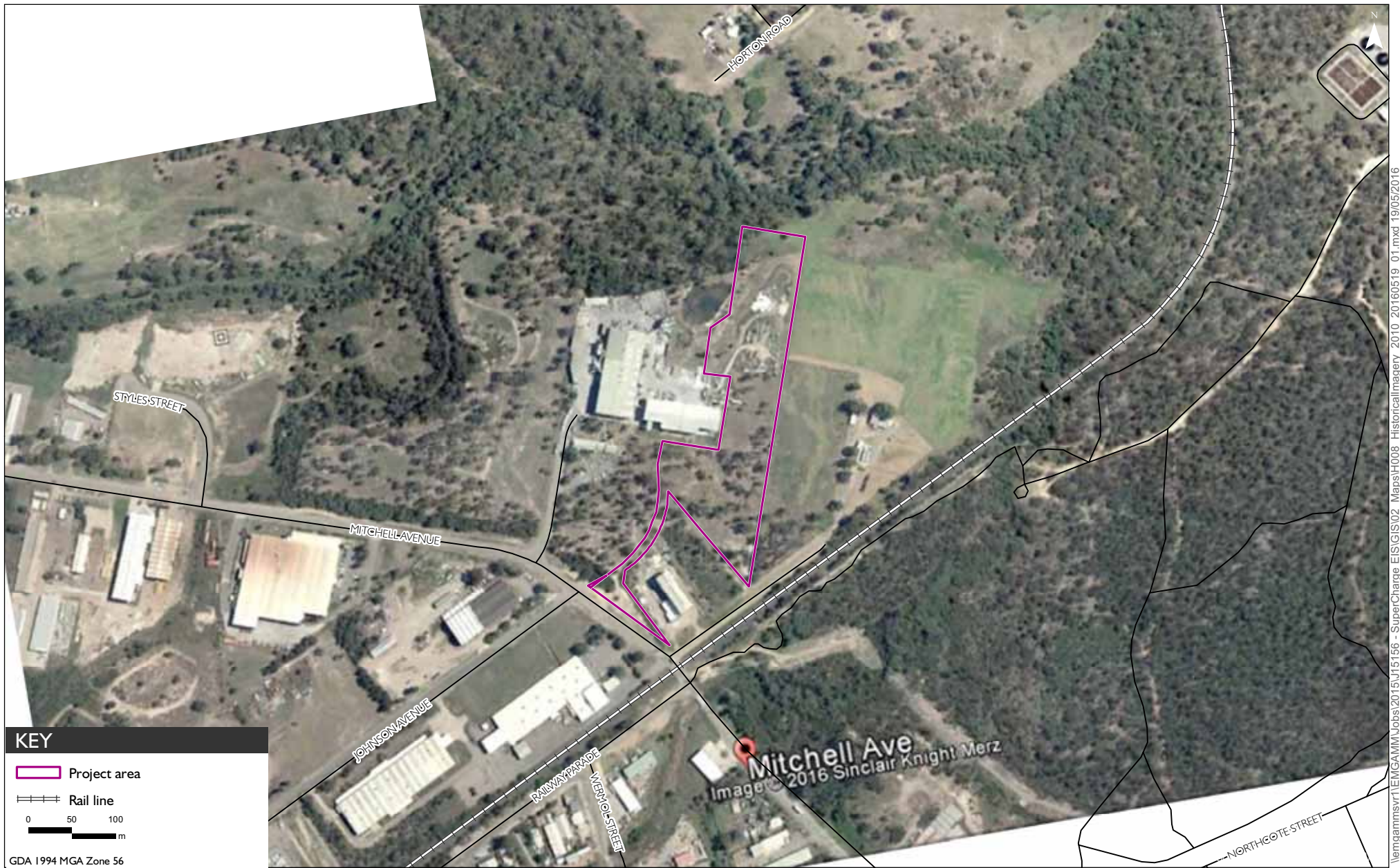
- Project area
- Rail line

0 50 100
m

GDA 1994 MGA Zone 56



Historical imagery - 2007
 Kurri Kurri Battery Recycling Facility
 Request for Secretary's Environmental Assessment Requirements
 Figure A-5



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Historical imagery - 2010

Kurri Kurri Battery Recycling Facility
Request for Secretary's Environmental Assessment Requirements

Figure A-6





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KEY

- Project area
- Rail line

0 50 100
m

GDA 1994 MGA Zone 56



Historical imagery - 2015
 Kurri Kurri Battery Recycling Facility
 Request for Secretary's Environmental Assessment Requirements
 Figure A-7

