STAGE 1 PRELIMINARY SITE INVESTIGATION

ASSESSMENT OF POTENTIAL SITE CONTAMINATION

LEEDS PARADE, ORANGE

PREPARED FOR:

BOB HEALY & COMPANY

FEBRUARY 2016

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The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

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Introduction

1.1 BACKGROUND

Geolyse was engaged by Bob Healy & Company (Healy & Co.) to conduct a Stage 1 Preliminary Site Investigation (Stage 1 PSI) for the site at Leeds Parade, Orange NSW 2800, (the site) to support a planning proposal to amend the zoning and minimum lot size of the site pursuant to the *Orange Local Environmental Plan 2011* (LEP).

The subject site is described as:

- Lot 15 DP6694, 390 Clergate Road, Orange
- Lot 3 DP255983, 440 Clergate Road, Orange
- Lot 2 DP255983, 440 Clergate Road, Orange
- Lot 14 DP6694, 440 Clergate Road, Orange
- Lot 25 DP6694, 440 Clergate Road, Orange

The Stage 1 PSI is recommended by the *Managing Land Contamination – Planning Guidelines* 1998 under the *NSW State Environmental Planning Policy* (SEPP) *No 55 – Remediation of Land* 1998. As the proposed rezoning "allows a change of use that may increase the risk to health or the environment from contamination", the planning authority is required to consider whether "the land is suitable for the proposed use or can be remediated to make it suitable".

The site has a total area of approximately 290 hectares and features generally undulating, cleared terrain with a large number of farm dams, a number of mapped and ephemeral watercourses and several stands of established native vegetation. The southern portion of the site (Lot 15) houses the former Orange abattoir buildings, which have been vacant and unused since approximately 2005. The remainder of the site is generally used for agricultural purposes.

The objective of the Stage 1 PSI was to identify the potential for land contamination at the site prior to subdivision of this land to enable creation of rural residential lots with minimum lot size of 4,000 square metres (m^2). A concept master plan showing approximately 450 lots together with internal access roads has been prepared, as demonstrated in **Figure 1**.

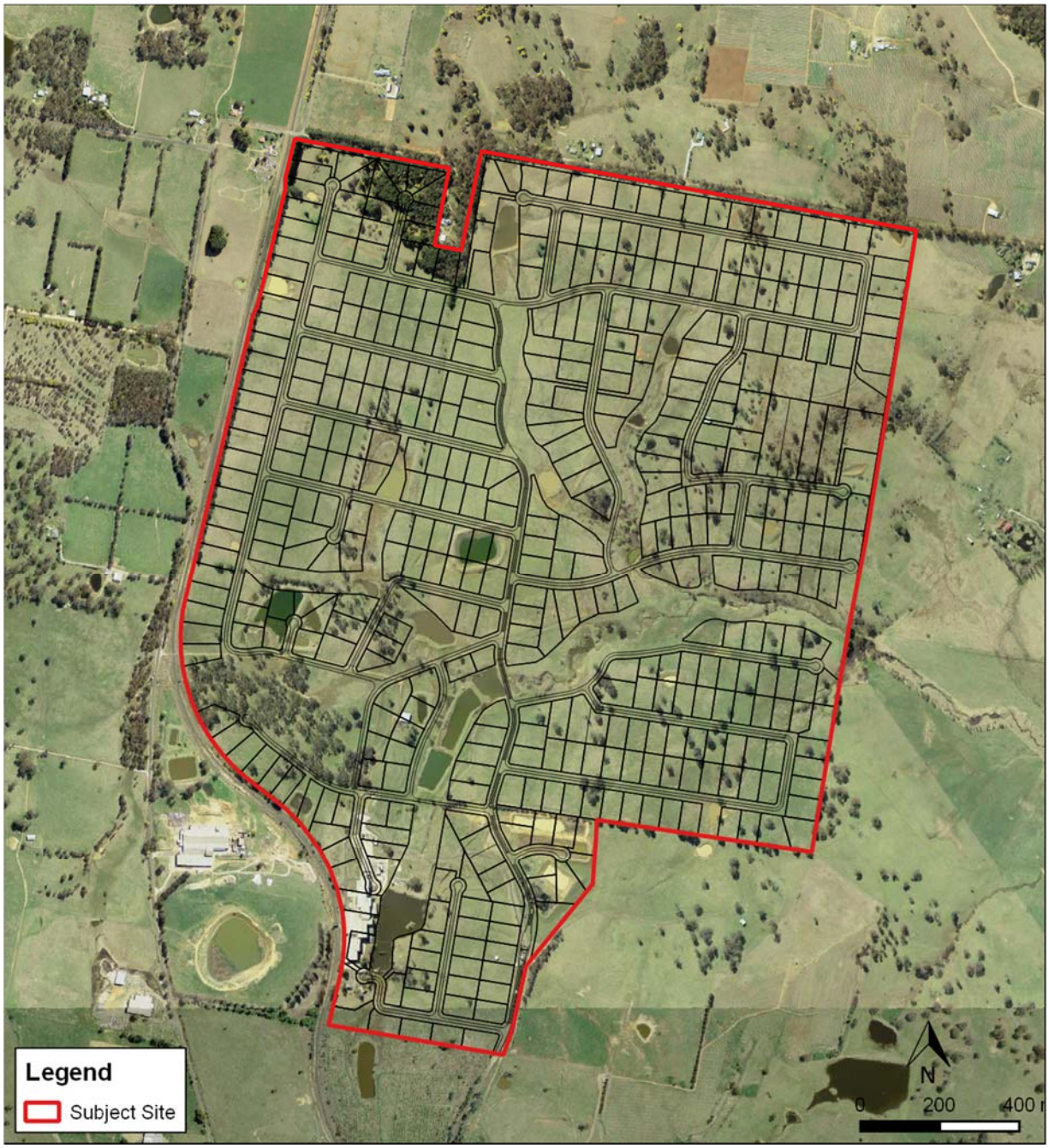

Figure 1: Site concept Master Plan

This Stage 1 PSI is based on a desktop review of available information, a site walkover reconnaissance and a search of historical records. Access was provided to the ground level of each structure on the site. Limited investigations involving soil, groundwater, sediment and surface water sampling were conducted as part of this ESA, however these do not constitute the requirements of a Stage 2 Detailed Site Investigation.

1.2 SCOPE OF WORK

The scope of work for this Stage 1 PSI consisted of the following components:

- Review of the following third party documents:
  - Published topographical, geological and soil maps of the area;

  - Details of groundwater bores located within 500 m of the site and registered on the groundwater bore database, maintained by the NSW Office of Water (http://allwaterdata.water.nsw.gov.au/water.stm);
  - The public register managed by the NSW EPA for information on scheduled activities and penalty notices issued under the Protection of the Environment Operations Act;
  - The database managed by the NSW Environment Protection Authority (EPA) for information on notices issued under the Contaminated Land Management Act 1997;
  - Historical parish charting maps (1884 to 1927), as well as regional charting maps, status branch charting maps and the NSW Land Titles Office (LTO) charting maps;
  - Aerial photographs – selected historical aerial photographs of the site available for review from NSW Land and Property Information (LPI) to provide evidence of the history of development of the site and indications of potential sources of contamination;
  - Review of site records, where available.
- Site inspection – A site inspection by Geolyse personnel of the site and surrounding areas was undertaken to provide further information, via visual inspection, of potential sources and areas of significant environmental liability. The site inspection focused on the following:
  - Areas of operational processes including waste management, water management, the condition of the site surfaces and buildings and the presence of electrical transformers on site.
  - Areas of potential landfilling.
  - Potential impacts of neighbouring land uses.
  - Sensitivity of the receiving environment.
  - Other relevant information which could be provided by the site operator.
- Collection of samples from soil, groundwater, sediment and surface water using a systematic and/or judgemental sampling design, and laboratory analysis for chemicals of potential concern (COPC).
- Preparation of this factual report detailing the Stage 1 PSI findings in accordance with the NSW EPA publication *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (EPA, November 1997).

An overview of neighbouring properties was also conducted to identify the presence and proximity of sensitive receptors which could be significantly impacted upon by the site, and off-site operations which could have a significant impact on land contamination at the site.

The scope of the Stage 1 PSI did not include an assessment of compliance with environmental licences / permits held by the site or with other environmental regulatory requirements. The Stage 1 PSI included limited and targeted sampling and analysis of soil, groundwater, sediment and surface water, however the findings of this investigation component are not sufficient to conclusively verify the existence (or otherwise) of contamination across the entirety of the site.

1.3 PERSONNEL

The site visit was conducted on 12 and 22 January 2016 by Brendan Stuart of Geolyse. Reconnaissance at the site was generally conducted unescorted.

Site Description

2.1 SITE DEFINITION

Table 2.1 – Summary of Property Description Details

Feature	Details
Facility Address[1]	390 Clergate Road, Orange, NSW 2800 (portion) 440 Clergate Road, Orange, NSW 2800
Title Identification Details[1]	Lots 2, 3 and 25 in Deposited Plan (DP) 6694 Lots 14 and 15 in DP 255983
Current Ownership	B Healy
Current Site Use and Zoning[2]	Land Use: Agriculture (pasture and grazing by livestock); Zoning: General Industrial (IN1) – Lot 15 DP 255983 Primary Production (RU1) – Remainder of site
Proposed Future Site Use	Rural Residential (large lot)
Previous Environmental Reports	• Effluent Pond Investigation – Leeds Parade Orange, NSW (Envirowest Consulting, 2012)
Site Area[1]	290 hectares (approximately)

Sources:
1: SIX Maps Website developed by NSW Government, Land and Property Information. http://maps.six.nsw.gov.au/ (accessed January 2016).
2: Orange Local Environmental Plan, 2011, under the Environmental Planning and Assessment Act 1979.

2.2 SITE SETTING

2.2.1 REGIONAL SETTING

The site is located on the urban fringe of Orange, with industrial land-uses to the south-west transitioning to rural land-uses to the north-east. The site is approximately 5 kilometres north of the Orange central business district and 2 kilometres north of the North Orange Shopping Centre. The general setting of the site is shown in **Plates 1** and **2**.

The following sensitive receptors are located within the vicinity of the site:

- Summer Hill Creek, located approximately 1.3 km east of the site, and its unnamed tributaries which traverse the site and neighbouring properties to the east;
- Residents of off-site dwellings to the north, east and south of the site.
- Livestock utilising rural land in the vicinity of the site;
- Groundwater present in aquifer(s) underlying the site.

2.2.2 LOCAL SETTING

Structures located on the site include the currently abandoned abattoir facility and caretaker's residence. Other smaller structures are present, ancillary to these main structures.

Land uses and properties adjacent to the site, including those across adjacent roads were obtained from the site inspection conducted by Geolyse personnel in January 2016. The local area surrounding the site is displayed in **Figure 2**. Identified adjacent land uses are summarised in **Table 2.2**:

Table 2.2 – Adjacent Properties Descriptions

Direction From Site	Site Use (Nature of Activity)
North	Farmland, with residences
South	Farmland (orchard) with residence, Charles Sturt University (undeveloped, used for ancillary agricultural operations)
East	'Rosedale' homestead and property (heritage item) and surrounding farmland
West	Main Western Railway, Former Canobolas Wool Topmaking plant; Farmland with residences beyond

2.3 TOPOGRAPHY

Topographical site information was obtained from the:

- Ophir 8731-4-S, 1:25,000 Scale, Topographic Map, Second Edition (New South Wales Land and Property Management Authority, 2009); and
- Site visits in January 2016

The fall of the land is generally from the north-east to the south-west, at an approximate peak elevation of 940 metres Australian Height Datum (mAHD) in the north-east, falling to 860 mAHD in the south-west. To the north of the site is a slightly higher peak, located in the Cabonne LGA, which is the highest point in the immediate locality at approximately 948 mAHD.

2.4 SURFACE WATER RECEPTORS

A large number of ephemeral waterways and farm dams are scattered throughout the property, with the primary creek line running approximately east-west through the bottom third of the site. Waterways at the site are predominantly ephemeral and drain to this main creek line, which itself drains to the east towards Summer Hill Creek.

The catchment of drainage gullies at the site includes portions of properties beyond the site's eastern, northern and southern boundaries. Some flow from originating from these properties is anticipated.

2.5 REGIONAL AND SITE GEOLOGY

Mapped soil landscapes around the site are shown on **Figure 2**. The site lies entirely on the North Orange soil landscape as defined in Kovac et al (1990). Soloths and alluvial soils of the Macquarie soil landscape are located to the east of the site.

The North Orange soil landscape consists of undulating low hills to 30% grade, with red earths on upper slopes and shallow lithosols on crests and sideslopes. The proposed subdivision is located on the upper slopes of this soil landscape, and generally comprises red earths. These soils types have soil profiles extending greater than 1.1 m to bedrock, with brown to dull reddish brown fine sandy loam to loam topsoils to 0.25 m depth, overlying dark red to reddish brown loam or fine sandy clay loam subsoil.

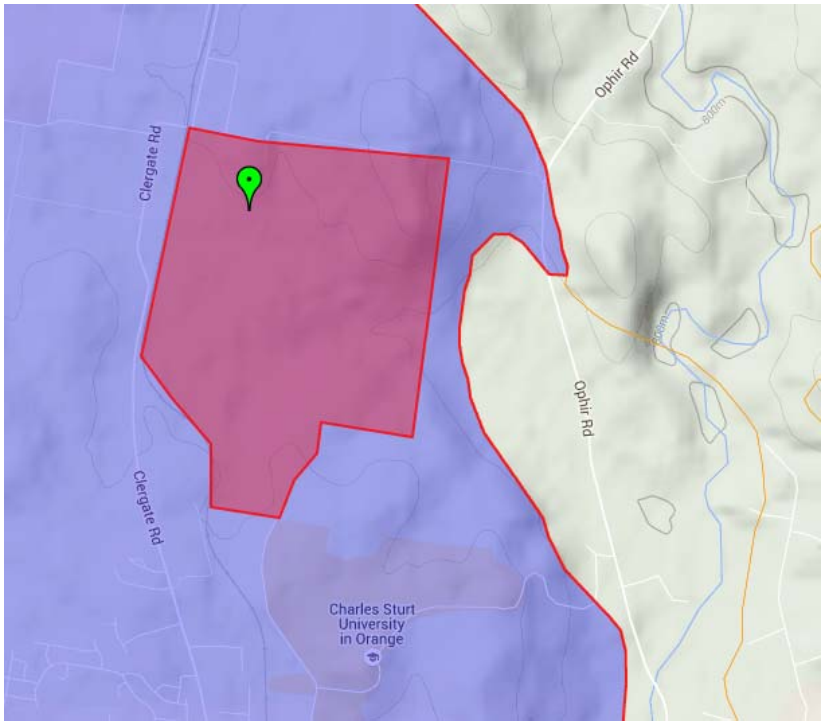

Figure 2: Extent of 'North Orange' Soil Landscape Group

The Orange Geological 1 : 100,000 Series Sheet 8731 (Geological Survey of NSW, 1997) indicates the underlying site geology is expected to comprise the 'Oakdale Formation' consisting of *mafic volcanic sandstone, basalt, siltstone, black shale, chert, breccia, conglomerate*, of the mid-Ordovician age Cabonne Group.

