Hornsby Shire Council

Hornsby Quarry Rehabilitation works including bulk earthworks (and associated civil works including construction of access tracks, drainage and retaining walls), site remediation, tree removal, revegetation work and site rehabilitation

Response to Submissions and Revised Project Scope

VOLUME 3 – APPENDICES I to K

November 2019

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Appendix I – Detailed Contamination Investigation

Hornsby Shire Council

Hornsby Quarry Rehabilitation - Targeted Detailed Site Contamination Investigation

September 2019

Executive summary

GHD Pty Ltd (GHD) was commissioned by the Hornsby Shire Council (the Council) to undertake a targeted detailed site contamination investigation (DSI) at the Hornsby Quarry in Hornsby, New South Wales (NSW).

Hornsby Quarry is a former breccia hard rock quarry that was operated by private business from the early 1900s and ceased quarry operations in the early 2000s. The quarry is considered a safety risk and has therefore been closed to the public since that time. The site is owned by the Council who intend to develop it into publically useable recreation space including several sports ovals.

The objective of this DSI was to assess, to the extent practicable using available information, the potential for contamination to be present at the site as a result of historical or current use of the site, which may pose a risk to human health or the environment. GHD completed a desktop study, site walkover and limited soil and surface water sampling program.

A field investigation conducted on 6 August 2019 included: four push tube / solid stem augered boreholes and three shallow hand augered holes at the former workshop area; three trenches across selected areas of the south-western fill area; three trenches across the eastern fill area; three soil grab samples from the northern fill area; and, one surface water sample from the diversion channel at the base of the northern fill slope.

All analytical results were reported below the nominated human and ecological criteria, with the exception of nickel and zinc results in some soil samples. GHD consider these results to be related to the natural rock and soil properties of the sampled material, and are not considered to be indicative of contamination.

Visual and olfactory indicators of hydrocarbon contamination were noted in two boreholes adjacent to the southern and eastern sides of the underground storage tank (UST). These samples reported results below the selected site assessment criteria.

The extent of hydrocarbon contamination associated with the UST is currently unknown and requires further investigation, or removal, of the potentially contaminated soils during removal of the UST.

Based on the findings of this investigation, GHD consider the risk of exposure to contaminants of potential concern (COPC) for on-site and off-site receptors to be low, however, we acknowledge the potential for contamination to exist associated with the UST.

Based on the completed scope of work, and in consideration of the proposed future recreational land use for the site, GHD recommend the following:

- Removal of the UST in accordance with the Department of Environment, Climate Change and Water NSW, *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008,* which states that “where two years have elapsed since fuel was put into or taken from a tank, it must be abandoned (after removing the fuel) in accordance with the Occupational Health and Safety (Dangerous Goods) Regulation 2001”. This would include site validation following removal and preparation of a validation report prepared by a suitable qualified person, such as a contaminated land consultant, in addition to completion of any soil or groundwater remediation following decommissioning of the UST, if remediation is required.
- A construction environment and management plan (CEMP) developed for the redevelopment works, should include:

– An unexpected finds protocol should be developed to manage potential unexpected finds, including ACM, at the workshop area and the fill areas.

– The management of surface aesthetics (with regard to anthropogenic materials in soils) during removal and reshaping of spoil in the fill areas.

- A remedial action plan (RAP) should be developed for the removal of the UST and associated impacted soils (if required).

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1. Introduction

1.1 Background

Hornsby Shire Council (the Council) engaged GHD Pty Ltd (GHD) to undertake a targeted detailed site investigation (DSI) of the Hornsby Quarry, New South Wales (NSW).

Hornsby Quarry is a former breccia hard rock quarry that was operated by private business from the early 1900s and ceased quarry operation in the early 2000s. The quarry is considered a safety risk and has therefore been closed to the public since that time.

The Council acquired the site in 2002 and has since undertaken a number of investigations and studies with regards to the future of the site and the environmental and technical constraints that the site poses. The Council has resolved to ultimately develop the site as community parkland. Figure 1 (Appendix A) provides a site location plan.

Several environmental studies have been undertaken to support the rectification works at the site, one of which includes a previous site investigation[1] which highlighted a number of potentially contaminated areas, specifically:

- The former workshop area to the west of the quarry, and associated buildings, above and below ground fuel tanks (ASTs and USTs), electrical transformer and detonator magazine
- The northern fill slope
- The eastern fill area
- The south-western fill area

At proposal stage, a site walkover was undertaken by a Senior Environmental Geologist from GHD, with Council's Project Manager on 8 July 2019. The walkover was limited to a small heritage cemetery at the southern side of the quarry, the former western workshop area, the south-western fill area, and the access road at the base of northern fill slope. Access to the eastern fill area was not available due to the operations of a construction compound (NorthConnex roads project) at the site.

Following the site walkover, it was discovered that the residual items at the former workshop area consisted of two bunded ASTs (one empty, one containing diesel fuel) underneath an awning, one petrol UST (containing 50 mm of fuel – see Section 2.5.3), one fuel bowser, a small locked and inaccessible metal building, and patches of concrete hardstand. The transformer, detonator magazine and all other buildings had been removed from site. All electrical services had also been removed from site.

Council confirmed that the contamination investigation was to be limited to the abovementioned areas, and was not to include the heritage cemetery or a crushing plant facility located at the southern entrance gate to the quarry.

1.2 Objective

This DSI was requested by an independent assessor as part of the Development Application (DA) assessment process, in order to meet the requirements of State Environmental Planning Policy for the Remediation of Land (SEPP 55). According to SEPP 55. According to SEPP 55, *Clause 7 Contamination and remediation to be considered in determining development application*:

[1] Parsons Brinckerhoff 2004, Hornsby Quarry and Environs Land Capability Study and Master Plan, October 2004

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

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

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

This DSI includes a desk study and a targeted contamination investigation:

- Assess the potential for current and historical activities, on- and off-site, to have resulted in contamination within the site e.g. quarrying operations, adjacent community activities
- Identify areas of known or suspected contamination based on a review of the available data, including site features that are likely to have caused site contamination e.g. fuel storage tanks, asbestos clad buildings, fill materials
- Determine whether further investigation and / or mitigation is required for potential contamination is required

The report includes an assessment of the site's suitability for a recreational land use.

1.3 Scope of work

The scope of works included:

- Desktop review of available data including a review of existing site investigation information, historical aerial photographs, a search of public records including the contaminated land register, and mapping including topographic, soil, geological and hydrogeological
- A site inspection to establish current site conditions
- A targeted intrusive soil and surface water sampling program including:
  - Drilling of four boreholes targeting the underground storage tank (UST) and aboveground storage tanks (ASTs)
  - Trenching in six locations targeting the east and southwest landfill areas on site
  - Hand augering of three boreholes in the workshop area
  - Shallow grab soil samples in the northern fill area
  - Grab sample of a surface water sample at the diversion channel below the northern fill area
  - Allowance for collection of an additional surface water sample following a rainfall event was included, however the sample was not collected due to the lack of rain
- Laboratory analysis of selected soil samples for contaminants of potential concern (COPC) identified in the preliminary conceptual site model (CSM).
- Data interpretation and preparation of this report documenting the findings of the investigation

1.4 Limitations

This report has been prepared in accordance with GHD limitations provided in Section 11.

2. Desktop study

The following section was prepared by reviewing publically available information and acquisition of a LotSearch report (Reference LS007759 EP, 6 August 2019) (a copy is presented in Appendix B).