Appendix B

Site photos



Photograph B 1 disused machinery



Photograph B 2 disused machinery



Photograph B 3 disused machinery



Photograph B 4 disused machinery



Photograph B 5 disused drums



Photograph B 6 disused engine



Photograph B 7 **old fill site, graded clean material looking north towards Swamp Creek**

Appendix C

Summary tables

>C10 - C16 Fraction minus Naphthalen	mg/kg	50	-	-	-	170	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
BTEXN																			
Benzene	mg/kg	0.2	-	-	3	95	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	-	-	-	135	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	-	-	230	185	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5	-	-	-	95	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX	mg/kg	0.2	-	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	mg/kg	1	-	370	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Organochlorine Pesticides (OC)																			
alpha-BHC	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Hexachlorobenzene (HCB)	mg/kg	0.05	80	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
beta-BHC	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
gamma-BHC	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
delta-BHC	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Heptachlor	mg/kg	0.05	50	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Aldrin	mg/kg	0.05	45	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Heptachlor epoxide	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Total Chlordane (sum)	mg/kg	0.05	530	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
trans-Chlordane	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
alpha-Endosulfan	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
cis-Chlordane	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Dieldrin	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
4,4'-DDE	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Endrin	mg/kg	0.05	100	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Endosulfan (sum)	mg/kg	0.05	2000	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
beta-Endosulfan	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
4,4'-DDD	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Endrin aldehyde	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Endosulfan sulfate	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
4,4'-DDT	mg/kg	0.2	-	640	-	-	----	----	----	----	----	----	<0.2	<0.2	----	----	----	----	----
Endrin ketone	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Methoxychlor	mg/kg	0.2	2500	-	-	-	----	----	----	----	----	----	<0.2	<0.2	----	----	----	----	----
Sum of DDD + DDE + DDF	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Sum of Aldrin + Dieldrin	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Organophosphorus Pesticides (OP)																			
Dichlorvos	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Demeton-S-methyl	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Monocrotophos	mg/kg	0.2	-	-	-	-	----	----	----	----	----	----	<0.2	<0.2	----	----	----	----	----
Dimethoate	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Diazinon	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Chlorpyrifos-methyl	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Parathion-methyl	mg/kg	0.2	-	-	-	-	----	----	----	----	----	----	<0.2	<0.2	----	----	----	----	----
Malathion	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Fenthion	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Chlorpyrifos	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Parathion	mg/kg	0.2	-	-	-	-	----	----	----	----	----	----	<0.2	<0.2	----	----	----	----	----
Pirimphos-ethyl	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Chlorfenvinphos	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Bromophos-ethyl	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Fenamiphos	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Prothiofos	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Ethion	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Carbophenothion	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----
Azinphos Methyl	mg/kg	0.05	-	-	-	-	----	----	----	----	----	----	<0.05	<0.05	----	----	----	----	----

>C10 - C16 Fraction minus Naphthalene	mg/kg	50	-	-	-	170	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
BTEXN																					
Benzene	mg/kg	0.2	-	-	3	95	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	-	-	-	135	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	-	-	230	185	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5	-	-	-	95	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX	mg/kg	0.2	-	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	mg/kg	1	-	370	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Organochlorine Pesticides (OC)																					
alpha-BHC	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Hexachlorobenzene (HCB)	mg/kg	0.05	80	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
beta-BHC	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
gamma-BHC	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
delta-BHC	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Heptachlor	mg/kg	0.05	50	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Aldrin	mg/kg	0.05	45	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Heptachlor epoxide	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Total Chlordane (sum)	mg/kg	0.05	530	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
trans-Chlordane	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
alpha-Endosulfan	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
cis-Chlordane	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Dieldrin	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
4,4'-DDE	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Endrin	mg/kg	0.05	100	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Endosulfan (sum)	mg/kg	0.05	2000	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
beta-Endosulfan	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
4,4'-DDD	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Endrin aldehyde	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Endosulfan sulfate	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
4,4'-DDT	mg/kg	0.2	-	640	-	-	<0.2	<0.2	<0.2	----	----	<0.2	----	----	----	----	----	----	----	----	----
Endrin ketone	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Methoxychlor	mg/kg	0.2	2500	-	-	-	<0.2	<0.2	<0.2	----	----	<0.2	----	----	----	----	----	----	----	----	----
Sum of DDD + DDE + DDF	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Organophosphorus Pesticides (OP)																					
Dichlorvos	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Demeton-S-methyl	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Monocrotophos	mg/kg	0.2	-	-	-	-	<0.2	<0.2	<0.2	----	----	<0.2	----	----	----	----	----	----	----	----	----
Dimethoate	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Diazinon	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Chlorpyrifos-methyl	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Parathion-methyl	mg/kg	0.2	-	-	-	-	<0.2	<0.2	<0.2	----	----	<0.2	----	----	----	----	----	----	----	----	----
Malathion	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Fenthion	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Chlorpyrifos	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Parathion	mg/kg	0.2	-	-	-	-	<0.2	<0.2	<0.2	----	----	<0.2	----	----	----	----	----	----	----	----	----
Pirimphos-ethyl	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Chlorfenvinphos	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Bromophos-ethyl	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Fenamiphos	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Prothiofos	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Ethion	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Carbophenothion	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----
Azinphos Methyl	mg/kg	0.05	-	-	-	-	<0.05	<0.05	<0.05	----	----	<0.05	----	----	----	----	----	----	----	----	----