The geology of the site, based on drilling data from installation of a groundwater bore in the southern portion of the site, constructed in 1961 (NSW Office of Water Licence Reference 80BL011780), is described as approximately 8 m of clay, overlying 1.5 m of sand with granite bedrock below.

Rocky outcrops are present across the site, generally located on the hill crests located in the north-east of the site.

The Australian Soil Resource Information System (ASRIS) on-line database, maintained by CSIRO Land and Water, indicates there is an extremely low probability of occurrence of acid sulphate soils in the area of the site (compiled 2008, accessed January 2016).

2.6 REGIONAL HYDROGEOLOGY

2.6.1 GROUNDWATER BORE RECORDS SEARCH

A search for registered groundwater users located within a 1 km radius of the site was undertaken using the NSW Office of Water on-line database (http://realtimedata.water.nsw.gov.au/water.stm), in January 2016. The results indicated that there are six registered groundwater bores on the site and within 500 m of the site, registered for stock and domestic purposes.

Table 2.3 – Groundwater Bores within 1 km of Site

Licence Reference	Location	Year Installed	Depth	Water Bearing Zone(s)	Registered Use(s)
80BL006662	On-site (Lot 15 DP 6694)	1946	19.80 m	Not recorded	Industrial
80BL006663	On-site (Lot 15 DP 6694)	1954	20.4 m	Not recorded	Industrial
80BL006664	On-site (Lot 15 DP 6694)	1946	20.1 m	Not recorded	Industrial
80BL006665	On-site (Lot 15 DP 6694)	1944	19.4 m	Not recorded	Industrial
80BL011472	On-site (Lot 15 DP 6694)	1961	8.2 m	6.6 m to 6.8 m	Industrial
80BL011780	On-site (Lot 15 DP 6694)	1961	14.0 m	7.6 m to 8.2 m 8.8 m to 9.1 m 11.6 m to 13.7 m	Industrial
80BL017790	400 m west	1966	36.6 m	Not recorded	Stock, Irrigation
80BL006061	490 m west	1957	22.8 m	18.3 m to 21.3 m	Stock, Domestic, Irrigation
80BL125856	300 m north	1983	90.8 m	48.5 m to 50.9 m 72.2 m to 74.0 m	Stock, Domestic
80BL010418	90 m north	1947	21.3 m	@ 15.2 m @ 18.3 m	Stock, Irrigation
80BL134536	200 m north	1984	53.3 m	42.7 m to 43.0 m 45.7 m to 46.0 m	Stock, Domestic
80BL105093	210 m east	1940	3.7 m	Not recorded	Domestic
80BL242987	410 m east	2007	15.0 m	Not recorded	Test Bore
80BL013897	130 m south	1964	20.7 m	@ 14.3 m 19.2 m to 19.8 m	Stock, Domestic, Irrigation
80BL236215	180 m south	1994	64.0 m	13.0 m to 13.5 m 19.0 m to 19.5 m 35.0 m to 35.5 m 45.0 m to 45.5 m	Stock, Domestic
80BL013804	190 m south	1963	19.7 m	@ 7.6 m @ 16.2 m	Stock, Domestic, Irrigation, Waste Disposal

Source: NSW Office of Water on-line database (http://realtimedata.water.nsw.gov.au/water.stm)

Geolyse has considered the surrounding agricultural land uses and notes the potential for unregistered bores for irrigation purposes proximal to the site.

2.6.2 ON-SITE GROUNDWATER BORES

In addition to the registered groundwater bores described above, four groundwater bores have been identified at the site. One is located proximal to the effluent treatment ponds to the east of the former abattoir plant, and three are located within paddocks on the north-west portion of the site.

Site Historical Review

A review of the site history was undertaken to assess historical use of the site, and in particular to identify activities with the potential to contaminate soil and/or groundwater at the site.

3.1 NSW EPA RECORDS

3.1.1 SCHEDULED ACTIVITIES AND/OR ENVIRONMENTAL NOTICES

A search of the NSW EPA on-line register (http://www.epa.nsw.gov.au/prpoeoapp/) was undertaken in January 2016 for environment protection licenses and/or penalty notices issued under the Protection of the Environment Operations Act (POEO) 1997. The search indicated that the NSW EPA has previously licenced the abattoir facility (as BOH Pty Ltd) and the neighbouring Canobolas Wool Topmaking plant (as 'Michell Australia Pty Ltd'), however licenses for these sites were surrendered in 2007 and 2004, respectively. A summary of the most up-to-date licence particulars relating to potential contamination at the site is provided in **Table 3.1**.

Table 3.1 – Environment Protection Licence Information

Licensee and Reference #	Premises[1]	Scheduled Activities	Permitted On-site Discharge(s)	Environmental Monitoring
BOH Pty Ltd Lic. # 1460 (surrendered 2007)	Clergate Road, Orange **Lot 15 DP 6694** **Lot 25 DP 6694** Lot A DP 100828 Lot B DP 100828	• Livestock Processing – rendering • Livestock Processing Industries – other	Discharge of pollutants to water at: • 'Utilisation areas', identified as "*areas with excavation scars*" from 2003 (85 KL/day limit) • Pipeline to wastewater storage dam on Michell Australia Pty Ltd premises, September 2002 to February 2005	Daily monitoring of discharge to utilisation areas for: • Volume
Michell Australia Pty Ltd Lic. # 1865 (surrendered 2004)	390 Clergate Road, Orange Lot 122 DP549276 Lot 63 DP564427 PT.1 DP103880, Lot 642 DP607509 Lot 641 DP607509 **Lots 2&3 DP255983** Lot 51 DP590761 **Lot 14 DP6694**	• Livestock Processing – scour	Discharge of pollutants to water at: • 'Utilisation areas', identified as "irrigation areas" (500 KL/day limit) present on below titles. - Lot 2 DP255983 - Lot 3 DP255983 - Lot 14 DP6694 • Pipeline to Yolarno[2] Pty Ltd Effluent Treatment System, October 2003 to August 2004	Monthly monitoring of discharge to utilisation areas for: • Biochemical oxygen demand • Oil and Grease • Phosphorus (total) • Salinity • Total Kjeldahl Nitrogen • Total suspended solids • Volume

Source: NSW EPA on-line register (http://www.epa.nsw.gov.au/prpoeoapp/)

The following non-compliances against licence provisions were recorded at the abattoir facility and Canobolas Wool Topmaking plant

- Abattoir, 2002:
  - BOD limit exceeded twice at discharge point 1
  - Operation of plant and equipment associated with effluent treatment and rendering was not carried out competently
  - Effluent irrigation was undertaken on areas of the premises not identified on the licence
  - Slaughtering was undertaken and not authorised by the licence

[1] Titles indicated in **bold** are those which comprise a portion of the site
[2] The abattoir facility was trading as 'Yolarno', prior to becoming BOH Pty Ltd.

- Canobolas Wool Topmaking Plant, 2002:
  - Licensee failed to conduct monitoring as there was no water available for sampling
- Abattoir, 2003:
  - Effluent irrigation was undertaken on areas of the premises not identified on the licence
  - Operation of plant and equipment was not carried out competently
  - Dust was not being minimised
  - Discharge from biofilter and spill from save-all have potential to pollute waters
  - Activities were undertaken not authorised by the licence

A clean-up notice relating to the site was issued by the NSW EPA in January 2003 in response to "*numerous complaints from residents surrounding the Orange Abattoir … regarding offensive odours*". The licensee was directed to cease irrigation of effluent and cease the use of effluent for washing down of cattle pens on the premises, as well as implement other operational controls. As no subsequent clean-up notices or penalty notices were recorded against the premises, it is assumed the directions were implemented as required.

A penalty notice relating to the former Canobolas Wool Topmaking plant was issued by the NSW EPA in November 2014 to the current occupier, 'Twice Around' for "*Carry out unlicensed scheduled activity (premises-based) – individual*" under Section 48(2) of the Protection of the Environment Operations Act 1997. No further information regarding this penalty notice was available.

3.1.2 CONTAMINATED SITES REGISTER

A search of the NSW EPA on-line register (http://www.environment.nsw.gov.au/prclmapp/) was undertaken in January 2016 for contaminated land notices issued or regulated under the Contaminated Land Management Act 1997. The search indicated that the NSW EPA holds no contaminated land records relating to the site and properties within 1 km of the site.

3.2 HISTORICAL PARISH CHARTING MAPS

Editions of the 'Parish of March' map and the 1 : 40,000 Cadastral Series 'Cullya P0920-7' map, held by the NSW LPI, were reviewed by Geolyse, and information relevant to the site is summarised below:

- Crown grants of the land comprising the site commenced in 1839.
- The 1884 edition indicates owners of the area encompassing the site include 'William Dale', 'George Blackett' and 'Thomas Miller'.
- The 1895 edition indicates no change of ownership or lot divisions. The proposed re-alignment of the Great Western Railway to the south-west of the site is shown.
- The 1907 edition indicates no change of ownership or lot divisions.
- The 1915 edition indicates a change of ownership of the title previously owned by Thomas Miller to 'David Jones'.
- The 1927 edition indicates no change of ownership or lot divisions.
- The 1964 regional charting map (updated to 2007) and status branch charting map (updated to 1985) indicates an easement for the Wallerawang to Dubbo Transmission Line' was gazetted in 1968, and resumption of land for the current alignment of the of the Great Western Railway to the south-west of the site was gazetted in 1984.

3.3 HISTORICAL AERIAL PHOTOGRAPHY SURVEY

An historical aerial photography survey was undertaken for the site, with a total of seven (7) photographs identified and reviewed. The historical aerial photographs that were reviewed spanned a period of

approximately 59 years, with the most recent from 2013, to the earliest in 1954. Aerial photographs, as attached in **Appendix A**, were reviewed to track changes in use of the site and surrounding properties over time. Key observations made during the review of aerial photos are summarised in **Table 3.2** as follows:

Table 3.2 – Summary of Aerial Photo Information

Date	Site Activity	Surrounding Land Use
10 Jan 1954	Two large structures of the abattoir facility and a number or smaller structures are present, generally within the current footprint of the current structures. The structures of the caretaker's residence to the south of the abattoir facility is also present. The majority of the site is cleared of vegetation, with the exception of stands of trees located to the north of the abattoir facility. A number of farm dams are present. The north-west portion of the site is utilised for orchard growing and associated structures, including a residence, are present in this area. The remainder of the site appears to be utilised for livestock grazing.	Land to the north, south, east and west of the site is cleared of vegetation and appears to be utilised for orchard growing (to the immediate west of Clergate Road, to the south of the site, and to the north-east of the site) and livestock grazing, with associated residences. 'Rosedale' homestead is present to the east of the site. Clergate Road, Pearce Lane, Leeds Parade and the 'Great Western Railway' are present in their current alignment.
Dec 1963	Erosion prevention control banks and several larger farm dams have been constructed. Three structures have been constructed approximately 600 m north of the abattoir facility.	Land uses of the surrounding area appear to have been insignificantly altered.
17 May 1973	Four structures have been constructed in the south-east of the site approximately 400 m east of the abattoir facility. Settlement ponds along the alignment of the main drainage line have been constructed.	Construction has commenced at the 'Canobolas Wool Topmaking' plant, to the west of the Great Western Railway and approximately 350 m west of the abattoir facility. A rail siding is present at this plant. Structures associated with the Orange Agricultural College (later to become the Orange campus of Charles Sturt University) are present (note: this area was not visible in the 1963 imagery). Land uses of the remainder of the surrounding area appear to have been insignificantly altered.
30 Oct 1989	The area encompassing the site is generally unchanged.	Construction at the 'Canobolas Wool Topmaking' plant has completed and structures reflect the current layout of the plant. Further structures of the Orange Agricultural College have been constructed. Land uses of the remainder of the surrounding area appear to have been insignificantly altered.
29 August 1998	Improvement works at the abattoir facility appears to have occurred. Two of the three structures to the north of the facility have been demolished. The four structures to the east of the facility have been demolished and a settlement pond has been constructed in the former footprint of these structures. The orchard area in the north-west portion of the site has been cleared and now appears to be utilised for livestock grazing (in-line with the majority of the site. Associated structures and residence have been demolished. Settlement ponds in the south of this area are now present.	Land uses of the surrounding area appear to have been insignificantly altered.
5 December 2005	Improvement works at the abattoir facility appears to have occurred. Three additional settlement ponds have been constructed adjacent to the existing pond to the east of the facility. The existing pond is the 2nd pond in this pond system.	Land uses of the surrounding area appear to have been insignificantly altered.
16 August 2013	All structures present on the site reflect the current layout of the site.	Land uses of the surrounding area appear to have been insignificantly altered.

3.4 SUMMARY OF SITE HISTORY INFORMATION

Crown grants incorporating the site commenced in 1839, which has been subject to private ownership to the present. Based on historical aerial photographs, the abattoir facility has been present at the site since prior to 1954. Agricultural uses including orchard growing and livestock grazing have previously occurred at the site. With the exception of orchard growing no longer occurring in the north-west portion, land uses at the site are largely unchanged (noting that the abattoir ceased operation in approximately 2005).

Various chemicals such as arsenic and organochlorine pesticides (OCPs) associated with orchard growing and cattle grazing activities are potential contaminants at the site based on known historic uses.

No search for NSW WorkCover Dangerous Goods licences was conducted to determine the potential presence (historic or otherwise) of above-ground or underground chemical storage tanks. Site reconnaissance did not indicate the presence of any chemical storage facilities on the site, and any facilities would pre-date the NSW WorkCover Dangerous Goods license database.

Given the distance of the site from urban areas, disposal of farm-generated waste by landfilling may have been undertaken on the site. Such waste may include animal carcasses, domestic refuse, empty chemical containers, etc.. Disposal of these wastes by incineration may also have occurred. No evidence of landfilling was evident during the site inspection conducted in January 2016 (refer to **Section 4.6**).

Irrigation of effluent from the abattoir facility and the former Canobolas Wool Topmaking plant neighbouring the site is understood to have occurred as a licenced activity from 2002 to 2005, however recorded licence non-compliances indicate this practice was implemented prior to this. Effluent discharge areas have not been verified, however anecdotal evidence suggests these include the ponds to the south of the former orchard area, and excavation scars in the north-east of the site.