2.1 Site identification

A summary of site identification details is provided in Table 1. Figures 1 and 2 (Appendix A) provide the site location and layout plan.

Table 1 Site details

Information	Details
Street Address	Hornsby Quarry, Quarry Road, Hornsby, NSW 2077
Lot and DP Number	**Lot number** / **Deposited Plan number** **A, B, C, D, E** / DP318676 **1** / DP926103 **75** / DP752053 **1** / DP114323 **1,2** / DP169188
Site Owner	Hornsby Shire Council
Site Area	40.53 hectares (Ha)
Local Government Area	Hornsby Council
Local Land Use Zoning	RE1 – Public Recreation
Current Land Use	Former quarry
Surrounding Land Use	North: Bushland then residential. West: Bushland and Rosemead Trail (bushwalking trail). South: Bushland then residential. East: Residential and commercial

2.1 Site walkover

A suitably qualified GHD Environmental Geologist conducted a site visit on 8 July 2019 During the site visit, photographs and notes were taken and are provided as Appendix C.

The site visit commenced at the gates at the northern end of Quarry Road next to the crushing facility, and continued north past Old Man's Valley Cemetery, and along the western and northern access roads above the quarry. No access was possible to the eastern side of the quarry, or the quarry itself, which, at the time of the visit, was under the active operation of NorthConnex. GHD understand these operations ceased approximately a week after the site visit, and cessation of these operation was confirmed during the site investigation. Details of the areas visited are provided in Figure 3 (Appendix A).

The following key observations were made at the time of the site visit.

The Old Man's Cemetery

During the site visit, Council indicated that no redevelopment work was proposed for the cemetery.

It was noted that conservation work has been carried out at the cemetery to preserve the historical significance of the area. The cemetery was fenced and locked (see Photos Hornsby 4029 – 4304, Appendix C).

GHD note that the explosives store observed at the cemetery during the investigation by Parsons Brinckerhoff, *Hornsby Quarry and Environs Land Capability Study and Master Plan: Volume 1 – Technical Investigations, October 2004*, was not present during this visit.

Former workshop area

The following residual infrastructure was observed during the site walkover in the former workshop area (see Photos Hornsby 4041 – 4060):

- Two bunded ASTs (one empty, one containing diesel fuel) underneath an awning. The tanks are covered in graffiti, but appear to be otherwise in good condition. Council indicated that these tanks will likely be retained post redevelopment. Minor hydrocarbon staining was noted at the outlet taps of the ASTs, and was entirely contained within the concrete bunding (see photos Hornsby 4057-4058, Appendix C)
- One petrol underground storage tank (UST) (containing 50 mm of fuel – see Section 2.5.3). No hydrocarbon staining was noted on the surface concrete pad covering the UST (see Photos Hornsby 4052-4053)
- Two fuel bowsers (and potentially related underground petroleum storage systems). Hydrocarbon staining was noted on the concrete base pad (see Photo Hornsby-4055, Appendix C)
- One small locked, inaccessible and heavily corroded metal building. Council suggested it may have been used for tool storage (see Photos Hornsby 4041 – 4047, Appendix C)
- Patches of concrete hard-stand (see Photos Hornsby 4048 – 4052, Appendix C)
- No evidence of asbestos containing building material fragments (ACM) was observed, although it is understood that there were such buildings present at this area, which have since been demolished and removed from site
- There was no evidence of an explosives magazine, or the transformer at the former workshop area, although they were noted during the Parsons Brinckerhoff (October 2004) investigation

South-western fill area

Photographs of this area are provided in Appendix C (Hornsby 4105 – 4111, 54A112, 54A113)

The south-western fill area also contains material from the quarry, and has been shaped into a moderately to gently sloping hill which is covered by long grasses.

Council indicated that some of this material is intended to be removed and used to backfill the quarry.

No evidence of anthropogenic materials was observed during the site visit.

Northern fill area

Photographs of this area are provided in Appendix C (Hornsby 4063 – 4066, Hornsby 4076, Hornsby 4083 – 4092).

The slope of this fill area is very steep, at greater than 45 degrees in places, and is comprised of poorly consolidated fill material including rocks / boulders of basaltic breccia, and weathered sandstones and clays. GHD understand the source of this spoil material was the quarry.

The steepness of the slope and the unconsolidated nature of the spoil material has resulted in several slipped slopes. In other areas, the fill has been covered by well established, mature trees including large eucalypts.

Council indicated that due to safety concerns related to the ground instability, this northern slope area would require re-shaping, including the development of an access track across the slope. The material removed during the reshaping process is intended to be used as fill material for the quarry.

A surface water diversion channel runs along the base of the northern fill slopes, and diverts surface water runoff from the eastern and northern slopes offsite to the south-west. The water was noted to be pooled in places and free of sheen.

A strip of geo-fabric was observed at the base of one of the slipped areas which is designed to prevent (or limit) incursion of soils into the diversion channel.

No evidence of anthropogenic materials was observed during the site visit.

Additional observations

- The current relative height level (RL) in the void is RL 53 Australian height datum (AHD) to RL 58 AHD, after placement of approximately 1.2 million cubic metres of fill by NorthConnex. Council will place the fill material from the south west fill area and the northern spoil mound into the void to create a final (safe) landform.
- Council propose to create a lake setting at the eastern end of the quarry to retain exposure of the quarry wall which displays the diatreme intrusion contact at this end of the quarry. The Council also intend to reshape the floor of the western end of the quarry to provide public access.
- Groundwater present in the base of the quarry is currently pumped out through lay-flat pipe and dispersed to ground at the top of a gully at the southern end of the former workshop area. Council indicated that they have a borehole licence to undertake this work.
- GHD understand from Council that the spoil material in the quarry from the NorthConnex project was classified as excavated natural material (ENM). No further information was provided to GHD for review.

Council indicated that the eastern fill area, known locally as Old Mans Valley, will be reshaped during redevelopment. GHD understand that the area is intended to be used for public recreation, including sporting ovals.

2.2 Environmental setting

2.2.1 Topography

The site is situated between 53 and 148 m AHD (LotSearch, 2019). The site has very steep embankments from the perimeter of the site to the centre of quarry. The pre-existing site topography (prior to the quarry development) consisted of a moderately steep gully running from north-east downwards to the south-west of the site. Surrounding landforms to the north and east are generally steep, with topography sloping moderately away from the quarry towards the south and west.

2.2.2 Hydrology and drainage

Surface water is expected to follow the local topography on site. Along the northern margin of the quarry void the diversion channel diverts storm water westwards from Old Mans Valley in the east and from Manor Road in the north.

A natural waterway runs through the site from north east to south east. This waterway flows into Jimmy Bancks Creek, 670 m south of the site. Waitara and Berowra Creeks are 680 and 980 m west of the site.

2.2.3 Soils

The Atlas of Australian Soils classify the site as being in the Kandosol and Sodosol Soil Orders (LotSearch, 2019).

- Kandosol is described as dissected sandstone plateau of moderate to strong relief with sandstone pillars, ledges, and slabs with level to undulating ridges, irregularly benched slopes, steep ridges, cliffs, canyons, narrow sandy valleys.
- Sodosol is described as dissected plateau remnants with flat to undulating ridge tops with moderate to steep side slopes.