Summary Table 2 Soil QA/QC results, 129 Michelle Ave, Kurri Kurri

Analytes	units	LOR	QA1	S1-0	RPD	QA2	S12-0	RPD	Blank	Spike	Spike control	RPD
Moisture Content				26-Apr-16								
Moisture Content (dried @ 103°C)	%	1	14.9	5.6	22.7	11.1	10.4	1.6	----	----	----	----
Total Metals												
Arsenic	mg/kg	5	5	2.5	16.7	<5	<5	----	----	----	----	----
Cadmium	mg/kg	1	<1	<1	-	1	0.5	16.7	----	----	----	----
Chromium	mg/kg	2	18	1	44.7	5	4	5.6	----	----	----	----
Copper	mg/kg	5	<5	<5	-	27	16	12.8	----	----	----	----
Lead	mg/kg	5	11	2.5	31.5	29	22	6.9	----	----	----	----
Nickel	mg/kg	2	7	1	37.5	5	4	5.6	----	----	----	----
Zinc	mg/kg	5	9	2.5	28.3	648	461	8.4	----	----	----	----
Mercury	mg/kg	0.1	<0.1	<0.1	----	<0.1	<0.1	----	----	----	----	----
Nutrients												
Ammonia as N	mg/kg	20	<20	<20	----	----	----	----	----	----	----	----
Nitrite as N	mg/kg	0.1	5.6	0.5	41.8	----	----	----	----	----	----	----
Nitrate as N	mg/kg	0.1	48.2	9.9	33.0	----	----	----	----	----	----	----
Nitrite + Nitrate as N (Sol.)	mg/kg	0.1	53.8	9.9	34.5	----	----	----	----	----	----	----
Total Phosphorus as P	mg/kg	2	84	40	17.7	----	----	----	----	----	----	----
Reactive Phosphorus as P	mg/kg	0.1	9.8	0.5	45.1	----	----	----	----	----	----	----
Polychlorinated Biphenyls (PCB)												
Total Polychlorinated biphenyls	mg/kg	0.1	----	----	----	----	----	----	----	----	----	----
Polynuclear Aromatic Hydrocarbons												
Naphthalene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Acenaphthene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Fluorene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Phenanthrene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Anthracene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Fluoranthene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Pyrene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Chrysene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Indeno(1,2,3-cd)pyrene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Dibenzo(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Sum of PAH	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Benzo(a)pyrene TEQ (zero)	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	----	----	----	----
Benzo(a)pyrene TEQ (half LOR)	mg/kg	0.5	0.6	0.6	----	0.6	0.6	----	----	----	----	----
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	----	1.2	1.2	----	----	----	----	----
Total Petroleum Hydrocarbons												
C6 - C9 Fraction	mg/kg	10	<10	<10	----	<10	<10	----	<10	17	34	-16.67
C10 - C14 Fraction	mg/kg	50	<50	<50	----	<50	<50	----	----	----	----	----
C15 - C28 Fraction	mg/kg	100	<100	<100	----	<100	<100	----	----	----	----	----
C29 - C36 Fraction	mg/kg	100	<100	<100	----	<100	<100	----	----	----	----	----
C10 - C36 Fraction (sum)	mg/kg	50	<50	<50	----	<50	<50	----	----	----	----	----
Total Recoverable Hydrocarbons - NEPM 2013 Fractions												
C6 - C10 Fraction	mg/kg	10	<10	<10	----	<10	<10	----	<10	22	41	-15.08
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	<10	<10	----	<10	<10	----	<10	12	21	-13.64
>C10 - C16 Fraction	mg/kg	50	<50	<50	----	<50	<50	----	----	----	----	----
>C16 - C34 Fraction	mg/kg	100	<100	<100	----	<100	<100	----	----	----	----	----
>C34 - C40 Fraction	mg/kg	100	<100	<100	----	<100	<100	----	----	----	----	----
>C10 - C40 Fraction (sum)	mg/kg	50	<50	<50	----	<50	<50	----	----	----	----	----
>C10 - C16 Fraction minus Naphthalene	mg/kg	50	<50	<50	----	<50	<50	----	----	----	----	----
BTEXN												
Benzene	mg/kg	0.2	<0.2	<0.2	----	<0.2	<0.2	----	<0.2	<0.2	<0.2	----
Toluene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	<0.5	3.6	9	-21.43
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	<0.5	0.6	1.1	-14.71
meta- & para-Xylene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	<0.5	3.7	7.2	-16.06
ortho-Xylene	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	<0.5	1.6	2.7	-12.79
Total Xylenes	mg/kg	0.5	<0.5	<0.5	----	<0.5	<0.5	----	<0.5	5.3	9.9	-15.13
Sum of BTEX	mg/kg	0.2	<0.2	<0.2	----	<0.2	<0.2	----	<0.2	9.5	20	-17.80
Naphthalene	mg/kg	1	<1	<1	----	<1	<1	----	<1	<1	<1	----