Effluent treatment systems consisting of connected settlement ponds are present at the site and are understood to have been used to treat wash-down from external pens (northern treatment ponds) and abattoir production waste (eastern treatment ponds).

Storage of chemicals associated with maintenance of farm machinery, e.g. lubricants, hydraulic fluids, etc., as well as refuelling of vehicles, can potentially result in contamination of soil and/or groundwater by petroleum hydrocarbons. Storage of chemicals was observed during the site inspection in January 2016, and evidence of minor spills was apparent.

Site Reconnaissance

4.1 WASTE MANAGEMENT

The site is not operational and no waste generation or disposal occurs at the site. Historically, solid wastes from the abattoir, including animal carcasses, may have been disposed on the site. Waste water and effluent is discussed below.

No evidence of stressed vegetation, which may be indicative of soil and/or groundwater contamination, was observed during the site inspection.

4.2 STORMWATER AND WASTE WATER

The majority of site stormwater is captured by drainage gullies across the site and discharge into various holding dams on the site. Surface water flow continues from west to east, and eventually discharges to Summer Hill Creek approximately 1.3 km to the east.

Some stormwater from the properties neighbouring the site's eastern, northern and southern boundaries currently flows onto the site, mostly via drainage gullies and into dams. The land use of these properties is generally similar to that of the site (i.e. agricultural), however does include the former Canobolas Wool Topmaking plant, which is currently utilised for a range of industrial purposes including the storage of demolition waste. Further, a change in land use at the site to rural residential may result in an increased risk of exposure to contaminants migrating onto the site, if present.

Stormwater from the former pen area to the immediate north of the facility is understood to be directed to a detention basin then a holding area, comprised of three connected settlement ponds, which then discharge to the main drainage line after a period of aeration and ambient ultraviolet (UV) treatment.

Effluent from production processes, anticipated to have predominantly been comprised of blood, 'paunch solids' and process water, is understood to have been pumped to a series of five settlement and evaporation basins (separate to the pen area settlement basins). Based on the area of the evaporation basins and a review of historic aerial photography (refer to **Section 4.3**), treated effluent is not anticipated to have discharged to the main drainage line, except in significant rainfall events.

It is understood that there is no connection at the site to sewer infrastructure. Waste water from installed amenities would have either been contained by a septic system and disposed off-site, or treated as part of the effluent treatment system.

4.3 CHEMICAL AND FUEL STORAGE

Historically, some storage of maintenance oils occurred at the site in drums around the abattoir facility (refer to **Plate 16**). A bunded area, approximately 2 m x 5 m, was observed to the north-east of the facility (refer to **Plate 17**) presumed to have previously housed an above-ground storage tank (AST), the historic contents of which could not be determined.

Storage of fuels, oils and other chemicals (e.g. herbicides) for current agricultural purposes was observed at the site (refer to **Plate 11**). No spill containment controls (e.g. bunding) was observed to be present surrounding these storage areas. Minor spills / leaks of maintenance oils associated with agricultural machinery were observed in the farm machinery shed (refer to **Plate 10**).

No observations were made during the site inspection or from historic aerial photography (refer to **Section 4.3**) that would indicate the presence (historic or otherwise) of bulk chemical storage infrastructure at the site, with the exception of the bunded area described above.

No evidence of generators was observed at the site, however back-up generators may have been present and removed subsequent to decommissioning of the abattoir facility. A boiler unit was observed (refer to **Plate 18**), however no indications of fuel leaks were apparent. No sheep dips or cattle dips were observed at the site.

4.4 ASBESTOS

Geolyse did not conduct an asbestos survey during the site inspection. Structures at the site, including the abattoir facility, sheds, and buildings ancillary to the caretaker residence, (refer to **Plates 12** to **14**), appeared to be have used fibrous cement in cladding and/or roofing, and warrant further investigation.

Weathering of structures, if identified to contain asbestos, may result in release of asbestos fibres into the soil, air and waterways.

4.5 POLYCHLORINATED BIPHENYLS (PCBs)

PCBs are known to have been used in electrical and hydraulic equipment, and were produced commercially in large quantities until the late 1970s until their phasing out in Australia in the 1970s (Department of the Environment, National Pollutant Inventory). Australia banned the importation of PCBs in 1975.

A hazardous materials survey was not conducted during the site inspection, however an electrical substation / transformer is present on the site which may potentially contain PCB containing transformer oils. The run-down condition of the substation (refer to **Plate 15**) may have resulted in leaks or spills of PCB transformer oil. The age of the substation, understood to have been installed during improvement works at the facility between 1989 and 1998, likely precludes the presence of PCB containing materials.

4.6 LANDFILLING

No areas of potential landfilling were observed during the site inspection. Based on the site topography there is some potential for fill material to be present beneath the concrete paving and building floors of the abattoir facility. A number of retaining walls were observed at the site, and the land in the vicinity of the facility slopes from north-west to east.

Based on observations during the site inspection, any filling at the site is considered most likely to be a component of ‘cut-and-fill’ civil works during establishment of the site in approximately the 1920s, and unlikely to have resulted from importing significant volumes of fill material to the site.

Environmental Sampling

5.1 POTENTIAL CONTAMINATION ISSUES

5.1.1 POTENTIAL SOURCES

Potential on-site sources of contamination which may have impacted the soil, sediment, surface water and/or groundwater beneath the site include the following:

- Application of pesticides on orchard or pasture;
- Irrigation of effluent from the abattoir facility and/or the former Canobolas Wool Topmaking Plant to discharge areas;
- Leakage and/or spills of agricultural machinery fuels and oils;
- Discharge of abattoir effluent (from pen areas or production processes) to treatment ponds;
- Weathering of building materials containing asbestos.

5.1.2 CHEMICALS OF POTENTIAL CONCERN (COPC)

COPC associated with the agricultural and abattoir uses of the site and considered to have the potential to adversely impact the underlying soil and groundwater environments include:

- Organochlorine Pesticides (OCPs), Organophosphorus Pesticides (OPPs);
- Heavy metals (Arsenic, Cadmium, Copper, Chromium, Lead, Nickel, Mercury and Zinc);
- Total Petroleum Hydrocarbons (TPH), Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene (BTEXN) compounds;
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Microbiological Parameters (Faecal Coliforms and *Escherichia Coli*); and
- Asbestos.

5.2 PREVIOUS INVESTIGATIONS

Previous investigations at the site are limited to the 'Effluent Pond Investigation – Leeds Parade Orange, NSW' (Envirowest Consulting, 2012). The below summary provides an overview of the scope and significant findings of the investigation. Previous sample locations are shown on the figure provided in **Appendix B**, attached.

Table 5.1 – Previous Investigation Summary

Report	Summary	
Envirowest Consulting Effluent Pond Investigation – Leeds Parade Orange, NSW 2012	**Scope**	Sludge and water sampling from the ponds and evaluate for the presence of potential contaminants. The samples were analysed in the laboratory for heavy metals, organochlorine pesticides, organophosphate pesticides and total petroleum hydrocarbons (TPH C10-C36). The analytes evaluated are potential contaminants of concern likely to occur in the effluent discharging into the ponds.

Table 5.1 – Previous Investigation Summary

Report	Summary	
	Findings	**Sludge** The levels of TPH(C10-C36) from sludge in the dam outlet pipe (BH5-1) were greater than the sensitive land-use threshold. The more appropriate comparison is wool wax criteria for application of wastewater to land (ARMC 1999). Only sample BH5-1 has an oily appearance and odour indicative of wool wax. The level of metals in the sludge samples was below the residential and commercial soil land-use thresholds. The level of metals, OCP and OPP was below the level of detection in all sludge samples. **Water** Sample BYH3 from the holding day outlet pipe contain levels of metals greater than the freshwater thresholds. In other samples the level of metals in the abattoir pond and holding dam were generally less than the freshwater thresholds. Levels of OCP and OPP were not detected in any sample.
	Recommendation	The sludge should be removed and dried and either re-compacted to fill the dam or spread over farmland. Testing of the sludge for organic matter (oil and grease content) should be undertaken and if greater than 2% it is not suitable for use as fill until degradation has occurred. Degradation is undertaken by composting. The water is suitable for irrigation onto the farmland. The water is not suitable for discharge in to waterways or creeks.

5.3 ADOPTED SITE INVESTIGATION LEVELS

5.3.1 SOIL AND SEDIMENT INVESTIGATION LEVELS

The soil investigation levels utilised for this investigation are consistent with those described within the National Environment Protection Council (NEPC), *Amended National Environment Protection (Assessment of Site Contamination) Measure 1999* (Amended ASC NEPM) 2013 and NSW EPA *Environmental Guidelines: Use and Disposal of Biosolids Products* (Biosolids Guidelines) 2000. A summary of these investigation levels is provided below.

- Health Investigation Levels (HIL) A – Residential (Amended ASC NEPM, NEPC 2013).
- Health Screening Levels (HSL) A – Residential (Amended ASC NEPM, NEPC 2013).
- Management Limits for petroleum hydrocarbons – Residential, Parkland and Open Space (Amended ASC NEPM, NEPC 2013).
- Aesthetic issues generally relate to the presence of materials with a negligible risk or non-hazardous inert foreign material in soil or fill resulting from human activity. In particular, soils on site should not exhibit discolouration (staining), a malodorous nature (odours) or abnormal consistency (rubble and asbestos).
- Stabilisation Grade A Microbiological Standards (Biosolids Guidelines, NSW EPA 2000)

5.3.2 GROUNDWATER AND SURFACE WATER INVESTIGATION LEVELS

The groundwater investigation levels utilised for this investigation are consistent with those described within the Amended ASC NEPM (NEPC 2013), and the Australian and New Zealand Environment and Conservation Council & Agricultural and Resource Management Council of Australia and New Zealand (ANZECC & ARMCANZ) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (Water Quality Guidelines). A summary of these investigation levels is provided below.

- Groundwater Health Screening Levels (HSL) A – Residential (Amended ASC NEPM, NEPC 2013). Where screening levels are non-limiting, a groundwater solubility limiting concentration is provided.

- Groundwater Investigation Levels (GIL) for Fresh Water (Amended ASC NEPM, NEPC 2013).
- Trigger values for toxicants at 95% level of protection (ANZECC & ARMCANZ 2000).
- Trigger values for thermotolerant coliforms in irrigation waters – Pasture and fodder for grazing animals except pigs and dairy animals, i.e. cattle, sheep and goats (ANZECC & ARMCANZ 2000).

5.4 METHODOLOGY

The following table outlines the scope and method of the assessment. Sample locations are presented on **Figure 4**, (appended).

Table 5.2 – Assessment Scope Summary

Activity / Item	Details
Date of Field Activities	12 January 2016
Samples Collected	Sample locations are shown on **Figure 4** (appended) **Soil:** 12 topsoil samples were collected from targeted locations (x6) and systematic grid based locations (x6) **Sediment:** 3 sediment samples from effluent treatment ponds **Surface Water:** 2 samples collected from effluent treatment ponds **Groundwater:** 2 samples collected from pre-existing bores
Methodology	**Soil:** Soil samples were collected directly from dig cuttings. All samples were placed in clean, laboratory-supplied acid washed solvent rinsed glass jars with Teflon® lids.
	Sediment: Samples were collected directly from sediment and placed into acid-washed glass jars with Teflon® lids provided by the laboratory
	Surface Water: Surface water samples were collected from approximately 0.1 m depth below the water surface using a reusable plastic container on an extension pole. Samples are then transferred to the laboratory analysis bottles.
	Groundwater: Groundwater 'grab' samples were collected by insertion of a weighted bailer to near the base (i.e. to approximately 1 m) of the groundwater well. The bailer (bottom filling) was repeatedly raised and lowered 2 m within the water column (and filled when lowered), then extracted for sampling. Groundwater was transferred to laboratory-supplied sample containers (containing appropriate preservatives) from the bottom half of the bailer (groundwater from the top half of the bailer was discarded).
Sample Preservation	Samples were stored on ice in an esky whilst on-site and in transit to the laboratory.
Decontamination	Re-usable equipment was decontaminated before each use using decontamination solution, then rinsed in potable water. Dedicated single-use items were not decontaminated, but were disposed following use. Nitrile gloves used for sampling were changed between each sample.

5.5 SAMPLE ANALYSIS

All samples were submitted to ALS Laboratories (ALS) for analysis. ALS is NATA (National Association of Testing Authorities) certified for the analyses performed.

The following table summarises details of the soil sample analysis undertaken.