The 'eSPADE' database published by the NSW Environment and Heritage (NSW Environment and Heritage, 2019) describes the soil and landscape as follows:

- Landscape: *gently undulating to steep low hills on deeply weathered basaltic breccia. Local relief to 70 m, slopes range from 3% to 65%. Diatremes (volcanic necks) and shallow intrusions often located in sandstone valley floors. Mostly cleared, tall open-forest (wet sclerophyll forests) and week infested closed-forest (rainforest).*
- Soils: *deep (150-300 cm)* Yellow Podzolic Soils (Dy4*.11) on upper and midslopes,* Yellow-Brown Earths (Gn2.41) *and* Red Podzolic Soils (Dr4.11) *on sandstone alluvium;* Yellow Podzolic Soils (Dy2.21) *on volcanic breccia; deep (>200cm)* Structured Loams (Um6.21) *in drainage lines. Associated soils include* Prairie Soils (Gn3.91, Gn4.31)*, deep* Krasnozems (Gn3.11) *and* Chocolate Soils (Db1.11, Db4.11).
- Limitations: *highly plastic, low wet-strength, highly reactive subsoil, occasional steep slopes with an extreme soil erosion hazard and localised mass movement hazard.*

2.2.4 Acid Sulfate Soils

The *NSW Office of Environment and Heritage Acid Sulfate Soils Risk Map* (NSW Government, n.d.) indicates the site is within an area with no known occurrence of Acid Sulfate Soils.

The Atlas of Australian Acid Sulfate Soils indicates the site is Class B (low probability of occurrence. 6 to 70% chance of occurrence) and Class C (extremely low probability of occurrence. 1 to 5 % chance of occurrence with occurrences in small localised areas).

2.2.5 Geology

The Sydney 1:100,000 *Geological Series Sheet 9130* (NSW Government Department of Resources and Geoscience, 1983) indicates the site is underlain by a Jurassic diatreme comprising volcanic breccia with various amounts of sedimentary breccia and basalt. The diatreme intruded the surrounding Triassic Hawkesbury Sandstone and Ashfield Shale of the Wianamatta Group, and produced a north-east to south-west elongated body which extends for approximately 1.5 kilometres and is less than 400 metres wide (Herbert, 1983, *in* Parsons Brinckerhoff (2004), *Hornsby Quarry and Environs Land Capability Study and Master Plan: Volume 1 – Technical Investigations, October 2004*).

The Hornsby Quarry diatreme forms part of the Hornsby – Thornleigh diatreme complex and was formed as a maar-diatreme volcano during the Early Jurassic, around 200 million years ago. The diatreme was created as a result of rising mafic magma intersecting the water table, producing a steam pressure driven explosion which forced pyroclastic ejecta upwards and

which subsequently fell to create a small ring-like cavity, and associated volcanic breccia, sedimentary breccia and basalt.

The quarry was mined for its hard rock basalt which was crushed and used as road base material and gravels. The eastern face of the quarry has exposed a vertical cross-section through the diatreme, and is valued for its expression of this geological phenomenon. It provides exposure to geological information that is important to understanding the history of creation of the Sydney Basin, and Council intend to preserve this exposure as part of the redevelopment plans for the quarry.

2.2.6 Groundwater

A search of the NSW Department of Primary Industries Office of Water Groundwater Bore Map revealed that there are six registered groundwater wells within two kilometres of the site. The closest registered bore to the site was a monitoring bore (GW111573) situated 1118 m to the north east. This bore was drilled to a depth of 5.0 m below ground level and sits in silty clay, weathered shale and sandstone.

Standing water levels in all six bores was recorded between 0.63 metres and 2.0 metres below ground level (bgl), however, depth to groundwater at the site itself is unknown, but expected to be relatively deep based on the water ponding at the base of the quarry. Salinity levels are not anticipated to be an issue at the site, and no dryland salinity is reported for the site in the National Assessment database (National Land and Water Resources audit, 2013), or the Dryland Salinity Potential of Western Sydney map (Department of Infrastructure, Planning and Natural Resources, March 2003).

Groundwater in the region surrounding the site is expected to flow from the north east to the south west.

2.3 Review of historical information

2.3.1 Historical aerial photographs and topographical maps

A selection of aerial photographs and topographical maps were examined in order to ascertain past activities and land uses at the property. The years examined were 1920, 1930, 1951, 1956, 1961, 1965, 1970, 1975, 1982, 1991, 2003, 2009, 2015 and 2019. The aerial photographs are included in the Lotsearch report provided as Appendix B. A summary of the information gained from the review of historical aerial photography is provided in Table 2.

Table 2 Review of historical aerial photographs

Year	On site observations	Off site observations
1920 (LotSearch, 2019) topography map	According to the 1920 topography map, the site is largely uncleared, with a moderately steep gully running from north-east to south-west across the site. Several scattered buildings are apparent on the image.	The surrounding land includes: **East:** Hornsby township and rail line **North**: Some residential development and a rifle range **West:** Uncleared bush land **South:** Natural vegetation then residential properties.
1930 (LotSearch, 2019) black and white photo, and	The site in the 1930 aerial photograph appears largely cleared of natural vegetation	The surrounding land includes: **East:** Natural vegetation then a natural waterway.

Year	On site observations	Off site observations
1942 topography map	(~15% natural vegetation in the site footprint), with crop use evident within the quarry footprint. Lines of trees, typical of an orchard, is present in the northwest corner of the site. A cleared area of land is present in the far southwest corner of the site. The north western corner of the present day quarry is disturbed, potentially excavated. A natural waterway is present in the southeast corner of the site, and another in the southwest. Several unsealed roads dissect the site, leading from the south to the crops and orchard areas.	**North:** Natural vegetation then an unsealed road and crops. **East:** Natural vegetation then Pacific Highway. The land on either side of Pacific Highway appears subdivided to residential blocks. **South:** Natural vegetation then residential houses.
1951 (LotSearch, 2019) black and white photo	The site in the 1951 aerial appears to have been quarried. The area where the present day quarry is filled with water. Crop use is not evident in this aerial. The cleared area in the southwest in the 1930s area has tree coverage in this aerial. The waterways in the southeast and southwest corners of the site remain unchanged from the 1930s aerial.	The surrounding land remains unchanged with the exception of: **North:** Natural vegetation then an unsealed road, an oval and several structures reminiscent of residential dwellings. **East:** Natural vegetation then light commercial buildings surrounding Pacific Highway.
1956 (LotSearch, 2019) black and white photo	The quarry no longer has water in the pit. The natural waterways in both the southwest and southeast of the site are present, with more vegetation cover in the southeast as compared to the 1951 aerial. Five small buildings are present on site. Four are in the south southwest of the site, adjacent to the waterway, and on the present-day western fill area. One small building is evident near the present day ASTs. Several unsealed roads traverse the site, leading to the quarry from the south. A large cleared area is present near the present day eastern fill area.	The surrounding land remains unchanged with the exception of: **North:** 150 m to the north is a large area of cleared land, starting from the area where the 1951 oval was, going northwest for at least 400 m. This area is approximately 75 m wide. This site corresponds to the present day rifle range. Further north are residential buildings.