National Environment Protection Council (NEPC) (Assessment of Site Contamination) Measure 1999 (as amended in 2013a), Schedule B1 Guideline on Investigation Levels for Soil and Groundwater.



Appendix D

Laboratory reports

CERTIFICATE OF ANALYSIS

Work Order	: ES1609066	Page	: 1 of 38
Client	: EMGA MITCHELL MCLENNAN	Laboratory	: Environmental Division Sydney
Contact	: MS NINA PEARSE-HAWKINS	Contact	:
Address	: Ground Floor Suite 1 20 Chandos Street St Leonards NSW 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9493 9500	Telephone	: +61-2-8784 8555
Project	: J15145	Date Samples Received	: 28-Apr-2016 12:15
Order number	: J15145	Date Analysis Commenced	: 28-Apr-2016
C-O-C number	: ----	Issue Date	: 10-May-2016 17:10
Sampler	: SEAN CASSIDY		
Site	: ----		
Quote number	: ----		
No. of samples received	: 34		
No. of samples analysed	: 34		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Pabi Subba	Senior Organic Chemist	Sydney Organics, Smithfield, NSW
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

- EG005T: Poor precision was obtained for sample ES1609066 #011 due to sample heterogeneity. Confirmed by re-digestion and re-analysis.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEX only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			SOIL-1 (0.1m)	SOIL-1 (0.5m)	QA/QC-1	SOIL-2 (0.1m)	SOIL-3 (0.1m)
		Client sampling date / time			[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit	ES1609066-001	ES1609066-002	ES1609066-003	ES1609066-004	ES1609066-005	
				Result	Result	Result	Result	Result	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	5.6	13.2	14.9	4.5	6.9	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	2020	10400	----	----	----	
Arsenic	7440-38-2	5	mg/kg	<5	5	5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	<2	19	18	2	14	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	9	
Lead	7439-92-1	5	mg/kg	<5	13	11	8	13	
Nickel	7440-02-0	2	mg/kg	<2	8	7	2	8	
Zinc	7440-66-6	5	mg/kg	<5	9	9	18	30	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK055: Ammonia as N									
Ammonia as N	7664-41-7	20	mg/kg	<20	<20	<20	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	6.3	5.6	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	9.9	46.5	48.2	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	9.9	52.8	53.8	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	40	87	84	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	<0.1	9.7	9.8	----	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	----	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----	
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----	
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----	
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----	
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-1 (0.1m)	SOIL-1 (0.5m)	QA/QC-1	SOIL-2 (0.1m)	SOIL-3 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-001	ES1609066-002	ES1609066-003	ES1609066-004	ES1609066-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	----	----
4,4'-DDT	50-29-3	0.2	mg/kg		----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-1 (0.1m)	SOIL-1 (0.5m)	QA/QC-1	SOIL-2 (0.1m)	SOIL-3 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-001	ES1609066-002	ES1609066-003	ES1609066-004	ES1609066-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-1 (0.1m)	SOIL-1 (0.5m)	QA/QC-1	SOIL-2 (0.1m)	SOIL-3 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-001	ES1609066-002	ES1609066-003	ES1609066-004	ES1609066-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		89.9	87.2	88.3	101	94.6
2-Chlorophenol-D4	93951-73-6	0.5	%		95.0	90.8	91.1	108	101
2,4,6-Tribromophenol	118-79-6	0.5	%		84.5	77.8	76.7	89.7	88.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		103	101	100	117	111
Anthracene-d10	1719-06-8	0.5	%		90.6	89.2	90.8	101	98.6
4-Terphenyl-d14	1718-51-0	0.5	%		101	92.3	93.4	106	100
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		95.4	104	108	111	106
Toluene-D8	2037-26-5	0.2	%		108	114	119	123	118