Table 5.3 – Schedule of Analysis

Type	Sample Details	Analysis
Soil	Topsoil (Systematic Grid Sampling) – TS1, TS2, TS3, TS4, TS5, TS8, TS9	• Metals: arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc • Organochlorine and organophosphorus pesticides

Table 5.3 – Schedule of Analysis

Type	Sample Details	Analysis
	Topsoil (Wool Topmaking Discharge Area) – IA1-1, IA2-1	• Metals: arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc • Organochlorine and organophosphorus pesticides • Total Recoverable Hydrocarbons / Total Petroleum Hydrocarbons • Benzene, Toluene, Ethylbenzene and Xylene • Polycyclic Aromatic Hydrocarbons • Asbestos • Faecal Coliforms and *Escherichia coli*
	Topsoil (Machinery Shed, Flammable Goods Shed) – TS6, TS7	• Metals: arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc • Organochlorine and organophosphorus pesticides • Total Recoverable Hydrocarbons / Total Petroleum Hydrocarbons • Benzene, Toluene, Ethylbenzene and Xylene • Polycyclic Aromatic Hydrocarbons
	Topsoil (Near Pump Shed) – TS10	• Metals: arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc • Organochlorine and organophosphorus pesticides • Total Recoverable Hydrocarbons / Total Petroleum Hydrocarbons • Benzene, Toluene, Ethylbenzene and Xylene • Polycyclic Aromatic Hydrocarbons • Asbestos
Sediment	Effluent Treatment Pond Sludge – SP1-SD1, SP2-SD1, SP3-SD1	• Metals: arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc • Organochlorine and organophosphorus pesticides • Faecal Coliforms and *Escherichia coli*
Surface Water	Effluent Treatment Pond Water – SP1-W1, SP2-W2	• Metals: arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc • Organochlorine and organophosphorus pesticides • Total Recoverable Hydrocarbons / Total Petroleum Hydrocarbons • Benzene, Toluene, Ethylbenzene and Xylene • Oil and grease • Faecal Coliforms and *Escherichia coli* • Nutrients (nitrogen, nitrate, nitrite, ammonia, phosphorus)
Groundwater	Water Level from 11.8 mbgl to 12.4 mbgl – B2, B3	• Metals: arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc • Organochlorine and organophosphorus pesticides • Total Recoverable Hydrocarbons / Total Petroleum Hydrocarbons • Benzene, Toluene, Ethylbenzene and Xylene • Faecal Coliforms and *Escherichia coli* • Nutrients (nitrogen, nitrate, nitrite, ammonia, phosphorus)

5.6 RESULTS

5.6.1 SOIL

Soils descriptions were logged as follows:

Table 5.4 – Soil Sample Descriptions

Sample(s)	Description
TS1, TS2, TS4, TS5, TS6, TS8, TS9, TS10	Silty CLAY: grey-brown, firm, medium plasticity, root matter
TS3	Silty CLAY: red-brown, firm, medium plasticity, root matter
TS7	Silty CLAY: dark grey, unconsolidated, low plasticity, some sand, hydrocarbon odour
IA1-1	Silty SAND: dark brown, unconsolidated, poorly graded
IA2-1	CLAY: light brown, stiff, medium plasticity

Soil analytical results are presented in the laboratory certificates in **Appendix C** and summarised in **Table 1** (attached). All samples reported concentrations below the adopted soil investigation levels, with two exceptions:

- Sample TS7 reported results for TRH (>C16-C34 fraction) and TRH (>C34-C40 fraction) exceeding 'management limits' for petroleum hydrocarbons, as follows:
  - >C16-C34 fraction was recorded at a concentration of 48,800 mg/kg against the criteria of 2,500 mg/kg
  - >C34-C40 fraction was recorded at a concentration of 15,300 mg/kg against the criteria of 1,000 mg/kg.
- Sample IA1-1 reported results for TRH (>C16-C34 fraction) and TRH (>C34-C40 fraction) exceeding 'management limits' for petroleum hydrocarbons. Following 'silica gel clean-up' to remove non-petrogenic hydrocarbons of biological origin (e.g. vegetable / animal oils and greases, humic and fatty acids):
  - >C16-C34 fraction was recorded at a concentration of 2,740 mg/kg against the criteria of 2,500 mg/kg
  - >C34-C40 fraction was recorded at a concentration of 2,790 mg/kg against the criteria of 1,000 mg/kg.

5.6.2 SEDIMENT

Sediment analytical results are presented in the laboratory certificates in **Appendix C** and summarised in **Table 2** (attached). All samples reported concentrations below the adopted sediment / soil investigation levels.

5.6.3 SURFACE WATER

Surface water analytical results are presented in the laboratory certificates in **Appendix C** and summarised in **Table 3** (attached). All samples reported concentrations below the adopted surface water investigation levels, with the following exceptions relating to heavy metals:

- Sample SP1-W1 reported results for chromium, copper, lead and zinc exceeding fresh water ecological protection trigger values.
  - Chromium was recorded at a concentration of 0.011 mg/L against the criteria of 0.001 mg/L
  - Copper was recorded at a concentration of 0.018 mg/L against the criteria of 0.0014 mg/L
  - Lead was recorded at a concentration of 0.006 mg/L against the criteria of 0.0034 mg/L
  - Zinc was recorded at a concentration of 0.062 mg/L against the criteria of 0.008 mg/L
- Sample SP2-W1 reported results for chromium and copper exceeding fresh water ecological protection trigger values.
  - Chromium was recorded at a concentration of 0.002 mg/L against the criteria of 0.001 mg/L
  - Copper was recorded at a concentration of 0.005 mg/L against the criteria of 0.0014 mg/L

5.6.4 GROUNDWATER

Groundwater samples were collected from 2 of 3 monitoring bores located at the site. Descriptions are provided as follows:

Table 5.5 – Groundwater Sampling Summary

Bore ID	Depth to Water	Description
B1	Dry (at 8.62 mbgl)	N/A
B2	12.41 mbgl	Clear
B3	11.80 mbgl	Clear

Groundwater analytical results are presented in the laboratory certificates in **Appendix C** and summarised in **Table 4** (attached). All samples reported concentrations below the adopted groundwater investigation levels, with the following exceptions relating to heavy metals:

- Sample B3 reported results for zinc and nitrate exceeding fresh water ecological protection trigger values.
  - Zinc was recorded at a concentration of 0.019 mg/L against the criteria of 0.008 mg/L
  - Nitrate was recorded at a concentration of 7.22 mgN/L against the criteria of 0.016 mg/L

5.7 DISCUSSION

Identified contamination impacts at the site are not considered to render the site unsuitable for rezoning to rural residential based on the following:

- Hydrocarbon impacts to soils are considered to be localised and have been visually delineated. Targeted remedial activities during earthworks and/or construction phase(s) will result in minimisation of potential risks to receptors.
- Sediments from effluent treatment ponds were not identified to present a risk to human health. Microbiological parameters were recorded below 'Stabilisation Grade A' standards (NSW EPA, 2000) and hold an 'Unrestricted Use' biosolids classification.
- Heavy metal impacts to surface water are applicable to protection of ecological receptors (i.e. toxicity to aquatic organisms). Management of residual surface water in effluent treatment ponds may be implemented by pump-out into existing downgradient evaporation basins.
- Zinc and nitrate impacts to groundwater are applicable to protection of ecological receptors (i.e. toxicity to aquatic organisms). Likely receptors of groundwater may include bores for domestic use or discharge to surface water bodies, however risks to these receptors are considered to be low and acceptable due to the following:
  - Contaminant sources (effluent irrigation) are no longer present;
  - Trace metal concentrations are considered to be naturally occurring (sourced from weathering of mineralised oxides and hydroxides);
  - Stressed waterways (algal blooms, discolouration, etc.) were not evident at the site.

Conclusions

Geolyse make the following conclusions regarding the potential for land contamination at the site, based on a desktop review of available information, a review of historical records, a site walkover reconnaissance and collection of environmental samples.

- The site is located on the urban fringe of Orange and the main structures include the currently abandoned abattoir facility and caretaker's residence. Other smaller structures are present, ancillary to these main structures;
- The fall of the land is generally from the north-east to the south-west, at an approximate peak elevation of 940 metres Australian Height Datum (mAHD) in the north-east, falling to 860 mAHD in the south-west. It is considered that the majority of site stormwater would be captured by drainage gullies across the site and discharge into various holding dams on the site. Waterways at the site are predominantly ephemeral and drain to the east towards Summer Hill Creek.
- Based on the review of historic operations at the site, the site is considered to have only been utilised for the abattoir and agricultural purposes.
- Based on current operations at the site, and observations of the site during the inspection in January 2016, it is considered that the site is suitable, or may be made suitable, for the proposed land uses permitted under 'large lot residential' zoning, with consideration to the following:
    1. Stormwater flow onto the site from properties beyond the site's boundaries may have impacted waterways at the site;
    2. Potential leaking of septic waste water storage tank(s) on-site, if present, may have impacted soil and groundwater at the site;
    3. Storage and use of chemicals associated with maintenance of farm machinery has resulted in localised soil contamination within the footprint of the machinery shed;
    4. Historic irrigation of effluent has resulted in localised soil contamination at the base of former ponds to the south of the former orchard area;
    5. Weathering of construction materials in structures potentially containing asbestos may have resulted in contamination. Spills and/or leaks resulting from operation or decommissioning of the electrical substation / transformer may have impacted soil and groundwater at the site;
    6. Groundwater impacts (zinc and nitrate) may present a low and acceptable risk to aquatic ecology.
- Further assessment and/or remediation of potentially contaminated areas of the site is not considered to be a requirement of rezoning the site from its current IN1 (general industrial) and RU1 (primary production) zonings to rural residential zoning, based on the following:
    - Developments permitted under the rural residential zoning without development consent do not include uses considered likely to "increase the risk of harm to health or the environment from contamination"; and
    - SEPP 55 contains a general provision that requires consideration of contamination for all development proposals which require development consent, at which point assessment and/or remediation of specified items 1-6 above may be considered, as appropriate.
- Notation of the above items may be required to be recorded on Section 149(5) Planning Certificates to be prepared for the subdivided lots, as necessary.