Year	On site observations	Off site observations
1961 (LotSearch, 2019) black and white photo	Vegetation to the south has become denser since the 1958 aerial. The quarry has become deeper with more unsealed roads traversing the slopes of the excavation. A number of additional buildings are present on site. Four are situated along the southern edge of the pit. One building is present on the southern border of the site in a clearing.	The surrounding land remains unchanged with the exception of: **East:** Natural vegetation. Approximately nine buildings are present 100 m to the northeast of site on the ridge adjacent to the unsealed road. **North:** The southern section of the cleared area referenced in the 1958 aerial now has several buildings occupying the land, reminiscent of a school or other type of institution, and may be the Mount Wilga medical precinct.
1965 (LotSearch, 2019) black and white photo	The site remains largely unchanged from the 1961 aerial, with the exception that the quarry appears deeper. The buildings surrounding the southern edge of the pit in the 1961 aerial are no longer present, with the exception of one.	The surrounding land remains unchanged with the exception of: **South-east**: A pool (Hornsby Aquatic and Leisure Centre) has been built 150 m southwest of the site. **East:** Commercial development has occurred in the east and southeast of the site, surrounding Pacific Highway.
1970 (LotSearch, 2019) black and white photo, and 1975 topography map	The site remains largely unchanged from the 1965 aerial. Water is present in the south western corner of the quarry.	The surrounding land remains unchanged with the exception of: **East:** An area south of the buildings on the ridge (referenced in the 1961 aerial description) has been cleared. The TAFE has been built, 150 m east of the site. **South**: An area of land to the south of the site, and west of the existing residential area has been cleared with new roads and cul-de-sacs developed. **North**: The area with buildings reminiscent of a school (or other form of institution) has additional structures.
1982 (LotSearch, 2019) colour photo	The quarry has been excavated significantly since the 1970 aerial. The structures to the south west (on the present day fill area) have been removed. This area is graded, with patterns in the land	The surrounding land remains unchanged with the exception of: **North:** The buildings reminiscent of a school (or other form of institution) has been removed and

Year	On site observations	Off site observations
	suggesting its being used for excess spoil. Buildings are present on the western edge of the quarry, where the present day ASTs are located. The present day eastern fill area is cleared, but it is unclear whether it is being used to store excess spoil.	the present day hospital buildings are present on this area. **South:** Residential buildings have been built west of the existing residential area. **East:** More commercial buildings have been built either side of Pacific Highway.
1991 (LotSearch, 2019) colour photo	The quarry has had further excavations since the 1982 aerial. The area east of the quarry, on the present day eastern fill area, has been cleared and levelled. A road has been cleared going to this area from the south eastern corner of the site. The western fill area is no longer graded and vegetation is growing in this area now.	The surrounding land remains unchanged with the exception of: **North:** The hospital has been further developed. Additional residential buildings and a new road is present to the northwest of the site. **East:** The building on the eastern border of the site (off Bridge Road) has had an expansion
2003 (LotSearch, 2019) colour photo	The quarry has water present in the bottom of the pit. Quarrying is understood to have ceased by this time, with the quarry in ownership of the Council. There is more vegetation growing on the site surrounding the quarry. Both fill areas are don't appear to be in use.	The surrounding land remains unchanged with the exception of: **East:** More commercial buildings have been built either side of Pacific Highway.
2009 (LotSearch, 2019) colour photo	No obvious changes to the site is apparent between the 2003 and 2009 aerial photographs, with the exception of more vegetation across the site and more water in the quarry.	The surrounding land remains unchanged with the exception of: **North:** The hospital has been further developed.
2019 (Google Maps) colour photo, and 2015 topography map	The eastern fill area has a number of buildings and permanent structures. There are several trucks evident in the aerial and four surface water features. The quarry has had significant filling with what appears to be uniform fill from the NorthConnex project. Some water remains on the western side of the quarry. The buildings to the west of the quarry have been removed.	The surrounding land remains unchanged with the exception of: **East:** The Hornsby Aquatic and Leisure Centre to the southeast has undergone a renovation. **North:** The hospital has been further developed.

2.3.2 Summary of the site history

Thomas and Eleanor Higgins, arrived in Sydney with the second fleet in June 1790. Their son, Thomas Edward Higgins was granted 250 acres of land at the site, including what is now the historical Old Man's Valley Cemetery. The Higgins family were orchardists in the areas having occupied the land from the 1820s until the 1970s, with the cemetery having been used by the Higgins family and others from 1871 to 1931

Based on the review of historical aerial photographs, the site has been used as a farmland from at least 1930. Between 1930 and 1951 the site was excavated and quarried. A significant expansion of the quarry occurred between 1956 and 1961 with production ramping up until at least 1991. In 2003 the quarry had water within the pit, suggesting the quarrying was no longer occurring. This is further supported by the increase of vegetation across the site. In 2018 it was apparent that works had begun to infill the quarry.

The surrounding land has been dominated by natural vegetation to the west, residential to the south and commercial to the east. The north transitioned from farm land to residential between 1930 and 1951, around the same time the site transitioned from farm land to a quarry. The rifle range approximately 300 m north of the site was developed between 1951 and 1956. Approximately 200 m north of the site is a hospital, with its present day structures being developed between 1956 and 1961.

2.4 Regulatory information

The following information presented in Table 3 was obtained from the Lotsearch report (Appendix B) and publically available information including NSW Environmental Protection Agency (EPA) and NSW Planning and Environment websites.

Table 3 Publically available information

Potential Sources	Notes	Information Source
Land use designations	The site and surrounding area is located within Hornsby Shire Council area. The site is shown on the Hornsby Local Environmental Plan (2013) and is zoned as RE1 – Public Recreation (NSW Government, 2019). To the north and south are areas zoned as R2 – Low Density Residential. The land to the west of the site is zoned E1 – Environmental Conservation. To the east is a small area zoned as R4 – High Density Residential, further east is zoned as B5 – Business Development.	Hornsby Local Environment Plan 2013.
Contaminated sites register	According to the NSW EPA, the site does not have any notices under the Contaminated Land Management (CLM) Act 1997 (NSW EPA, 2019). One contaminated site is registered within 2 km of the site; • Coles Express Hornsby, 194 – 206 Pacific Highway: 4 current and 5 former notices related to this site. This site is located approximately 790 m southeast of the Hornsby Quarry.	Environment Protection Authority (EPA) Contaminated Sites Register.
List of NSW contaminated sites notified to NSW EPA	According to the NSW EPA, no contaminated land records were listed for the site (LotSearch, 2019). Three notified sites are within a 1000 m of the site.	List of NSW contaminated sites notified to the EPA.

Potential Sources	Notes	Information Source
	• Hornsby Train Maintenance Centre, 1B Stephen Street, other industry, regulation under the CLM Act not required, approximately 1 kilometre to the northeast. • Midas Car care Centre Hornsby, 2A Linda Street, unclassified activity, regulation under the CLM Act not required, circa 700 m to the east. • Coles Express Hornsby, 194 – 206 Pacific Highway, service station, contamination currently regulated under the CLM Act, circa 1000 m southeast of the Hornsby Quarry.	
James Hardie asbestos waste sites	According to the NSW EPA (LotSearch, 2019) there are no known James Hardie asbestos waste sites located within 1000 m radius of the site.	EPA Other Sites with Contamination Issues.
Other sites with contamination issues – Former Gasworks and NSW EPA PFAS Investigation Program	One NSW EPA Per- and poly-fluoroalkyl substances (PFAS) Investigation Program site is located within a 2000 m radius of the site (LotSearch, 2019). • Westleigh NSW Fire Service, 12 Warrigal Drive, Westleigh, circa 1700 m to the southwest of the site. PFAS compounds in soil were not found to exceed the Human Health PFAS Criteria for Public Open Space (PFAS NEMP 2018) and therefore the site was considered suitable for use as a sports oval. A Human Health and Ecological Risk Assessment (HHERA) assessed the ways in which people might come into contact with PFAS. The HHERA concluded that improvement action was not required for the site to be used as a sports oval. It was agreed with the EPA, and in consultation with Hornsby Shire Council, that NSW Rural Fire Service as a precaution would remove a 10 m x 25 m x 0.3 m section of soil from the north-east of the site. The excavated soil was removed and then sent to landfill, in accordance with NSW EPA waste classification guidelines.	EPA PFAS Investigation Program: EPA.
Historical business directory records	Two historical business directory records have been identified which were registered to the site (LotSearch, 2019); • Quarry Proprietors, Hornsby Blue Metal Quarry, The Valley, Hornsby 2077. 1982 Business Directory Record. • Baths-Swimming, Hornsby Olympic Pool, Pacific Highway, Hornsby, 1970 Business Directory Record. Several potentially contaminating industries are listed in the historical business directories within 400 m of the site: Motor Garage, engineers and/or service stations:	Universal Business Directories (UBD)