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-1 (0.1m)	SOIL-1 (0.5m)	QA/QC-1	SOIL-2 (0.1m)	SOIL-3 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-001	ES1609066-002	ES1609066-003	ES1609066-004	ES1609066-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		108	111	116	118	112



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-4 (0.1m)	SOIL-5 (0.1m)	SOIL-6 (0.1m)	SOIL-6 (0.5m)	SOIL-7 (0.1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-006	ES1609066-007	ES1609066-008	ES1609066-009	ES1609066-010	
				Result	Result	Result	Result	Result	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	4.1	8.7	4.6	3.9	5.7	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	----	----	----	----	----	
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	<2	2	<2	3	27	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	44	
Lead	7439-92-1	5	mg/kg	11	8	<5	<5	8	
Nickel	7440-02-0	2	mg/kg	2	4	<2	2	18	
Zinc	7440-66-6	5	mg/kg	19	96	15	20	55	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK055: Ammonia as N									
Ammonia as N	7664-41-7	20	mg/kg	----	----	<20	<20	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	----	----	<0.1	<0.1	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	----	----	4.6	3.3	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	4.6	3.3	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	----	----	37	61	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	----	----	<0.1	<0.1	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	<0.1	----	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	<0.05	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	<0.05	----	
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	<0.05	----	
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	<0.05	----	
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	<0.05	----	
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	<0.05	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-4 (0.1m)	SOIL-5 (0.1m)	SOIL-6 (0.1m)	SOIL-6 (0.5m)	SOIL-7 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-006	ES1609066-007	ES1609066-008	ES1609066-009	ES1609066-010
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	<0.05	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	<0.05	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	<0.05	----	----
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	----	<0.05	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	<0.2	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	<0.2	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	<0.2	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	<0.05	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	<0.05	<0.05	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-4 (0.1m)	SOIL-5 (0.1m)	SOIL-6 (0.1m)	SOIL-6 (0.5m)	SOIL-7 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-006	ES1609066-007	ES1609066-008	ES1609066-009	ES1609066-010
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	<0.05	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	<0.05	<0.05	----
Ethion	563-12-2	0.05	mg/kg		----	----	<0.05	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	<0.05	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	<0.05	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-4 (0.1m)	SOIL-5 (0.1m)	SOIL-6 (0.1m)	SOIL-6 (0.5m)	SOIL-7 (0.1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-006	ES1609066-007	ES1609066-008	ES1609066-009	ES1609066-010	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	110	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	110	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	90.8	112	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	----	77.5	85.6	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	----	63.5	88.2	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	92.7	87.0	92.4	95.2	95.9	
2-Chlorophenol-D4	93951-73-6	0.5	%	97.6	90.4	97.2	98.3	103	
2,4,6-Tribromophenol	118-79-6	0.5	%	89.8	82.7	91.6	90.3	91.9	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	107	98.5	105	107	112	
Anthracene-d10	1719-06-8	0.5	%	93.8	85.6	91.4	93.9	99.9	
4-Terphenyl-d14	1718-51-0	0.5	%	99.2	91.2	94.8	95.9	103	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	106	123	108	103	113	
Toluene-D8	2037-26-5	0.2	%	109	126	118	114	122	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-4 (0.1m)	SOIL-5 (0.1m)	SOIL-6 (0.1m)	SOIL-6 (0.5m)	SOIL-7 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-006	ES1609066-007	ES1609066-008	ES1609066-009	ES1609066-010
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		105	121	112	108	120