References

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Appended Figures

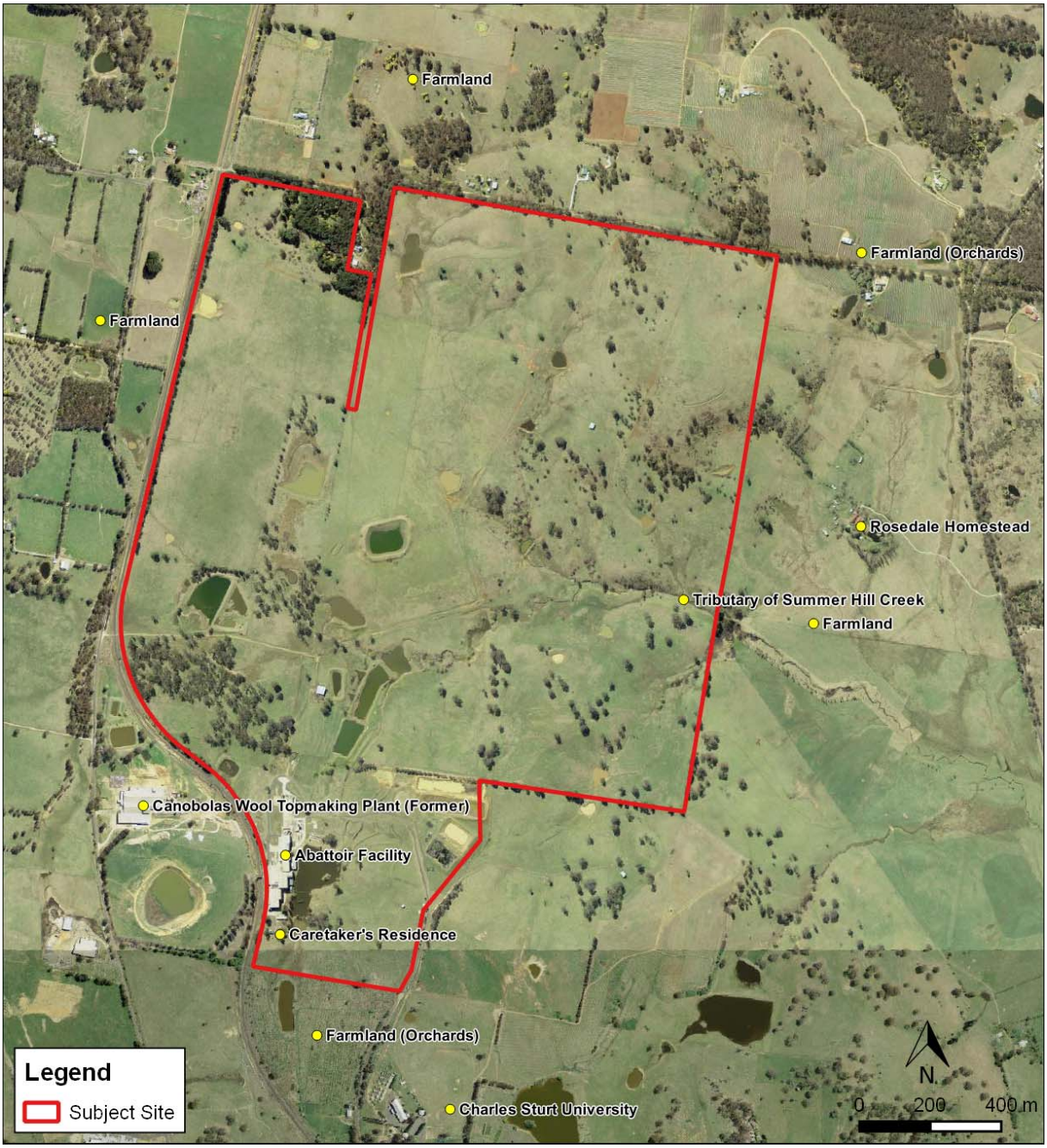


Figure 3: Site Layout

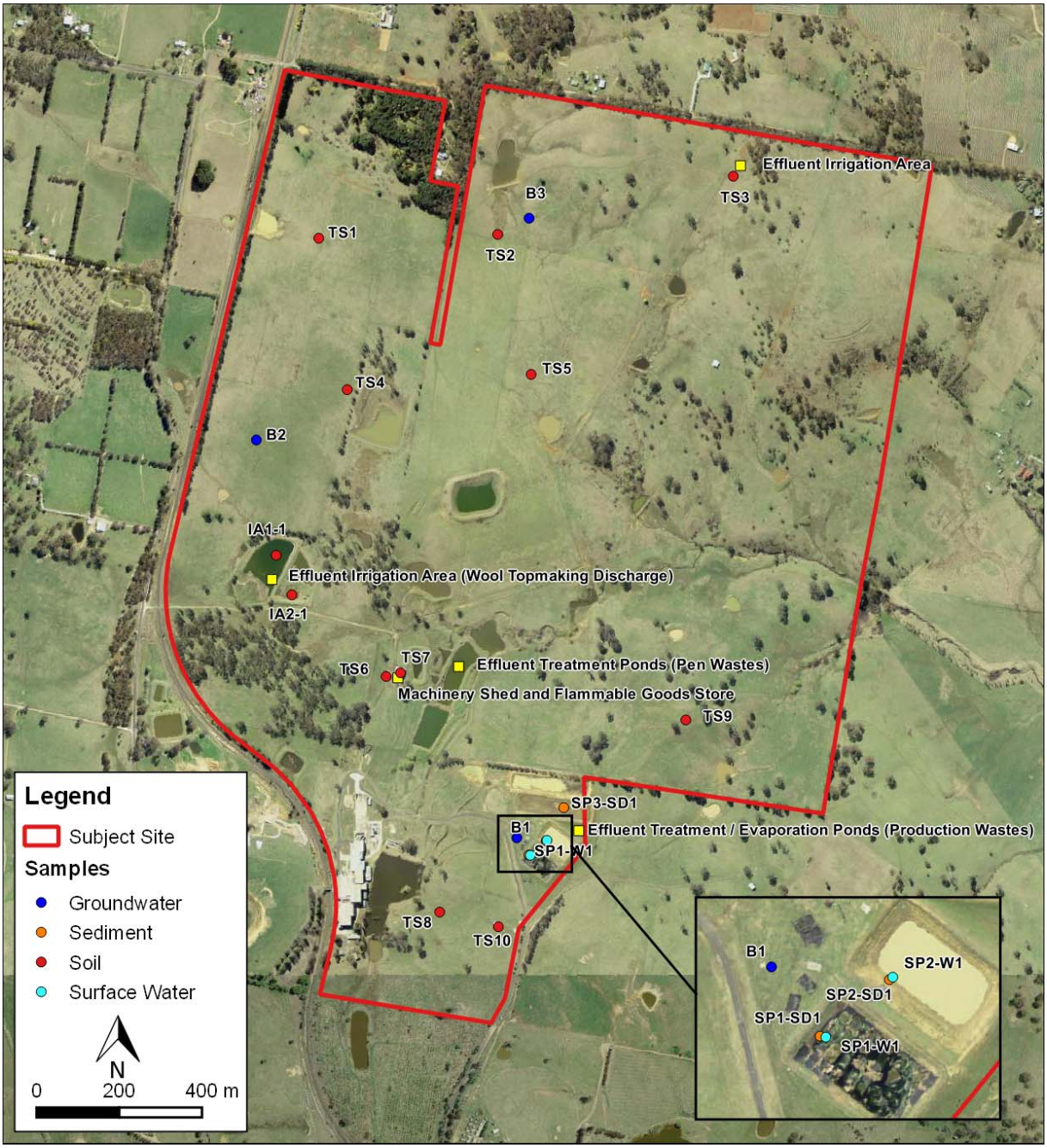


Figure 4: Sampling Locations

Tables

Table 1: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Topsoil

				Sample ID	IA1-1	IA2-1	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8	TS9	TS10
				Sample Date	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**												
Total Metals by ICP-AES	Arsenic	5	mg/kg	100	**55**	**8**	**32**	**6**	**11**	< 5	**16**	**15**	**10**	< 5	**7**	**7**
	Cadmium	1	mg/kg	20	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
	Chromium	2	mg/kg	100	**42**	**63**	**39**	**33**	**19**	**13**	**62**	**15**	**24**	**12**	**44**	**34**
	Copper	5	mg/kg	6000	**42**	**29**	**85**	**28**	**104**	**47**	**53**	**50**	**36**	**10**	**15**	**22**
	Lead	5	mg/kg	300	**18**	**13**	**114**	**25**	**41**	**26**	**28**	**8**	**10**	**7**	**15**	**14**
	Nickel	2	mg/kg	400	**20**	**16**	**9**	**10**	**6**	**6**	**16**	**6**	**5**	**3**	**5**	**7**
	Zinc	5	mg/kg	7400	**244**	**19**	**32**	**41**	**138**	**21**	**61**	**66**	**270**	**19**	**41**	**89**
Total Mercury by FIMS	Mercury	0.1	mg/kg	40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**1**
OC Pesticides by GCMS	4.4`-DDD	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	4.4`-DDE	0.05	mg/kg	-	< 0.25	< 0.05	**1.31**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	4.4`-DDT	0.2	mg/kg	-	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 0.2	< 0.2	< 0.2
	Aldrin	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	alpha-BHC	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	alpha-Endosulfan	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	beta-BHC	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	beta-Endosulfan	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	cis-Chlordane	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	delta-BHC	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Dieldrin	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Endosulfan (sum)	0.05	mg/kg	270	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Endosulfan sulfate	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Endrin	0.05	mg/kg	10	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Endrin aldehyde	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Endrin ketone	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	gamma-BHC	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Heptachlor	0.05	mg/kg	6	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Heptachlor epoxide	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Hexachlorobenzene (HCB)	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Methoxychlor	0.2	mg/kg	300	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 0.2	< 0.2	< 0.2
	Sum of Aldrin + Dieldrin	0.05	mg/kg	6	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Sum of DDD + DDE + DDT	0.05	mg/kg	240	< 0.25	< 0.05	**1.31**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Total Chlordane (sum)	0.05	mg/kg	50	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	trans-Chlordane	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
OP Pesticides by GCMS	Azinphos Methyl	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Bromophos-ethyl	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Carbophenothion	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Chlorfenvinphos	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Chlorpyrifos	0.05	mg/kg	160	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Chlorpyrifos-methyl	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Demeton-S-methyl	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Diazinon	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Dichlorvos	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Dimethoate	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Ethion	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Fenamiphos	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Fenthion	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Malathion	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Monocrotophos	0.2	mg/kg	-	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 0.2	< 0.2	< 0.2
	Parathion	0.2	mg/kg	-	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 0.2	< 0.2	< 0.2
	Parathion-methyl	0.2	mg/kg	-	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1	< 0.2	< 0.2	< 0.2
	Pirimphos-ethyl	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05
	Prothiofos	0.05	mg/kg	-	< 0.25	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05

Table 1: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Topsoil

				Sample ID	IA1-1	IA2-1	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8	TS9	TS10
				Sample Date	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**												
Asbestos Identification in Soils	Asbestos Detected	0.1	g/kg	Nil	**ND**	-	-	-	-	-	-	-	-	-	-	**ND**
	Sample weight (dry)	0.01	g	-	**51.5**	-	-	-	-	-	-	-	-	-	-	**48.2**
Faecal Coliforms by MPN	Escherichia coli	2	orgs/g	100	< 2	< 3	-	-	-	-	-	-	-	-	-	-
	Faecal Coliforms	2	orgs/g	1000	< 2	< 3	-	-	-	-	-	-	-	-	-	-
TRH Volatiles/BTEX	Benzene	0.2	mg/kg	0.5	< 0.2	-	-	-	-	-	-	< 0.2	< 0.2	-	-	< 0.2
	Toluene	0.5	mg/kg	160	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Ethylbenzene	0.5	mg/kg	55	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	meta- & para-Xylene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	ortho-Xylene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Total Xylenes	0.5	mg/kg	40	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Sum of BTEX	0.2	mg/kg	-	< 0.2	-	-	-	-	-	-	< 0.2	< 0.2	-	-	< 0.2
	Naphthalene	1	mg/kg	-	< 1	-	-	-	-	-	-	< 1	< 1	-	-	< 1
	C6 - C9 Fraction	10	mg/kg	-	< 10	-	-	-	-	-	-	< 10	< 10	-	-	< 10
	C6 - C10 Fraction	10	mg/kg	700	< 10	-	-	-	-	-	-	< 10	< 10	-	-	< 10
	C6 - C10 Fraction minus BTEX (F1)	10	mg/kg	45	< 10	-	-	-	-	-	-	< 10	< 10	-	-	< 10
TRH - Semivolatile Fraction	>C10 - C16 Fraction	50	mg/kg	1000	< 50	-	-	-	-	-	-	< 50	< 50	-	-	< 50
	>C10 - C16 Fraction minus Naphthalene (F2)	50	mg/kg	110	< 50	-	-	-	-	-	-	< 50	< 50	-	-	< 50
	>C16 - C34 Fraction	100	mg/kg	2500	**8250**	-	-	-	-	-	-	< 100	**48800**	-	-	< 100
	>C34 - C40 Fraction	100	mg/kg	1000	**15400**	-	-	-	-	-	-	< 100	**15300**	-	-	< 100
	>C10 - C40 Fraction (sum)	50	mg/kg	-	**23600**	-	-	-	-	-	-	< 50	**64100**	-	-	< 50
	C10 - C14 Fraction	50	mg/kg	-	< 50	-	-	-	-	-	-	< 50	< 50	-	-	< 50
	C15 - C28 Fraction	100	mg/kg	-	**5560**	-	-	-	-	-	-	< 100	**24800**	-	-	< 100
	C29 - C36 Fraction	100	mg/kg	-	**10800**	-	-	-	-	-	-	< 100	**31100**	-	-	< 100
	C10 - C36 Fraction (sum)	50	mg/kg	-	**16400**	-	-	-	-	-	-	< 50	**55900**	-	-	< 50
TRH - Semivolatile Fraction (Silica Gel Clean Up)	>C10 - C16 Fraction (SG)	50	mg/kg	1000	< 50	-	-	-	-	-	-	-	-	-	-	-
	>C10 - C16 Fraction minus Naphthalene (F2) (SG)	50	mg/kg	-	**260**	-	-	-	-	-	-	-	-	-	-	-
	>C16 - C34 Fraction (SG)	100	mg/kg	2500	**2740**	-	-	-	-	-	-	-	-	-	-	-
	>C34 - C40 Fraction (SG)	100	mg/kg	1000.000	**2790**	-	-	-	-	-	-	-	-	-	-	-
	>C10 - C40 Fraction (sum) (SG)	50	mg/kg	-	**5530**	-	-	-	-	-	-	-	-	-	-	-
	C10 - C14 Fraction (SG)	25	mg/kg	-	< 50	-	-	-	-	-	-	-	-	-	-	-
	C15 - C28 Fraction (SG)	50	mg/kg	-	**760**	-	-	-	-	-	-	-	-	-	-	-
	C29 - C36 Fraction (SG)	50	mg/kg	-	**3860**	-	-	-	-	-	-	-	-	-	-	-
	C10 - C36 Fraction (sum) (SG)	25	mg/kg	-	**4620**	-	-	-	-	-	-	-	-	-	-	-

Table 1: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Topsoil

				Sample ID	IA1-1	IA2-1	TS1	TS2	TS3	TS4	TS5	TS6	TS7	TS8	TS9	TS10
				Sample Date	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**												
PAHs (SIM)	Acenaphthene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Anthracene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Benzo(b+j)fluoranthene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Chrysene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Fluoranthene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Fluorene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Indeno(1.2.3.cd)pyrene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Naphthalene (Ex SVOC)	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Phenanthrene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Pyrene	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Benzo(a)pyrene TEQ (half LOR)	0.5	mg/kg	3	**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**
	Benzo(a)pyrene TEQ (zero)	0.5	mg/kg	-	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5
	Sum of polycyclic aromatic hydrocarbons	0.5	mg/kg	300	< 0.5	-	-	-	-	-	-	< 0.5	< 0.5	-	-	< 0.5

mg/kg	milligrams per kilogram
g/kg	grams per kilogram
orgs/g	organisms per gram (most probable number)
LOR	limit of reporting
Criteria	From *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC 2013); or *Use and Disposal of Biosolids Products* (NSW EPA 2000)
	Criteria exceeded

Table 2: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Sediment

				Sample ID	SP1-SD1	SP2-SD1	SP3-SD1
				Sample Date	12/01/2016	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**			
Total Metals by ICP-AES	Arsenic	5	mg/kg	100	-	< 5	< 5
	Cadmium	1	mg/kg	20	-	< 1	< 1
	Chromium	2	mg/kg	100	-	**41**	**31**
	Copper	5	mg/kg	6000	-	**21**	**39**
	Lead	5	mg/kg	300	-	**10**	**18**
	Nickel	2	mg/kg	400	-	**5**	**9**
	Zinc	5	mg/kg	7400	-	**23**	**66**
Total Mercury by FIMS	Mercury	0.1	mg/kg	40	-	< 0.1	< 0.1
OC Pesticides by GCMS	4.4`-DDD	0.05	mg/kg	-	-	< 0.05	< 0.05
	4.4`-DDE	0.05	mg/kg	-	-	< 0.05	< 0.05
	4.4`-DDT	0.2	mg/kg	-	-	< 0.2	< 0.2
	Aldrin	0.05	mg/kg	-	-	< 0.05	< 0.05
	alpha-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
	alpha-Endosulfan	0.05	mg/kg	-	-	< 0.05	< 0.05
	beta-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
	beta-Endosulfan	0.05	mg/kg	-	-	< 0.05	< 0.05
	cis-Chlordane	0.05	mg/kg	-	-	< 0.05	< 0.05
	delta-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
	Dieldrin	0.05	mg/kg	-	-	< 0.05	< 0.05
	Endosulfan (sum)	0.05	mg/kg	270	-	< 0.05	< 0.05
	Endosulfan sulfate	0.05	mg/kg	-	-	< 0.05	< 0.05
	Endrin	0.05	mg/kg	10	-	< 0.05	< 0.05
	Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	< 0.05
	Endrin ketone	0.05	mg/kg	-	-	< 0.05	< 0.05
	gamma-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
	Heptachlor	0.05	mg/kg	6	-	< 0.05	< 0.05
	Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	< 0.05
	Hexachlorobenzene (HCB)	0.05	mg/kg	-	-	< 0.05	< 0.05
	Methoxychlor	0.2	mg/kg	300	-	< 0.2	< 0.2
	Sum of Aldrin + Dieldrin	0.05	mg/kg	6	-	< 0.05	< 0.05
	Sum of DDD + DDE + DDT	0.05	mg/kg	240	-	< 0.05	< 0.05
	Total Chlordane (sum)	0.05	mg/kg	50	-	< 0.05	< 0.05
	trans-Chlordane	0.05	mg/kg	-	-	< 0.05	< 0.05
OP Pesticides by GCMS	Azinphos Methyl	0.05	mg/kg	-	-	< 0.05	< 0.05
	Bromophos-ethyl	0.05	mg/kg	-	-	< 0.05	< 0.05
	Carbophenothion	0.05	mg/kg	-	-	< 0.05	< 0.05
	Chlorfenvinphos	0.05	mg/kg	-	-	< 0.05	< 0.05
	Chlorpyrifos	0.05	mg/kg	160	-	< 0.05	< 0.05
	Chlorpyrifos-methyl	0.05	mg/kg	-	-	< 0.05	< 0.05
	Demeton-S-methyl	0.05	mg/kg	-	-	< 0.05	< 0.05
	Diazinon	0.05	mg/kg	-	-	< 0.05	< 0.05
	Dichlorvos	0.05	mg/kg	-	-	< 0.05	< 0.05
	Dimethoate	0.05	mg/kg	-	-	< 0.05	< 0.05
	Ethion	0.05	mg/kg	-	-	< 0.05	< 0.05
	Fenamiphos	0.05	mg/kg	-	-	< 0.05	< 0.05
	Fenthion	0.05	mg/kg	-	-	< 0.05	< 0.05
	Malathion	0.05	mg/kg	-	-	< 0.05	< 0.05
	Monocrotophos	0.2	mg/kg	-	-	< 0.2	< 0.2
	Parathion	0.2	mg/kg	-	-	< 0.2	< 0.2
	Parathion-methyl	0.2	mg/kg	-	-	< 0.2	< 0.2
	Pirimphos-ethyl	0.05	mg/kg	-	-	< 0.05	< 0.05
	Prothiofos	0.05	mg/kg	-	-	< 0.05	< 0.05
Faecal Coliforms by MPN	Escherichia coli	2	orgs/g	100	< 3	**3**	< 2
	Faecal Coliforms	2	orgs/g	1000	**7**	**3**	< 2

mg/kg	milligrams per kilogram
g/kg	grams per kilogram
orgs/g	organisms per gram (most probable number)
LOR	limit of reporting
Criteria	From *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC 2013); or *Use and Disposal of Biosolids Products* (NSW EPA 2000)
	Criteria exceeded