Potential Sources	Notes	Information Source
	• Central Auto Repairs formerly McCredles Garage: 2 Dural Road, 200m to the southeast of the site. Referenced in the 1948 – 1988 UBDs. • Thompson & Bourke, formally Pacific Garage, 304 Pacific Highway, Hornsby 210 m east of the site. Referenced in the 1948 – 1972 UBDs. • Barsby T. B., 33 Jersey St Hornsby, 240 m east of the site. Referenced in the 1964 - 1971 UBDs. • Kookaburra Tyre and Service Station, 25-27 Jersey St. Hornsby. 260 m east of the site. Referenced in the 1953 – 1962 UBDs. Dry cleaners, pressers and dryers; • Lindfield Laundry and Dry Cleaners Pty Ltd, 286a Pacific Hwy, Hornsby. 255 m to the south east of the site. Referenced in the 1948 – 1950 UBDs. • Thrift Macks Dry Cleaning Service, formally Red Robin Dry Cleaning Service and Page Boy, 25 Station St, Hornsby, 340 m to the southeast of the site. Referenced in the 1970 – 1988 UBDs.	
Current licenced activities under the POEO Act 1997	The site is subject to a licence for Lendlease Engineering Pty Limited for the NorthConnex Project between Windsor Road, Baulkham Kills and M2 Motorway, Pennant Hills and M1 Motorway, Wahroonga, NSW 2076. This licence pertains to the activity of '*crushing, grinding or separating: road construction'*. There are another two activities licensed under the POEO Act 1997 within a 1000 m radius of the site (LotSearch, 2019). • Sydney Water Corporation holds a license for the '*sewerage treatment processing by small plants'* at the West Hornsby Sewerage Treatment System off Valley Road. This activity is located 175 m west of the site. • Sydney Trains hold a license for '*railway systems activities'* over their network of features, the closest being 330 m east of the site.	POEO Licence Data Source: EPA.
Former activities licenced under the POEO Act 1997	There are five formerly licenced activities associated with the site (LotSearch, 2019); • CSR Limited was issued a POEO license in 2000 for '*land-based extractive activity'* on Quarry Road, Hornsby. • Luhrmann Environment Management Pty Ltd, Robert Orchard and Sydney Weed and Pest management Pty Ltd all held a licenses associated with '*waterways throughout NSW*' for '*other activities/non-scheduled activity – application of herbicides*'. • Hornsby Shire Council was issued a license in 1999 for '*miscellaneous licensed*	Former Licenced Activities Data Source: EPA.

Potential Sources	Notes	Information Source
	discharge to waters (at any time)' at 203 Pacific Highway, Hornsby (Hornsby Aquatic Centre) Further, one licence was held by Laing O'Rourke Australia Construction Pty Ltd for *'railway systems activities'* in the rail corridor between Pretoria Parade, Waitara and Colah Road, Asquith, Hornsby. This area is located 300 m east of the site.	
Delicenced activities regulated by the EPA	There are two delicenced activities within 1000 m of the site that are still regulated by the EPA (LotSearch, 2019). • Rail Corporation NSW held a license for '*hazardous, industrial or group A waste generation or storage*' at their Hornsby Maintenance Centre at 1B Stephen St in Hornsby. This Maintenance Center is located 352 m north east of the site. • Ausgrid held a license for '*hazardous, industrial or group A waste generation or storage*' at Energy Australia, located at 51-59 Bridge Road, 795 m east of the site.	Delicensed Activities Data Source: EPA.

2.4.1 NSW and local heritage register

LotSearch compiled a list of heritage items within 1000 m of the site. No records pertained to the Commonwealth Heritage List, the National Heritage List or the State Heritage Register – Curtilages (LotSearch, 2019). Several records pertaining to the Environmental Planning Instrument – Heritage were within the site and surrounds. The '*Diatreme Hornsby Quarry and surrounding vegetation', 'Hornsby Park, Lone Pine and sandstone steps', 'TAFE College buildings 'K' and 'M' and grounds (excluding other buildings)', 'Old Man's Valley Cemetery, including Higgins' Family Cemetery, sandstone receptacle and cool room', 'Peats Ferry Road Precinct, Hornsby West Side Heritage Conservation Area'* and the '*Sandstone steps'* are classified as 'Item – Landscape, Archaeological or General' in the Hornsby Local Environmental Plan, published in 2013. GHD understand from Council that Lone Pine was removed when the Hornsby aquatic centre was constructed.

2.4.2 SafeWork NSW Hazardous Chemicals Site Search

GHD ordered a SafeWork NSW site search on 1 August 2019 which was returned on 27 August 2019. The search identified several copies of documents held by SafeWork NSW on record number 35/010344.

The documents include a request from Caltex Oil (Australia) Pty Ltd to install a "2,000 gallon underground tank and one single electric pump for dispensing gasoline" in the former workshop area. Additional documents show an application to keep 500 non electric and 500 electric detonators, 5000 kilograms of Type E blasting explosives and 5000 litres of petrol on site. The exact storage locations are unclear, although it appears the petrol was stored in the UST at the former workshop area.

A copy of the search is provided in Appendix B.

2.5 Previous investigations

Several third party documents were provided to GHD by Council for review. The following are relevant to this contamination investigation:

- Parsons Brinckerhoff (PB) (2004), Hornsby Quarry and Environs Land Capability Study and Master Plan: Land Capability Study, October 2004.
- PB (2004), Hornsby Quarry and Environs Land Capability Study and Master Plan: Volume 1 – Technical Investigations, October 2004.

2.5.1 PB, 2004: Land Capability Study

The Council engaged PB to undertake a Land Capability Study for the site to '*identify important issues that need to be considered when planning for future rehabilitation and management of the Hornsby Quarry and surrounding land in Old Mans Valley'* (Parsons Brinckerhoff, 2004). As part of this Study, two technical volumes were created that provided detailed findings on a number of technical investigations. One such investigation was for contamination. This document provided a high level overview of the contamination investigation, as summarised below:

A number of potential contamination within the site area were identified:

- Workshop area;
  - – Buildings
  - – Fuel storage and dispensing facilities
  - – Electrical transformer
- Crushing plant facility (GHD note that investigation of the crushing plant was not included in this DSI as it will not form part of the redevelopment plans for the quarry)
- Explosive magazines near the cemetery (GHD note that investigation of the cemetery was not included in this DSI as it will not form part of the redevelopment plans for the quarry)
- Detonator magazine west of the quarry pit
- Fill areas
- Degraded site buildings on Quarry Road

The identified potential contaminants of concern included;

- Total petroleum hydrocarbons (TPH)
- Benzene, toluene, ethylbenzene and xylenes (BTEX)
- Polycyclic aromatic hydrocarbons (PAH)
- Organochlorine pesticides (OP)
- Polychlorinated biphenyls (PCBs)
- Volatile halogenated compounds (VHC)
- Semi-volatile organic compounds (SVOC)
- Heavy metals

PB recognised these contamination areas *present a moderate development constraint, but they do no prohibit development.* PB recommended that all areas of potential contamination be further investigated and in some cases remediation may be required.