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			SOIL-8 (0.1m)	SOIL-8 (0.5m)	SOIL-9 (0.1m)	SOIL-9 (0.35m)	SOIL-12 (0.1m)
		Client sampling date / time			[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit	ES1609066-011	ES1609066-012	ES1609066-013	ES1609066-014	ES1609066-015	
				Result	Result	Result	Result	Result	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	14.8	6.4	15.2	5.4	10.4	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	----	----	----	----	----	
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	61	16	19	23	4	
Copper	7440-50-8	5	mg/kg	84	26	35	53	16	
Lead	7439-92-1	5	mg/kg	17	5	8	13	22	
Nickel	7440-02-0	2	mg/kg	27	11	12	15	4	
Zinc	7440-66-6	5	mg/kg	197	39	98	82	461	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK055: Ammonia as N									
Ammonia as N	7664-41-7	20	mg/kg	<20	<20	<20	<20	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	5.3	<0.1	8.3	<0.1	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	32.5	1.7	21.9	3.4	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	37.8	1.7	30.2	3.4	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	268	138	131	199	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	----	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----	
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----	
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----	
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----	
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-8 (0.1m)	SOIL-8 (0.5m)	SOIL-9 (0.1m)	SOIL-9 (0.35m)	SOIL-12 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-011	ES1609066-012	ES1609066-013	ES1609066-014	ES1609066-015
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	----	----
4,4'-DDT	50-29-3	0.2	mg/kg		----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-8 (0.1m)	SOIL-8 (0.5m)	SOIL-9 (0.1m)	SOIL-9 (0.35m)	SOIL-12 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-011	ES1609066-012	ES1609066-013	ES1609066-014	ES1609066-015
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-8 (0.1m)	SOIL-8 (0.5m)	SOIL-9 (0.1m)	SOIL-9 (0.35m)	SOIL-12 (0.1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-011	ES1609066-012	ES1609066-013	ES1609066-014	ES1609066-015	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	73.9	92.0	90.8	88.1	84.1	
2-Chlorophenol-D4	93951-73-6	0.5	%	59.9	95.0	68.4	94.4	87.9	
2,4,6-Tribromophenol	118-79-6	0.5	%	33.4	78.0	54.1	75.9	95.3	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	91.8	107	113	103	98.3	
Anthracene-d10	1719-06-8	0.5	%	76.8	92.5	97.5	90.1	88.0	
4-Terphenyl-d14	1718-51-0	0.5	%	80.8	92.7	99.0	81.4	89.6	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	100	100	102	112	104	
Toluene-D8	2037-26-5	0.2	%	116	111	109	118	105	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-8 (0.1m)	SOIL-8 (0.5m)	SOIL-9 (0.1m)	SOIL-9 (0.35m)	SOIL-12 (0.1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-011	ES1609066-012	ES1609066-013	ES1609066-014	ES1609066-015	
				Result	Result	Result	Result	Result	
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%	112	109	103	114	102	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			QA/QC-2	SOIL-13 (0.1m)	SOIL-13 (0.5m)	SOIL-13 (0.65m)	SOIL-14 (0.1m)
		Client sampling date / time			[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit	ES1609066-016	ES1609066-017	ES1609066-018	ES1609066-019	ES1609066-020	
				Result	Result	Result	Result	Result	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	11.1	37.4	17.3	17.1	35.5	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	----	----	----	----	----	
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	5	3	<2	<2	6	
Copper	7440-50-8	5	mg/kg	27	10	<5	<5	19	
Lead	7439-92-1	5	mg/kg	29	24	<5	<5	24	
Nickel	7440-02-0	2	mg/kg	5	6	<2	<2	9	
Zinc	7440-66-6	5	mg/kg	648	168	15	18	222	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	<0.1	<0.1	0.5	
EK055: Ammonia as N									
Ammonia as N	7664-41-7	20	mg/kg	----	40	<20	<20	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	----	----	<0.1	<0.1	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	----	----	2.6	0.2	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	2.6	0.2	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	----	720	142	246	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	----	11.7	4.0	5.1	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	<0.1	<0.1	----	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA/QC-2	SOIL-13 (0.1m)	SOIL-13 (0.5m)	SOIL-13 (0.65m)	SOIL-14 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-016	ES1609066-017	ES1609066-018	ES1609066-019	ES1609066-020
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
4,4'-DDT	50-29-3	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA/QC-2	SOIL-13 (0.1m)	SOIL-13 (0.5m)	SOIL-13 (0.65m)	SOIL-14 (0.1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-016	ES1609066-017	ES1609066-018	ES1609066-019	ES1609066-020
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		----	<0.05	<0.05	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		----	<0.05	<0.05	<0.05	----
Ethion	563-12-2	0.05	mg/kg		----	<0.05	<0.05	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		----	<0.05	<0.05	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	<0.05	<0.05	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	160
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	160
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA/QC-2	SOIL-13 (0.1m)	SOIL-13 (0.5m)	SOIL-13 (0.65m)	SOIL-14 (0.1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-016	ES1609066-017	ES1609066-018	ES1609066-019	ES1609066-020	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	220	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	320	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	114	130	110	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	81.7	92.7	74.8	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	94.0	82.9	76.1	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	90.1	92.5	99.5	90.8	89.8	
2-Chlorophenol-D4	93951-73-6	0.5	%	95.2	98.3	106	95.5	88.6	
2,4,6-Tribromophenol	118-79-6	0.5	%	81.1	89.6	91.1	84.8	79.9	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	106	109	115	105	88.4	
Anthracene-d10	1719-06-8	0.5	%	92.0	93.5	101	91.2	93.1	
4-Terphenyl-d14	1718-51-0	0.5	%	95.6	97.1	103	93.5	94.0	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	101	95.2	100.0	99.6	103	
Toluene-D8	2037-26-5	0.2	%	106	102	107	103	109	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QA/QC-2	SOIL-13 (0.1m)	SOIL-13 (0.5m)	SOIL-13 (0.65m)	SOIL-14 (0.1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit	ES1609066-016	ES1609066-017	ES1609066-018	ES1609066-019	ES1609066-020	ES1609066-020
				Result	Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%	103	96.4	103	101	106	106