Table 3: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Surface Water

				Sample ID	SP1-W1	SP2-W1
				Sample Date	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**		
Total Metals by ICP-MS - Suite A	Arsenic	0.001	mg/L	0.13	**0.004**	**0.004**
	Cadmium	0.0001	mg/L	0.0002	< 0.0001	< 0.0001
	Chromium	0.001	mg/L	0.001	**0.011**	**0.002**
	Copper	0.001	mg/L	0.0014	**0.018**	**0.005**
	Lead	0.001	mg/L	0.0034	**0.006**	< 0.001
	Nickel	0.001	mg/L	0.011	**0.004**	< 0.001
	Zinc	0.005	mg/L	0.008	**0.062**	< 0.005
Total Mercury by FIMS	Mercury	0.0001	mg/L	0.0006	< 0.0001	< 0.0001
OC Pesticides by GCMS	4.4`-DDD	0.5	µg/L	-	-	< 0.5
	4.4`-DDE	0.5	µg/L	-	-	< 0.5
	4.4`-DDT	2	µg/L	0.01	-	< 2
	Aldrin	0.5	µg/L	-	-	< 0.5
	alpha-BHC	0.5	µg/L	-	-	< 0.5
	alpha-Endosulfan	0.5	µg/L	-	-	< 0.5
	beta-BHC	0.5	µg/L	-	-	< 0.5
	beta-Endosulfan	0.5	µg/L	-	-	< 0.5
	cis-Chlordane	0.5	µg/L	-	-	< 0.5
	delta-BHC	0.5	µg/L	-	-	< 0.5
	Dieldrin	0.5	µg/L	-	-	< 0.5
	Endosulfan sulfate	0.5	µg/L	-	-	< 0.5
	Endrin	0.5	µg/L	0.02	-	< 0.5
	Endrin aldehyde	0.5	µg/L	-	-	< 0.5
	Endrin ketone	0.5	µg/L	-	-	< 0.5
	gamma-BHC	0.5	µg/L	-	-	< 0.5
	Heptachlor	0.5	µg/L	0.09	-	< 0.5
	Heptachlor epoxide	0.5	µg/L	-	-	< 0.5
	Hexachlorobenzene (HCB)	0.5	µg/L	-	-	< 0.5
	Methoxychlor	2	µg/L	-	-	< 2
	Sum of Aldrin + Dieldrin	0.5	µg/L	-	-	< 0.5
	Sum of DDD + DDE + DDT	0.5	µg/L	-	-	< 0.5
	Total Chlordane (sum)	0.5	µg/L	0.08	-	< 0.5
	trans-Chlordane	0.5	µg/L	-	-	< 0.5
OP Pesticides by GCMS	Azinphos Methyl	0.5	µg/L	0.02	-	< 0.5
	Bromophos-ethyl	0.5	µg/L	-	-	< 0.5
	Carbophenothion	0.5	µg/L	-	-	< 0.5
	Chlorfenvinphos	0.5	µg/L	-	-	< 0.5
	Chlorpyrifos	0.5	µg/L	0.01	-	< 0.5
	Chlorpyrifos-methyl	0.5	µg/L	-	-	< 0.5
	Demeton-S-methyl	0.5	µg/L	-	-	< 0.5
	Diazinon	0.5	µg/L	0.01	-	< 0.5
	Dichlorvos	0.5	µg/L	-	-	< 0.5
	Dimethoate	0.5	µg/L	0.15	-	< 0.5
	Ethion	0.5	µg/L	-	-	< 0.5
	Fenamiphos	0.5	µg/L	-	-	< 0.5
	Fenthion	0.5	µg/L	-	-	< 0.5
	Malathion	0.5	µg/L	0.05	-	< 0.5
	Monocrotophos	2	µg/L	-	-	< 2
	Parathion	2	µg/L	0.004	-	< 2
	Parathion-methyl	2	µg/L	-	-	< 2
	Pirimphos-ethyl	0.5	µg/L	-	-	< 0.5
	Prothiofos	0.5	µg/L	-	-	< 0.5
Oil and Grease	Oil & Grease	5	mg/L	-	**38**	**8**

Table 3: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Surface Water

				Sample ID	SP1-W1	SP2-W1
				Sample Date	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**		
Thermotolerant Coliforms & E.coli by Membrane Filt	Escherichia coli	1	CFU/100mL	-	**330**	**1**
	Faecal Coliforms	1	CFU/100mL	1000	**330**	**1**
TRH Volatiles/BTEX	Benzene	1	µg/L	800	< 1	< 1
	Toluene	2	µg/L	61000	< 2	< 2
	Ethylbenzene	2	µg/L	3900	< 2	< 2
	meta- & para-Xylene	2	µg/L	-	< 2	< 2
	ortho-Xylene	2	µg/L	-	< 2	< 2
	Total Xylenes	2	µg/L	200	< 2	< 2
	Sum of BTEX	1	µg/L	-	< 1	< 1
	Naphthalene	5	µg/L	16	< 5	< 5
	C6 - C9 Fraction	20	µg/L	-	< 20	< 20
	C6 - C10 Fraction	20	µg/L	-	< 20	< 20
	C6 - C10 Fraction minus BTEX (F1)	20	µg/L	1000	< 20	< 20
TRH - Semivolatile Fraction	>C10 - C16 Fraction	100	µg/L	-	< 100	< 100
	>C10 - C16 Fraction minus Naphthalene (F2)	100	µg/L	1000	< 100	< 100
	>C16 - C34 Fraction	100	µg/L	-	**1030**	**220**
	>C34 - C40 Fraction	100	µg/L	-	**350**	< 100
	>C10 - C40 Fraction (sum)	100	µg/L	-	**1380**	**220**
	C10 - C14 Fraction	50	µg/L	-	< 50	< 50
	C15 - C28 Fraction	100	µg/L	-	**550**	**120**
	C29 - C36 Fraction	50	µg/L	-	**720**	**130**
	C10 - C36 Fraction (sum)	50	µg/L	-	**1270**	**250**
Total Phosphorus as P By Discrete Analyser	Total Phosphorus as P	0.01	mg/L	-	**5.03**	**0.46**
Total Nitrogen as N (TKN + Nox) By Discrete Analys	Total Nitrogen as N	0.1	mg/L	-	**9.2**	**5.1**
Total Kjeldahl Nitrogen as N By Discrete Analyser	Total Kjeldahl Nitrogen as N	0.1	mg/L	-	**9.2**	**5.1**
Nitrite and Nitrate as N (NOx) by Discrete Analyse	Nitrite + Nitrate as N	0.01	mg/L	-	**0.01**	< 0.01
Ammonia as N by Discrete analyser	Ammonia as N	0.01	mg/L	0.9	**0.11**	**0.01**
Nitrite as N by Discrete Analyser	Nitrite as N	0.01	mg/L	-	**0.01**	< 0.01
Nitrate as N by Discrete Analyser	Nitrate as N	0.01	mg/L	0.158013544	< 0.01	< 0.01
Reactive Phosphorus as P-By Discrete Analyser	Reactive Phosphorus as P	0.01	mg/L	-	**4.11**	**0.16**

mg/L	milligrams per litre
µg/L	micrograms per litre
meq/L	milliequivalents per litre
CFU/100mL	colony forming units per 100 millilitres
LOR	limit of reporting
Criteria	From *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC 2013); or *Use and Disposal of Biosolids Products* (NSW EPA 2000)
	Criteria exceeded

Table 4: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Groundwater

				Sample ID	B2	B3
				Sample Date	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**		
Dissolved Mercury by FIMS	Mercury	0.0001	mg/L	0.0006	< 0.0001	< 0.0001
Dissolved Metals by ICP-MS - Suite A	Arsenic	0.001	mg/L	0.13	< 0.001	**0.001**
	Cadmium	0.0001	mg/L	0.0002	< 0.0001	< 0.0001
	Chromium	0.001	mg/L	0.001	< 0.001	< 0.001
	Copper	0.001	mg/L	0.0014	< 0.001	< 0.001
	Lead	0.001	mg/L	0.0034	< 0.001	< 0.001
	Nickel	0.001	mg/L	0.011	< 0.001	**0.002**
	Zinc	0.005	mg/L	0.008	< 0.005	**0.019**
OC Pesticides by GCMS	4.4`-DDD	0.5	µg/L	-	< 0.5	< 0.5
	4.4`-DDE	0.5	µg/L	-	< 0.5	< 0.5
	4.4`-DDT	2	µg/L	0.01	< 2	< 2
	Aldrin	0.5	µg/L	-	< 0.5	< 0.5
	alpha-BHC	0.5	µg/L	-	< 0.5	< 0.5
	alpha-Endosulfan	0.5	µg/L	-	< 0.5	< 0.5
	beta-BHC	0.5	µg/L	-	< 0.5	< 0.5
	beta-Endosulfan	0.5	µg/L	-	< 0.5	< 0.5
	cis-Chlordane	0.5	µg/L	-	< 0.5	< 0.5
	delta-BHC	0.5	µg/L	-	< 0.5	< 0.5
	Dieldrin	0.5	µg/L	-	< 0.5	< 0.5
	Endosulfan sulfate	0.5	µg/L	-	< 0.5	< 0.5
	Endrin	0.5	µg/L	0.02	< 0.5	< 0.5
	Endrin aldehyde	0.5	µg/L	-	< 0.5	< 0.5
	Endrin ketone	0.5	µg/L	-	< 0.5	< 0.5
	gamma-BHC	0.5	µg/L	-	< 0.5	< 0.5
	Heptachlor	0.5	µg/L	0.09	< 0.5	< 0.5
	Heptachlor epoxide	0.5	µg/L	-	< 0.5	< 0.5
	Hexachlorobenzene (HCB)	0.5	µg/L	-	< 0.5	< 0.5
	Methoxychlor	2	µg/L	-	< 2	< 2
	Sum of Aldrin + Dieldrin	0.5	µg/L	-	< 0.5	< 0.5
	Sum of DDD + DDE + DDT	0.5	µg/L	-	< 0.5	< 0.5
	Total Chlordane (sum)	0.5	µg/L	0.08	< 0.5	< 0.5
	trans-Chlordane	0.5	µg/L	-	< 0.5	< 0.5
OP Pesticides by GCMS	Azinphos Methyl	0.5	µg/L	0.02	< 0.5	< 0.5
	Bromophos-ethyl	0.5	µg/L	-	< 0.5	< 0.5
	Carbophenothion	0.5	µg/L	-	< 0.5	< 0.5
	Chlorfenvinphos	0.5	µg/L	-	< 0.5	< 0.5
	Chlorpyrifos	0.5	µg/L	0.01	< 0.5	< 0.5
	Chlorpyrifos-methyl	0.5	µg/L	-	< 0.5	< 0.5
	Demeton-S-methyl	0.5	µg/L	-	< 0.5	< 0.5
	Diazinon	0.5	µg/L	0.01	< 0.5	< 0.5
	Dichlorvos	0.5	µg/L	-	< 0.5	< 0.5
	Dimethoate	0.5	µg/L	0.15	< 0.5	< 0.5
	Ethion	0.5	µg/L	-	< 0.5	< 0.5
	Fenamiphos	0.5	µg/L	-	< 0.5	< 0.5
	Fenthion	0.5	µg/L	-	< 0.5	< 0.5
	Malathion	0.5	µg/L	0.05	< 0.5	< 0.5
	Monocrotophos	2	µg/L	-	< 2	< 2
	Parathion	2	µg/L	0.004	< 2	< 2
	Parathion-methyl	2	µg/L	-	< 2	< 2
	Pirimphos-ethyl	0.5	µg/L	-	< 0.5	< 0.5
	Prothiofos	0.5	µg/L	-	< 0.5	< 0.5
Thermotolerant Coliforms & E.coli by Membrane Filt	Escherichia coli	1	CFU/100mL	-	< 2	< 1
	Faecal Coliforms	1	CFU/100mL	1000	< 2	< 1

Table 4: Environmental Monitoring - Former North Orange Abattoir
JANUARY 2016 - Groundwater

				Sample ID	B2	B3
				Sample Date	12/01/2016	12/01/2016
Group	**Analyte**	**LOR**	**Units**	**Criteria**		
TRH Volatiles/BTEX	Benzene	1	µg/L	800	< 1	< 1
	Toluene	2	µg/L	61000	< 2	< 2
	Ethylbenzene	2	µg/L	3900	< 2	< 2
	meta- & para-Xylene	2	µg/L	-	< 2	< 2
	ortho-Xylene	2	µg/L	-	< 2	< 2
	Total Xylenes	2	µg/L	200	< 2	< 2
	Sum of BTEX	1	µg/L	-	< 1	< 1
	Naphthalene	5	µg/L	16	< 5	< 5
	C6 - C9 Fraction	20	µg/L	-	< 20	< 20
	C6 - C10 Fraction	20	µg/L	-	< 20	< 20
	C6 - C10 Fraction minus BTEX (F1)	20	µg/L	1000	< 20	< 20
TRH - Semivolatile Fraction	>C10 - C16 Fraction	100	µg/L	-	< 100	< 100
	>C10 - C16 Fraction minus Naphthalene (F2)	100	µg/L	1000	< 100	< 100
	>C16 - C34 Fraction	100	µg/L	-	< 100	< 100
	>C34 - C40 Fraction	100	µg/L	-	< 100	< 100
	>C10 - C40 Fraction (sum)	100	µg/L	-	< 100	< 100
	C10 - C14 Fraction	50	µg/L	-	< 50	< 50
	C15 - C28 Fraction	100	µg/L	-	< 100	< 100
	C29 - C36 Fraction	50	µg/L	-	< 50	< 50
	C10 - C36 Fraction (sum)	50	µg/L	-	< 50	< 50
Total Phosphorus as P By Discrete Analyser	Total Phosphorus as P	0.01	mg/L	-	**0.37**	**0.11**
Total Nitrogen as N (TKN + Nox) By Discrete Analys	Total Nitrogen as N	0.1	mg/L	-	**0.8**	**7.8**
Total Kjeldahl Nitrogen as N By Discrete Analyser	Total Kjeldahl Nitrogen as N	0.1	mg/L	-	**0.3**	**0.6**
Nitrite and Nitrate as N (NOx) by Discrete Analyse	Nitrite + Nitrate as N	0.01	mg/L	-	**0.54**	**7.22**
Ammonia as N by Discrete analyser	Ammonia as N	0.01	mg/L	0.9	**0.06**	< 0.01
Nitrite as N by Discrete Analyser	Nitrite as N	0.01	mg/L	-	-	< 0.01
Nitrate as N by Discrete Analyser	Nitrate as N	0.01	mg/L	0.158	-	**7.22**
Reactive Phosphorus as P-By Discrete Analyser	Reactive Phosphorus as P	0.01	mg/L	-	-	**0.08**

mg/L	milligrams per litre
µg/L	micrograms per litre
meq/L	milliequivalents per litre
CFU/100mL	colony forming units per 100 millilitres
LOR	limit of reporting
Criteria	From *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC 2013); or *Use and Disposal of Biosolids Products* (NSW EPA 2000)
	Criteria exceeded