2.5.2 PB, 2004: Technical Investigations

The Council engaged PB to undertake a Phase 1 Environmental Site Assessment of the site. This included the review of historical documentation, including a WorkCover NSW Dangerous Goods Licence information and records, NSW EPA notices, property records, land title information and aerial photographs.

A review of the title information and aerial photographs indicated that the site was used as market gardens and orchard cultivation from the 1820s to the 1960s. Parts of the site were leased to Hornsby Blue Metal Limited in 1924. Hornsby Blue Metal Limited acquired the majority of the site between 1960 and 1968. Site quarrying infrastructure was constructed by 1969. Extensive quarrying activities appeared to have ceased by late 1992.

WorkCover NSW records confirmed a UST was located in the vicinity of the office and workshop area, and was used to store petrol. The initial UST had the capacity to hold 9,000 L. This tank was replaced in 1968 with a smaller capacity tank (4,500 L). The UST was reported to have been removed in 1997/98. PB is not aware of any reports relating to the removal of this UST. Two above ground storage tanks (ASTs) are located in the same area. These were used to store diesel and have the capacity to hold 30,000 L and 25,000 L. These remain on site in a bunded area.

Also in this area was a detonator magazine used to store up to 5,000 detonators. All detonators and explosives were utilised prior to the cessation of quarrying activities on site. GHD did not observe this magazine during their site visit.

Council records obtained by PB indicated that parts of the site was used for the purposes of an extractive industry until early 1999, and that landfilling occurred in the late 1980s.

Previous investigation reports reviewed by PB did not focus on contamination aspects of the site, and as such, are not summarised in this technical investigation.

A site investigation was undertaken by PB in 2004. At the time of the investigation, the quarry workings consisted of a single large pit. No infrastructure was observed within the quarry and former access roads were unsealed. The two diesel ASTs were observed in the workshop area, along with a waste oil AST with a capacity of 2,000 to 5,000 L. GHD note that the waste oil AST was not observed during their site visit. All ASTs were reported to be in covered, bunded areas. A number of buildings in this area were reported, some of which were constructed with fibrous cement sheeting. These buildings were not present during GHD's site walkover. Numerous 44 gallon drums noted to have contained diesel oil were stored on site, but were not observed by GHD. A transformer was also noted in the workshop area at the time of the PB inspection, however, it was not observed during the GHD site walkover.

PB identified a number of areas of environmental concern as a result of this Phase 1 Environmental Site Assessment. These are summarised in Section 2.5.1. To address the potential contamination issues identified within the study area, PB recommended a *Phase 2 Detailed Site Investigation be scoped and implemented as part of future management principles* for the site (Parsons Brinckerhoff, 2004).

2.5.3 GHD Pty Ltd, May 2019. Hornsby Quarry Rehabilitation EIS – Geophysical Investigation Report

This report details the geophysical investigation of the UST at the former workshop area with the use of ground penetrating radar (GPR). The survey determined that the UST is slightly smaller than the overlying concrete slab, at approximately 8600 mm x 4500 mm. The GPR reflection suggested that the depth to the top of the top underneath the slab is approximately 700 mm below surface. A measuring tape placed within the sump/downpipe hit the assumed base of the tank at 2500 mm depth. A dipstick removed from the tank indicated there was 50 mm of hydrocarbon residue at the base of the tank.

3. Preliminary conceptual site model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The development of a preliminary CSM is an essential part of all site assessments and provides the framework for identifying contamination sources and how potential receptors may be exposed to contamination.

Based on the information collected as part of this assessment, the following CSM has been developed for the potential on-site sources of contamination. A figure outlining the locations of these potential sources is presented as Figure 2, Appendix A.

3.1 Potential Sources of Contamination

Sources of potential contamination were identified during site visit, desk based searches and previous investigations are considered to include the following:

Historical Sources

- Workshop area
  - – Buildings, some of which were constructed with fibrous cement sheeting
  - – Waste oil AST with a capacity of 2,000 to 5,000 litres
  - – Electrical transformer
  - – Numerous 44 gallon drums, previously holding diesel oil
  - – Detonator magazine west of the quarry pit
  - – Areas of the site previously used for farming practices

Current sources

- – Two bunded aboveground storage tanks (ASTs) (one empty, one containing diesel fuel) underneath an awning
- – One petrol UST
- – One fuel bowser (and potentially related underground petroleum storage systems)
- – One small locked, inaccessible and heavily corroded metal building, possibly used for tool storage
- – Fill areas located to the North, East and Southwest of the quarry

3.1.1 Contaminants of concern

- Total recoverable hydrocarbons (TRH)
- Benzene, toluene, ethylbenzene and xylenes (BTEX)
- Polycyclic aromatic hydrocarbons (PAH)
- Organochlorine pesticides (OCP) and organophosphorus pesticides (OCP)
- Polychlorinated biphenyls (PCBs)
- Volatile halogenated compounds (VHC)
- Semi-volatile and volatile organic compounds (SVOC, VOC)
- Heavy metals
- Asbestos

3.2 Pathways

Potential pathways are detailed below:

- Direct contact (ingestion and/or dermal).
- Volatilisation of vapours and accumulation in soil and voids (inhalation).
- Leaching from subsurface soils / vertical migration to groundwater.
- Lateral migration via impacted surface water.
- Lateral migration via impacted groundwater

3.3 Receptors

When evaluating potential adverse health / environmental effects from exposure to a contaminated site, all potentially exposed populations should be considered. For the site, the key populations or receptors of interest are considered to include:

- Current and future intrusive maintenance (utility) or construction workers (excavations).
- Future recreational users of the site.
- Groundwater underlying the site.
- Ecological systems such as the tributaries to Jimmy Bancks Creek, Waitara and/or Berowra Creeks and natural vegetation.
- Offsite residential (south and north) and commercial (east) receptors.

3.4 Potential source-pathway-receptor linkages

Based on the current information, a tabulated conceptual site model (CSM) has been developed as presented in Table 4. The CSM shows the source-pathway-receptors (SPR) linkages identified for the site and a discussion on where they are likely to be complete or incomplete.