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		SOIL-14 (0.5m)	SOIL-15 (0.1m)	SOIL-16 (0.1m)	SOIL-16 (0.5m)	SOIL-16 (1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit	ES1609066-021	ES1609066-022	ES1609066-023	ES1609066-024	ES1609066-025
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	14.1	4.6	14.2	12.3	16.9
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	6	4	4	<2	11
Copper	7440-50-8	5	mg/kg	8	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg	13	6	8	<5	7
Nickel	7440-02-0	2	mg/kg	4	3	3	<2	4
Zinc	7440-66-6	5	mg/kg	83	16	22	<5	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	----	----	<20	<20	<20
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	----	----	<0.1	0.5	2.4
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	----	----	2.1	0.8	4.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	----	2.1	1.3	6.5
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	2	mg/kg	----	----	99	45	60
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	----	----	0.2	<0.1	3.6
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-14 (0.5m)	SOIL-15 (0.1m)	SOIL-16 (0.1m)	SOIL-16 (0.5m)	SOIL-16 (1m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-021	ES1609066-022	ES1609066-023	ES1609066-024	ES1609066-025
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----	----
4,4'-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-14 (0.5m)	SOIL-15 (0.1m)	SOIL-16 (0.1m)	SOIL-16 (0.5m)	SOIL-16 (1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-021	ES1609066-022	ES1609066-023	ES1609066-024	ES1609066-025	
				Result	Result	Result	Result	Result	
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	----	
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	----	
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	----	
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	----	
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-14 (0.5m)	SOIL-15 (0.1m)	SOIL-16 (0.1m)	SOIL-16 (0.5m)	SOIL-16 (1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-021	ES1609066-022	ES1609066-023	ES1609066-024	ES1609066-025	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	111	----	----	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	79.0	----	----	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	72.0	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	91.7	89.4	83.9	87.2	87.0	
2-Chlorophenol-D4	93951-73-6	0.5	%	106	96.1	99.1	96.5	90.7	
2,4,6-Tribromophenol	118-79-6	0.5	%	91.4	79.9	85.3	79.6	85.0	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	103	104	94.9	95.0	90.2	
Anthracene-d10	1719-06-8	0.5	%	108	89.0	100	102	97.6	
4-Terphenyl-d14	1718-51-0	0.5	%	107	89.6	101	103	97.6	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	121	104	106	103	111	
Toluene-D8	2037-26-5	0.2	%	120	106	104	104	114	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-14 (0.5m)	SOIL-15 (0.1m)	SOIL-16 (0.1m)	SOIL-16 (0.5m)	SOIL-16 (1m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-021	ES1609066-022	ES1609066-023	ES1609066-024	ES1609066-025	
				Result	Result	Result	Result	Result	
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%	113	97.4	93.4	99.4	103	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID			SOIL-17 (0.1m)	SOIL-17 (0.5m)	SOIL-17 (1m)	SOIL-18 (0.1m)	SOIL-18 (0.5m)
		Client sampling date / time			[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit	ES1609066-026	ES1609066-027	ES1609066-028	ES1609066-029	ES1609066-030	
				Result	Result	Result	Result	Result	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%	9.2	10.8	7.9	9.6	8.7	
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg	4140	----	3780	5500	----	
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	3	<2	4	3	7	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	7	8	
Lead	7439-92-1	5	mg/kg	<5	<5	<5	7	10	
Nickel	7440-02-0	2	mg/kg	2	<2	2	3	6	
Zinc	7440-66-6	5	mg/kg	7	<5	<5	51	78	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EK055: Ammonia as N									
Ammonia as N	7664-41-7	20	mg/kg	<20	<20	<20	<20	<20	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	0.2	1.7	<0.1	0.1	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	16.8	34.8	44.4	4.8	30.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	16.8	35.0	46.1	4.8	30.2	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	46	39	41	49	199	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	0.3	0.1	3.5	<0.1	0.6	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	----	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----	
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----	
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----	
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----	