Plates

Plate 1: Abattoir Facility

Plate 2: General Setting of Site

Plate 3: Effluent Treatment Pond 1 (Production Wastes) – Samples SP1-SD1, SP1-W1

Plate 4: Effluent Treatment Pond 2 (Production Wastes) – Samples SP2-SD1, SP2-W1

Plate 5: Effluent Treatment Pond 3 (Production Wastes) – Samples SP3-SD1 (dry)

Plate 6: Effluent Irrigation Area (Wool Topmaking Discharge) – Samples IA1-1, IA2-1

Plate 7: Groundwater Monitoring Bore – Sample B2

Plate 8: Groundwater Monitoring Bore – Sample B3

Plate 9: Irrigation Area and Excavation Scars – Sample TS3

Plate 10: Machinery Shed – Sample TS6

Plate 11: Flammable Goods Shed – Sample TS7

Plate 12: Pump-house with Likely Fibrous Cement Cladding – Sample TS10

Plate 13: Roof of Abattoir Facility (Southern Portion) with Likely Fibrous Cement Sheeting

Plate 14: Structures Ancillary to Caretaker's Residence, with Likely Fibrous Cement Sheeting

Plate 15: Decommissioned Transformer / Substation

Plate 16: Drum (Empty) – Air Compressor Fluid

Plate 17: Bunded Area

Plate 18: Boiler Unit

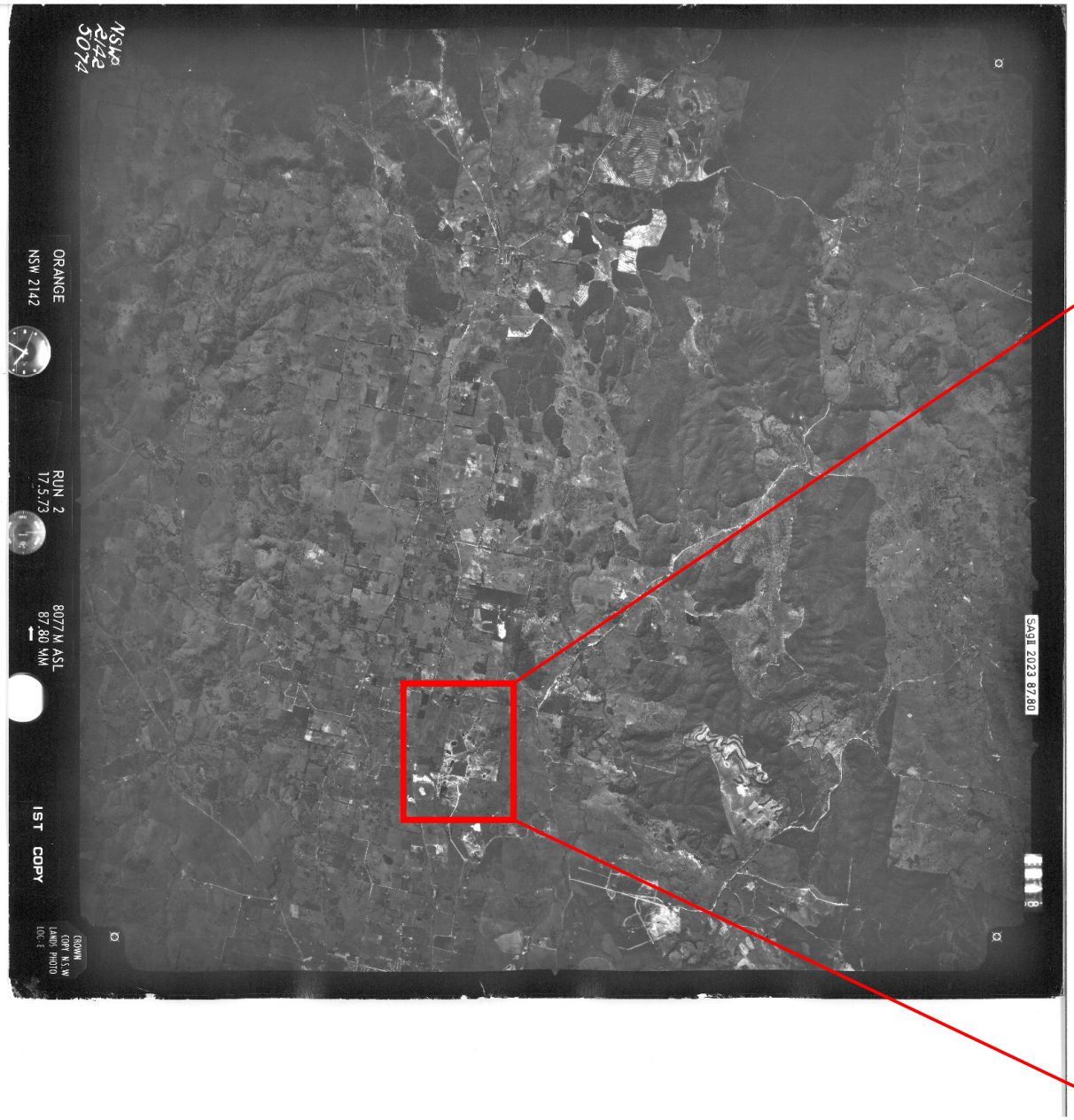
Appendix A

HISTORIC AERIAL PHOTOGRAPHY

1954 Aerial Photography

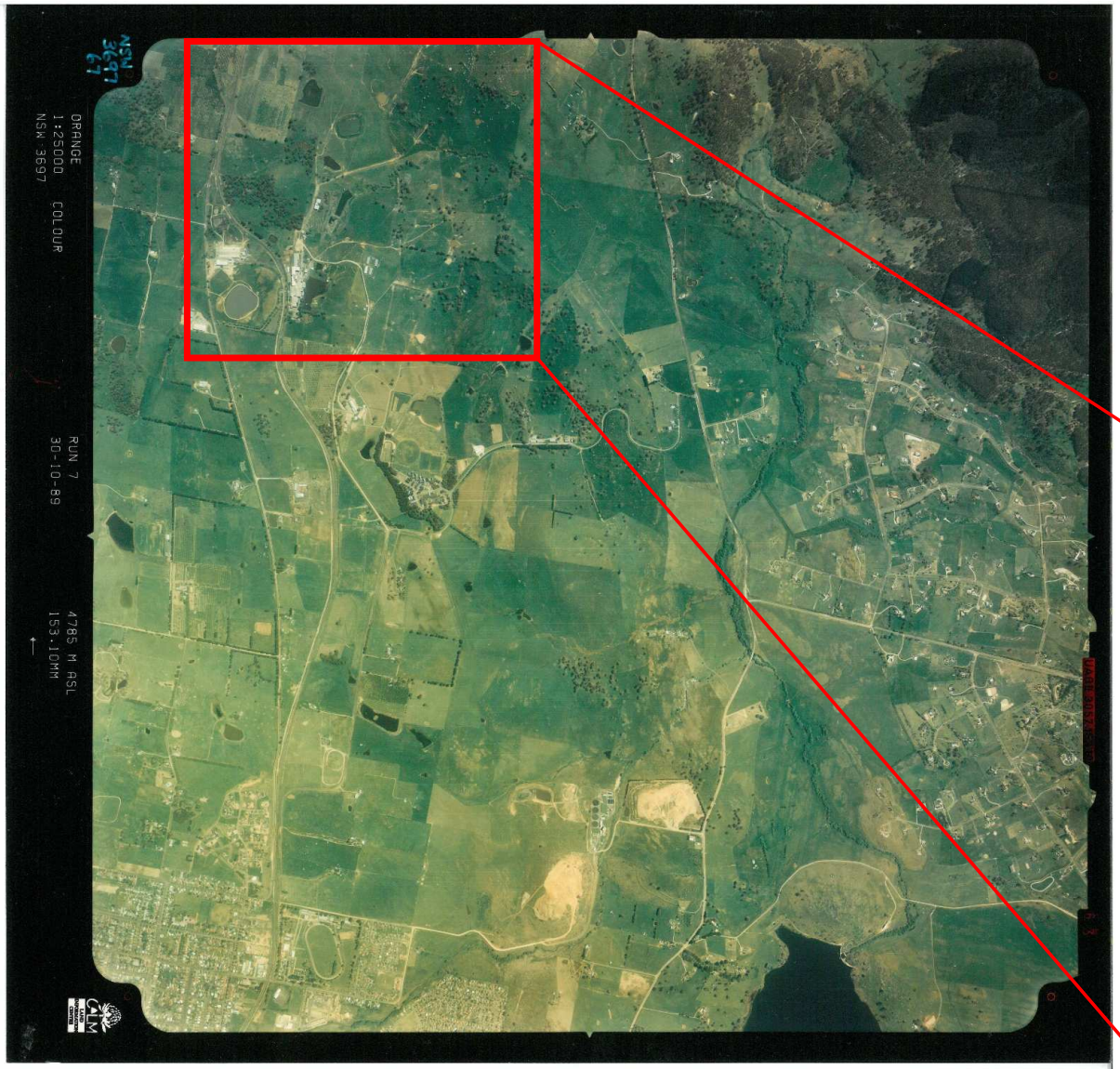
1963 Aerial Photography

1973 Aerial Photography

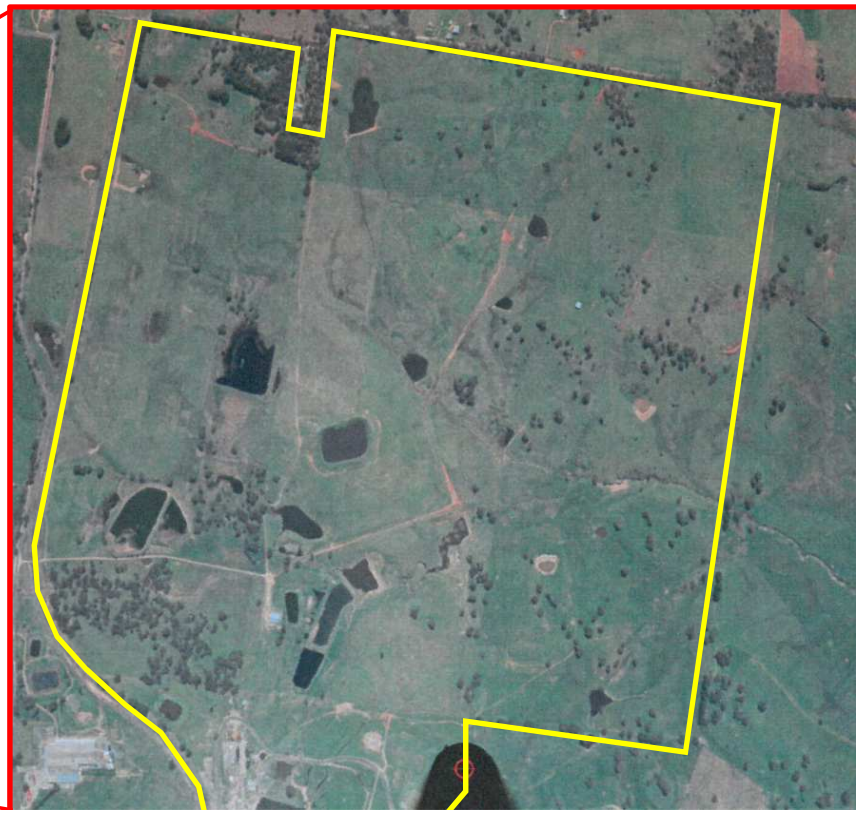


1989 Aerial Photography (North)

1989 Aerial Photography (South)



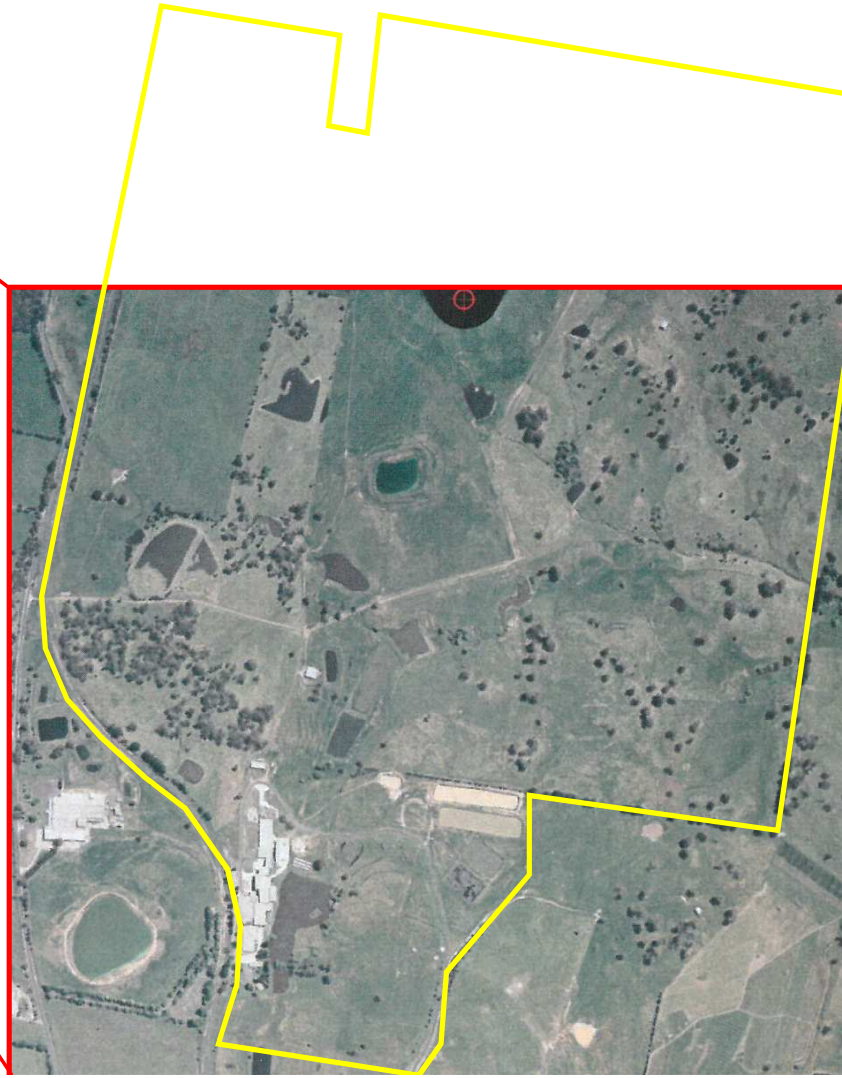
1998 Aerial Photography (North)