Table 4 Preliminary conceptual site model

Area	Potential contaminant source	COPC	Potential Pathways	Potential Receptors	SPR Linkage complete?
Workshop area					
Current and former buildings	Fibrous cement sheeting	Asbestos	Direct contact (inhalation)	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Incomplete** - It is understood that the buildings constructed from fibrous material were removed in the early 2000s. No fragments were observed during the site walkover.
				Future recreational users of the site.	
	Degradation of metal surfaces / former paints	Heavy metals	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Possible** – If soils are impacted with heavy metals then direct contact with soils could result in a complete source-pathway-receptor linkage.
				Future recreational users of the site.	
			Lateral migration via impacted groundwater	Groundwater and ecological systems such as the tributaries to Waitara and/or Berowra Creeks and natural vegetation	**Unlikely -** Groundwater in the area is deep and therefore a source receptor pathway is considered incomplete for this area.
Two bunded diesel ASTs underneath an awning.	Diesel fuel	Heavy metals, TRH, BTEX, PAHs	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Unlikely -** Although Council has indicated it will not remove the ASTs in the proposed development, the bunding appears in good condition and there is no evidence of leaks (such as odours or staining) outside the bund walls. GHD is unaware of any documented leaks or releases of fuel.
				Future recreational users of the site.	
			Lateral migration via impacted groundwater	Groundwater and ecological systems such as the tributaries to Jimmy Bancks Creek, Waitara and/or Berowra Creeks and natural vegetation	
			Lateral migration via impacted groundwater, volatilisation of vapours gas and accumulation in building voids (inhalation).	Offsite residential (south and north) and commercial (east) receptors.	
			Volatilisation of vapours and accumulation in soil and building voids (inhalation).	Current and future intrusive maintenance (utility) or construction workers (excavations).	
				Future recreational users of the site.	
Former waste oil AST with a capacity of 2,000 to 5,000 L.	Waste oil	Heavy metals, TRH, BTEX, PAHs	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Incomplete –** The former waste oil AST was located in a covered and bunded area, and was removed prior to GHD's visit. Therefore the potential for historical spills to impact human health, soils or groundwater, (which is deep at this location) is considered unlikely.
				Future recreational users of the site.	
			Lateral migration via impacted groundwater	Groundwater and ecological systems such as the tributaries to Jimmy Bancks Creek, Waitara and/or Berowra Creeks and natural vegetation	
			Lateral migration via impacted groundwater, volatilisation of vapours gas and accumulation in building voids (inhalation).	Offsite residential (south and north) and commercial (east) receptors.	
			Volatilisation of vapours and accumulation in soil and building voids (inhalation).	Current and future intrusive maintenance (utility) or construction workers (excavations).	
				Future recreational users of the site.	
Petrol UST	Petrol	Heavy metals, TRH, BTEX	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Human health - Possible** - Former or ongoing leaks may have occurred. Human contact with impacted soil is a potentially complete source-pathway-receptor linkage. **Groundwater and Ecosystem - Unlikely -** Groundwater in the area is deep and therefore a groundwater and ecosystem source receptor pathway is considered incomplete for this area.
				Future recreational users of the site.	

Area	Potential contaminant source	COPC	Potential Pathways	Potential Receptors	SPR Linkage complete?
			Lateral migration via impacted groundwater	Ecological systems such as the tributaries to Jimmy Bancks Creek, Waitara and/or Berowra Creeks and natural vegetation	
			Lateral migration via impacted groundwater, volatilisation of vapours gas and accumulation in building voids (inhalation).	Offsite residential (south and north) and commercial (east) receptors.	
			Volatilisation of vapours and accumulation in soil and building voids (inhalation).	Current and future intrusive maintenance (utility) or construction workers (excavations).	
				Future recreational users of the site.	
Former electrical transformer	Transformer oil	TRH, PAH, PCBs	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Human Health - Possible -** The size, condition, exact location and removal records of the transformer are unknown. No records are available to suggest the transformer was bunded or situated on hardstand. However, it is assumed that the transformer was removed using best practice during the redevelopment. **Groundwater and Ecosystem - Unlikely -** Groundwater in the area is deep and therefore a groundwater and ecosystem source receptor pathway is considered incomplete for this area.
				Future recreational users of the site.	
			Lateral migration via impacted groundwater	Groundwater and ecological systems such as the tributaries to Jimmy Bancks Creek, Waitara and/or Berowra Creeks and natural vegetation	
			Leaching from subsurface soils / vertical migration to groundwater.		
			Lateral migration via impacted groundwater, volatilisation of vapours gas and accumulation in building voids (inhalation).	Offsite residential (south and north) and commercial (east) receptors.	
			Volatilisation of vapours and accumulation in soil and building voids (inhalation).	Current and future intrusive maintenance (utility) or construction workers (excavations).	
				Future recreational users of the site.	
Numerous 44 gallon drums, previously holding diesel oil	Diesel fuel	Heavy metals, TRH, BTEX, PAHs	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Possible -** The size, condition, exact location and removal records of the 44 gallon drums are unknown. No records are available to suggest the drums were bunded or situated on hardstand. However, it is assumed that the drums were removed using best practice during redevelopment **Groundwater and Ecosystem - Unlikely -** Groundwater in the area is deep and therefore a groundwater and ecosystem source receptor pathway is considered incomplete for this area
				Future recreational users of the site.	
			Lateral migration via impacted groundwater	Ecological systems such as the tributaries to Jimmy Bancks Creek, Waitara and/or Berowra Creeks and natural vegetation	
			Lateral migration via impacted groundwater, volatilisation of vapours gas and accumulation in building voids (inhalation).	Offsite residential (south and north) and commercial (east) receptors.	
			Volatilisation of vapours and accumulation in soil and building voids (inhalation).	Current and future intrusive maintenance (utility) or construction workers (excavations).	
				Future recreational users of the site.	
Fill Areas					
Southwest North East	Potential fill other than that derived from quarrying operations	Heavy metals, TRH, BTEX, PAHs, OCP OPP, PCBs, asbestos and any other contaminants	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations).	**Possible -** The contamination status of the fill is unknown. It is likely to be mostly overburden from quarrying activities, however uncontrolled fill could be present from past activities. It is understood that much of the fill in the south-western area will be removed and used to further fill the quarry pit in the proposed development, the fill from the northern fill area will be levelled
				Future recreational users of the site.	

Area	Potential contaminant source	COPC	Potential Pathways	Potential Receptors	SPR Linkage complete?
		associated with unknown fill.	Lateral migration via impacted groundwater	Ecological systems such as the tributaries to Jimmy Bancks Creek, Waitara and/or Berowra Creeks and natural vegetation	and the fill from the eastern area will remain in situ with minor levelling to create playing fields.
			Leaching from subsurface soils / vertical migration to groundwater.		
			Lateral migration via impacted groundwater, volatilisation of vapours gas and accumulation in building voids (inhalation).	Offsite residential (south and north) and commercial (east) receptors.	
			Volatilisation of vapours and accumulation in soil and building voids (inhalation).	Current and future intrusive maintenance (utility) or construction workers (excavations).	
				Future recreational users of the site.	
Areas of the site previously used for farming practices.	Herbicides and pesticides used on the soil.	OCP, OPP	Direct contact (ingestion and/or dermal).	Current and future intrusive maintenance (utility) or construction workers (excavations). Future recreational users of the site.	**Incomplete -** Farming practices on site ceased nearly 100 years ago and the site was since quarried, moving all potentially contaminated site either offsite or into the fill areas.

4. Data quality objectives

The purpose of establishing Data Quality Objectives (DQO) is to ensure the assessment is undertaken in a way that enables the collection and reporting of reliable data on which to base the assessment.