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-17 (0.1m)	SOIL-17 (0.5m)	SOIL-17 (1m)	SOIL-18 (0.1m)	SOIL-18 (0.5m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-026	ES1609066-027	ES1609066-028	ES1609066-029	ES1609066-030
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	----	----
4,4'-DDT	50-29-3	0.2	mg/kg		----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-17 (0.1m)	SOIL-17 (0.5m)	SOIL-17 (1m)	SOIL-18 (0.1m)	SOIL-18 (0.5m)
Client sampling date / time					[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]
Compound	CAS Number	LOR	Unit		ES1609066-026	ES1609066-027	ES1609066-028	ES1609066-029	ES1609066-030
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-17 (0.1m)	SOIL-17 (0.5m)	SOIL-17 (1m)	SOIL-18 (0.1m)	SOIL-18 (0.5m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-026	ES1609066-027	ES1609066-028	ES1609066-029	ES1609066-030	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	85.3	82.7	85.6	88.9	89.0	
2-Chlorophenol-D4	93951-73-6	0.5	%	90.1	99.4	96.2	96.6	91.1	
2,4,6-Tribromophenol	118-79-6	0.5	%	82.6	95.0	85.9	87.5	92.0	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	91.5	101	100	97.6	95.8	
Anthracene-d10	1719-06-8	0.5	%	94.1	104	104	103	102	
4-Terphenyl-d14	1718-51-0	0.5	%	96.7	104	103	102	99.6	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	109	117	106	112	125	
Toluene-D8	2037-26-5	0.2	%	108	118	101	105	125	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-17 (0.1m)	SOIL-17 (0.5m)	SOIL-17 (1m)	SOIL-18 (0.1m)	SOIL-18 (0.5m)
Client sampling date / time				[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	[26-Apr-2016]	
Compound	CAS Number	LOR	Unit	ES1609066-026	ES1609066-027	ES1609066-028	ES1609066-029	ES1609066-030	
				Result	Result	Result	Result	Result	
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%	99.7	109	93.5	96.4	118	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-18 (1m)	TRIP BLANK	TRIP SPIKE	TSC	----
Client sampling date / time					[26-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	----
Compound	CAS Number	LOR	Unit		ES1609066-031	ES1609066-032	ES1609066-033	ES1609066-034	-----
					Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	----	----
4,4'-DDT	50-29-3	0.2	mg/kg		----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-18 (1m)	TRIP BLANK	TRIP SPIKE	TSC	----
Client sampling date / time					[26-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	----
Compound	CAS Number	LOR	Unit		ES1609066-031	ES1609066-032	ES1609066-033	ES1609066-034	-----
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	17	34	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	22	41	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-18 (1m)	TRIP BLANK	TRIP SPIKE	TSC	----
Client sampling date / time				[26-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	----	
Compound	CAS Number	LOR	Unit	ES1609066-031	ES1609066-032	ES1609066-033	ES1609066-034	-----	
				Result	Result	Result	Result	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	12	21	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	3.6	9.0	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.6	1.1	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	3.7	7.2	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	1.6	2.7	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	9.5	20.0	----	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	5.3	9.9	----	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	91.6	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	100	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	85.6	----	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	96.0	----	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	98.1	----	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	101	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	106	105	101	107	----	
Toluene-D8	2037-26-5	0.2	%	102	101	96.7	99.0	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SOIL-18 (1m)	TRIP BLANK	TRIP SPIKE	TSC	----
Client sampling date / time					[26-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	[28-Apr-2016]	----
Compound	CAS Number	LOR	Unit		ES1609066-031	ES1609066-032	ES1609066-033	ES1609066-034	-----
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		95.7	101	103	104	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130



SYDNEY

Ground floor, Suite 01, 20 Chandos Street
St Leonards, New South Wales, 2065
T 02 9493 9500 F 02 9493 9599

NEWCASTLE

Level 5, 21 Bolton Street
Newcastle, New South Wales, 2300
T 02 4927 0506 F 02 4926 1312

BRISBANE

Level 4, Suite 01, 87 Wickham Terrace
Spring Hill, Queensland, 4000
T 07 3839 1800 F 07 3839 1866