1998 Aerial Photography (South)

2005 Aerial Photography (North)

2005 Aerial Photography (South)



2013 Aerial Photography

Appendix B

PREVIOUS SAMPLE LOCATIONS (ENVIROWEST 2012)

BH5, BH5-1
Wool scourer, holding dam at outlet

BH4-1
Wool scourer, holding dam at inlet

BH3, BH3-1
Wool scourer, holding dam at inlet

BH2-1
Wool scourer, rinse dam dam

BH1, BH1-1
Abattoir pond

Figure 1. Sampling locations 29/02/12		
Abattoir and wool scourer effluent dams, Leeds Parade, Orange, NSW		
	Envirowest Consulting Pty Ltd	
Job: R12077	Drawn by: GM	Date: 12/3/2012

BH6-1
Wool scourer,
settlement dam 1

BH8-1
Wool scourer,
settlement dam 3

BH7-1
Wool scourer,
settlement dam 2

Figure 2. Sampling location 12/03/12		
Wool scourer settlement dams, Leeds Parade, Orange, NSW		
	Envirowest Consulting Pty Ltd	
Job: R12077	Drawn by: GM	Date: 12/3/2012

Appendix C

LABORATORY CERTIFICATES

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1600816**	Page	: 1 of 19
Client	: **GEOLYSE PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR BRENDAN STUART	Contact	:
Address	: PO BOX 1963 ORANGE NSW, AUSTRALIA 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: bstuart@geolyse.com	E-mail	:
Telephone	: +61 02 6393 5000	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 6393 5050	Facsimile	: +61-2-8784 8500
Project	: 215322	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 14-Jan-2016 08:30
C-O-C number	: ----	Date Analysis Commenced	: 14-Jan-2016
Sampler	: BRENDAN STUART	Issue Date	: 19-Jan-2016 15:32
Site	: ----		
		No. of samples received	: 19
Quote number	: ----	No. of samples analysed	: 19

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
- Descriptive Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW Sydney Organics, Smithfield, NSW
Sarah Axisa	Microbiologist	Sydney Microbiology, Smithfield, NSW
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW
Tony DeSouza	Senior Microbiologist	WRG Subcontracting, 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.

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.

- EP068: Positive result has been confirmed by re-extraction and re-analysis.
- Microbiological Comment: The samples were received and tested out of holding time. It may be informative to record this fact.

  Microbiological Comment: According to ALS work instruction for membrane filtration, the suggested volume for filtration of non-treated / non-drinking water starts from 50 mL if the sample is turbid. A result of <2 cfu/100 mL is reported when there is no target organism growth from a volume of 50 mL. It may be informative to record this fact.

  Microbiological Comment: Membrane filtration results are reported as estimate (~) due to the presence of many non-target organism colonies that may have inhibited the growth of the target organisms on the filter membrane. It may be informative to record this fact.
- EP068: Particular samples required dilution due to sample matrix interferences. LOR values have been adjusted accordingly.
- **EA200: As only one sample container was submitted for multiple tests, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly and NATA accreditation does not apply to analysis on these samples.**
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Faecal Coliforms by MPN (MM616) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989. NATA accreditation does not cover performance of this method.
- 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.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP1-SD1	SP2-SD1	SP3-SD1	IA1-1	IA2-1
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-003	ES1600816-005	ES1600816-007	ES1600816-008	ES1600816-009
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%		----	30.9	10.3	12.2	19.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	No	----
Asbestos Type	1332-21-4	-	--		----	----	----	-	----
Sample weight (dry)	----	0.01	g		----	----	----	51.5	----
APPROVED IDENTIFIER:	----	-	--		----	----	----	S.SPOONER	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	<5	<5	55	8
Cadmium	7440-43-9	1	mg/kg		----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		----	41	31	42	63
Copper	7440-50-8	5	mg/kg		----	21	39	42	29
Lead	7439-92-1	5	mg/kg		----	10	18	18	13
Nickel	7440-02-0	2	mg/kg		----	5	9	20	16
Zinc	7440-66-6	5	mg/kg		----	23	66	244	19
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Endrin	72-20-8	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP1-SD1	SP2-SD1	SP3-SD1	IA1-1	IA2-1
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-003	ES1600816-005	ES1600816-007	ES1600816-008	ES1600816-009
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	<0.2	<1.0	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	<0.2	<1.0	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	<0.2	<1.0	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	<0.2	<1.0	<0.2
Malathion	121-75-5	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Parathion	56-38-2	0.2	mg/kg		----	<0.2	<0.2	<1.0	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Ethion	563-12-2	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		----	<0.05	<0.05	<0.25	<0.05
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	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP1-SD1	SP2-SD1	SP3-SD1	IA1-1	IA2-1
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-003	ES1600816-005	ES1600816-007	ES1600816-008	ES1600816-009
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	----
C10 - C14 Fraction	----	50	mg/kg		----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg		----	----	----	**5560**	----
C29 - C36 Fraction	----	100	mg/kg		----	----	----	**10800**	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	**16400**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	**8250**	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	**15400**	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	**23600**	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP1-SD1	SP2-SD1	SP3-SD1	IA1-1	IA2-1
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-003	ES1600816-005	ES1600816-007	ES1600816-008	ES1600816-009
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		----	----	----	<1	----
MM616: Coliforms MPN									
Escherichia coli	----	2	orgs/g		<3	3	<2	<2	<3
Faecal Coliforms	----	2	orgs/g		7	3	<2	<2	<3
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	108	98.7	124	123
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	113	108	119	128
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	123	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	107	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	120	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	93.8	----
Anthracene-d10	1719-06-8	0.5	%		----	----	----	114	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	107	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	115	----
Toluene-D8	2037-26-5	0.2	%		----	----	----	110	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	102	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS1	TS2	TS3	TS4	TS5
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-010	ES1600816-011	ES1600816-012	ES1600816-013	ES1600816-014
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%		20.2	10.8	21.9	16.5	19.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	----	----
Asbestos Type	1332-21-4	-	--		----	----	----	----	----
Sample weight (dry)	----	0.01	g		----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		32	6	11	<5	16
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		39	33	19	13	62
Copper	7440-50-8	5	mg/kg		85	28	104	47	53
Lead	7439-92-1	5	mg/kg		114	25	41	26	28
Nickel	7440-02-0	2	mg/kg		9	10	6	6	16
Zinc	7440-66-6	5	mg/kg		32	41	138	21	61
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<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	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<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	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<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	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<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	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		1.31	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<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	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS1	TS2	TS3	TS4	TS5
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-010	ES1600816-011	ES1600816-012	ES1600816-013	ES1600816-014
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<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	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<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	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<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	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		**1.31**	<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	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<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	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<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	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<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	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS1	TS2	TS3	TS4	TS5
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-010	ES1600816-011	ES1600816-012	ES1600816-013	ES1600816-014
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	0.5	mg/kg		----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS1	TS2	TS3	TS4	TS5
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-010	ES1600816-011	ES1600816-012	ES1600816-013	ES1600816-014
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	----
MM616: Coliforms MPN									
Escherichia coli	----	2	orgs/g		----	----	----	----	----
Faecal Coliforms	----	2	orgs/g		----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		83.6	120	123	66.3	96.7
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		70.9	128	126	70.0	104
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS6	TS7	TS8	TS9	TS10
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-015	ES1600816-016	ES1600816-017	ES1600816-018	ES1600816-019
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%		21.0	12.0	17.9	19.2	18.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	----	No
Asbestos Type	1332-21-4	-	--		----	----	----	----	-
Sample weight (dry)	----	0.01	g		----	----	----	----	48.2
APPROVED IDENTIFIER:	----	-	--		----	----	----	----	S.SPOONER
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		15	10	<5	7	7
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		15	24	12	44	34
Copper	7440-50-8	5	mg/kg		50	36	10	15	22
Lead	7439-92-1	5	mg/kg		8	10	7	15	14
Nickel	7440-02-0	2	mg/kg		6	5	3	5	7
Zinc	7440-66-6	5	mg/kg		66	270	19	41	89
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	1.0
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS6	TS7	TS8	TS9	TS10
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-015	ES1600816-016	ES1600816-017	ES1600816-018	ES1600816-019
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<1.0	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<1.0	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.25	<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	<0.25	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<1.0	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<1.0	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<1.0	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.25	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.25	<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
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS6	TS7	TS8	TS9	TS10
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-015	ES1600816-016	ES1600816-017	ES1600816-018	ES1600816-019
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		<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
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	<50
C15 - C28 Fraction	----	100	mg/kg		<100	**24800**	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		<100	**31100**	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	**55900**	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	**48800**	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	**15300**	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**64100**	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TS6	TS7	TS8	TS9	TS10
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]
Compound	CAS Number	LOR	Unit		ES1600816-015	ES1600816-016	ES1600816-017	ES1600816-018	ES1600816-019
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<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
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	<1
MM616: Coliforms MPN									
Escherichia coli	----	2	orgs/g		----	----	----	----	----
Faecal Coliforms	----	2	orgs/g		----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		91.8	98.9	116	101	107
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		85.5	102	116	102	109
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		119	120	----	----	115
2-Chlorophenol-D4	93951-73-6	0.5	%		104	105	----	----	107
2.4.6-Tribromophenol	118-79-6	0.5	%		113	121	----	----	122
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		97.5	93.2	----	----	96.8
Anthracene-d10	1719-06-8	0.5	%		114	114	----	----	118
4-Terphenyl-d14	1718-51-0	0.5	%		97.9	107	----	----	98.6
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		100	102	----	----	96.1
Toluene-D8	2037-26-5	0.2	%		96.0	94.2	----	----	90.2
4-Bromofluorobenzene	460-00-4	0.2	%		95.2	89.5	----	----	88.8

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	B2	B3	SP1-W1	SP2-W1	----
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	----
Compound	CAS Number	LOR	Unit		ES1600816-001	ES1600816-002	ES1600816-004	ES1600816-006	--------
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	**0.001**	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	**0.002**	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	**0.019**	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	----	**0.004**	**0.004**	----
Cadmium	7440-43-9	0.0001	mg/L		----	----	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		----	----	**0.011**	**0.002**	----
Copper	7440-50-8	0.001	mg/L		----	----	**0.018**	**0.005**	----
Nickel	7440-02-0	0.001	mg/L		----	----	**0.004**	<0.001	----
Lead	7439-92-1	0.001	mg/L		----	----	**0.006**	<0.001	----
Zinc	7440-66-6	0.005	mg/L		----	----	**0.062**	<0.005	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	----	<0.0001	<0.0001	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		----	----	**38**	**8**	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	----	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	----	<0.5	----
gamma-BHC	58-89-9	0.5	µg/L		<0.5	<0.5	----	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	----	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	----	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	B2	B3	SP1-W1	SP2-W1	----
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	----
Compound	CAS Number	LOR	Unit		ES1600816-001	ES1600816-002	ES1600816-004	ES1600816-006	--------
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	----	<0.5	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	<0.5	----	<0.5	----
4.4`-DDT	50-29-3	2	µg/L		<2.0	<2.0	----	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Methoxychlor	72-43-5	2	µg/L		<2.0	<2.0	----	<2.0	----
^ Total Chlordane (sum)	----	0.5	µg/L		<0.5	<0.5	----	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	<0.5	----	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L		<0.5	<0.5	----	<0.5	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Monocrotophos	6923-22-4	2	µg/L		<2.0	<2.0	----	<2.0	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Diazinon	333-41-5	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Parathion-methyl	298-00-0	2	µg/L		<2.0	<2.0	----	<2.0	----
Malathion	121-75-5	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Fenthion	55-38-9	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Parathion	56-38-2	2	µg/L		<2.0	<2.0	----	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Ethion	563-12-2	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	<0.5	----	<0.5	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	----	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	B2	B3	SP1-W1	SP2-W1	----
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	----
Compound	CAS Number	LOR	Unit		ES1600816-001	ES1600816-002	ES1600816-004	ES1600816-006	--------
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	**550**	**120**	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	**720**	**130**	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	**1270**	**250**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	**1030**	**220**	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	**350**	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	**1380**	**220**	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL		<2	<1	**~330**	**~<2**	----
Escherichia coli	----	1	CFU/100mL		<2	<1	**~330**	**~<2**	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**87.7**	**88.8**	----	**99.8**	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**84.4**	**86.8**	----	**81.7**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**123**	**99.6**	**121**	**121**	----
Toluene-D8	2037-26-5	2	%		**126**	**125**	**113**	**129**	----
4-Bromofluorobenzene	460-00-4	2	%		**93.6**	**96.6**	**93.8**	**93.3**	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	IA1-1 - [12-Jan-2016]	Mid brown clay soil with grey rocks.
EA200: Description	TS10 - [12-Jan-2016]	Pale brown clay soil with grey rocks.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1601342**	Page	: 1 of 4
Client	: **GEOLYSE PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR BRENDAN STUART	Contact	:
Address	: PO BOX 1963 ORANGE NSW, AUSTRALIA 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: bstuart@geolyse.com	E-mail	:
Telephone	: +61 02 6393 5000	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 6393 5050	Facsimile	: +61-2-8784 8500
Project	: 215322	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 20-Jan-2016 10:30
C-O-C number	: ----	Date Analysis Commenced	: 14-Jan-2016
Sampler	: BRENDAN STUART	Issue Date	: 25-Jan-2016 18:24
Site	: ----		
		No. of samples received	: 5
Quote number	: ----	No. of samples analysed	: 5

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

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Hoa Nguyen	Senior Inorganic Chemist	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.

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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	IA1-1	----	----	----	----
				Client sampling date / time	[12-Jan-2016]	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1601342-005	--------	--------	--------	--------
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1	%		**12.2**	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**2740**	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		**2790**	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**5530**	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**260**	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup									
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		**760**	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**3860**	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		**4620**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	B2	B3	SP1-W1	SP2-W1	----
				Client sampling date / time	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	[12-Jan-2016]	----
Compound	CAS Number	LOR	Unit		ES1601342-001	ES1601342-002	ES1601342-003	ES1601342-004	--------
					Result	Result	Result	Result	Result
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.06**	<0.01	**0.11**	**0.01**	**----**
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		**----**	<0.01	**0.01**	<0.01	**----**
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**----**	**7.22**	<0.01	<0.01	**----**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.54**	**7.22**	**0.01**	<0.01	**----**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**0.3**	**0.6**	**9.2**	**5.1**	**----**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**0.8**	**7.8**	**9.2**	**5.1**	**----**
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**0.37**	**0.11**	**5.03**	**0.46**	**----**
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		**----**	**0.08**	**4.11**	**0.16**	**----**