DQOs have been established for this assessment to assist the design and implementation of data collection activities, to ensure the type, quantity and quality of data obtained are appropriate and address the project objectives. The DQO process described in Schedule B2 of the National Environmental Protection Council (2013) *National Environment Protection (Assessment of Site Contamination) Amendment Measure (No.1)* (NEPM), was adopted for this project, and involves seven steps:

- Step 1: State the problem
- Step 2: Identify the decisions
- Step 3: Identify inputs to the decision
- Step 4: Define the study boundaries
- Step 5: Develop a decision rule
- Step 6: Specify limits on decision errors
- Step 7: Optimise the design for obtaining data

A description of each DQO step developed for this project is provided in Table 5. Table 1

Table 5 Data quality objectives

Step	Data quality objectives
Step 1 State the Problem	The problem is that potential source-pathway-receptor linkages of contaminants have been identified but not assessed and as such the contamination status of the site is unknown. The objectives of the investigation are to assess whether the potential contamination sources have actually caused site contamination and if these impacts may pose a risk to receptors or affect the proposed future use of the site.
Step 2 Identify the Decision	The decisions for the assessment are the issues that need to be addressed arising from Step 1 and form the basis for risk characterisation: • Is contamination present at the site and will the presence of any contamination affect the future use of the site or pose a risk to the identified receptors? • Is there a need for further assessment, remediation and/or management of contamination (if identified)?
Step 3 Inputs to the Decision	The inputs to the decision represent the information and data that will be collected as part of the assessment include: • Review of historical land uses and potential sources of contamination identified at the site and on surrounding properties • Review current land uses and practices for potential sources of contaminations at the site and on surrounding properties

Step	Data quality objectives
	• Published environmental information for the site, including geological and hydrogeological maps • Review of previous documentation, where available • Drilling and soil sampling from four soil boreholes around the former UST • Sampling from six trenches excavated in the south western and eastern fill areas • Collection of a surface water sample from the onsite stormwater diversion channel • Collection of soil samples from hand bores in the maintenance area and northern fill area • Groundwater at the site is known to be deep and was not intersected during the investigation • Collection and laboratory analysis of soil samples; and • Comparison of the analytical data to applicable investigation levels to evaluate the potential for contamination to adversely impact upon human health and/or environmental receptors.
Step 4 Boundaries of the Study	The lateral boundaries of the study area are the boundaries of the site, as depicted in Figure 1 Appendix A. The vertical boundary of the study area is the depth of investigation (5.0 mbgl at the UST, 1.0 mbgl in the fill areas).
Step 5 Decision Rules	The decision rules adopted in this investigation are as follows: • The concentrations of contaminants of potential concern are to be assessed against adopted site investigation levels, which are sourced from the NSW EPA, NEPM, and NEMP endorsed guidelines with reference to site-specific exposure scenarios • If concentrations of contaminants of potential concern are below the adopted investigation levels, then contamination at the site will be considered unlikely to pose an unacceptable risk to identified receptors. In such case, no further investigation, remediation or management is required • Conversely, when concentration(s) of contaminants of potential concern exceed the adopted site investigation levels, further assessment may be required to evaluate the need for additional investigation and / or remediation / management activities
Step 6 Tolerable Limits on Decision Errors	Two types of decision errors are possible: • Sampling errors which occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site, i.e. the samples collected are not representative of the site conditions such that contamination is either missed or overstated • Measurement errors which occur during sample collection, handling preparation, analysis and data reduction To minimise the potential for decision errors, a number of data quality indicators (DQIs) were evaluated, namely representativeness,

Step	Data quality objectives
	completeness, comparability, precision, sensitivity and accuracy. The DQIs were based on those listed in Appendix C of the NEPM.

Step 7
Optimisation of the Data Collection Process
	For the assessment, the data collected will be optimised by:
	• Engagement of specialist GHD personnel with previous experience in the assessment and remediation of contaminated sites to cover all aspects of the assessment
	• Laboratory analysis of selected soil samples for identified contaminants of potential concern. Samples were selected on the basis of:
	  • The potential for contamination presence in fill materials
	  • Visual and olfactory indications of potential contamination presence observed during the sampling program, as well as Photo Ionisation Detector (PID) screening results
	• Assessment of data quality with reference to the specified DQIs, to evaluate the reliability and useability of the obtained data
	• Assessment of laboratory analytical results against adopted criteria

5. Basis of the assessment

5.1 Relevant guidelines

The framework for the contamination assessment made herein, was developed in accordance with guidelines "made or approved", by the NSW EPA under Section 105 of the *Contaminated Land Management Act, 1997*. These guidelines include, but are not limited to the following:

- NSW EPA (1995) *Contaminated Sites: Sampling Design Guidelines*
- NSW EPA (2011) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*
- NEPM (2013) *National Environment Protection (Assessment of Site Contamination) Amendment Measure (No.1)*, National Environment Protection Council (NEPC)
- NSW EPA (2015) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*
- NSW EPA (2016) Contaminated land management, Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017

Site investigation levels have been adopted from assessment criteria presented in NEPM (2013) as discussed below. The site is currently zoned as public open space and the intended ongoing land use is for public recreation, therefore recreational land use scenarios have been considered appropriate for the screening criteria, and are discussed in the following sections.

5.2 Soil assessment criteria

5.2.1 Human health criteria

National Environment Protection (Assessment of Site Contamination) Measure 2013 (NEPM) (2013) Health Screening Levels (HSL) C Recreational Soil for Vapour Intrusion, Sand (0 m to < 1 m)

The NEPM (2013) presents Health Screening Levels (HSLs) for fuel derived petroleum hydrocarbons, which are generic criteria based on a series of reasonably conservative assumptions in order to be protective of human health for a variety of land use types. For the purposes of selecting health based investigation levels for recreational soil (HSL-C) are considered to be appropriate for proposed future land use (i.e. public open space).

Note that the NEPM (2013) presents HSLs for vapour intrusion only. For the direct contact pathway, reference has been made to Friebel and Nadebaum (2011) Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater CRC Technical Report No 10. The NEPM HSLs are based on the work by Friebel and Nadebaum, however the direct contact pathway was not included into the NEPM (2013).

Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE), Health Screening Levels (HSLs) for Direct Contact, Setting C (Recreational/Open Space)) and Direct Contact during intrusive works.

HSLs have been developed for soil vapour, groundwater and soil for petroleum hydrocarbons. HSLs were developed to address an identified need for consistent human health risk assessment for petroleum hydrocarbons in Australian conditions. HSL C refers to sites classified as recreational/ open space.

NEPM (2013) Table 1A (1) Health Investigation Levels (HIL) C Recreational

For non-petroleum hydrocarbons, the NEPM 2013 Health Investigation Levels (HIL) have been adopted. The HILs take into account direct contact pathways, including incidental ingestion and dermal contact. For the purposes of selecting health based investigation levels for recreational soil (HIL-C) are considered to be appropriate for proposed future land use (i.e. public open space).

5.2.2 Ecological criteria

NEPM (2013) Ecological Investigation Levels (EILs) Urban residential – public open space

EILs were developed for common metal contaminants in soil as well as several other compounds based on a species sensitivity distribution model. EILs consider the physiochemical properties of soil and contaminants and the capacity of the soil to accommodate increases in contaminant levels above natural background while maintaining ecosystem protection. EILs apply principally to contaminants in the top two metres of soil at the finished surface/ ground level which corresponds to the root zone and habitation of many species.

5.2.3 Assessment for absence/presence of asbestos in soil.

In alignment with the DQOs set for this investigation, a preliminary assessment on asbestos in soil was undertaken for the site area, where selected soil samples were screened for asbestos using a presence / absence protocol in laboratories. This analytical method does not allow quantification of asbestos concentrations in soil for comparison against the HSL criteria provided in NEPM (2013). Therefore the assessment criterion adopted in this investigation was based on positive or negative identification of asbestos in collected soil samples, as well as identification of asbestos on site during fieldworks.

5.3 Surface water assessment criteria

5.3.1 Human health criteria

The analytical results have not been assessed against drinking water assessment criteria because water from the site is not used as for human consumption, and groundwater is not abstracted from the site for public use or within 1,000 metres of the site.

5.3.2 Ecological criteria

Groundwater was not encountered during drilling at the site, and is understood to be deep. Given that a source-pathway-receptor link is considered incomplete for groundwater, analytical results were not assessed against the NEPM (2013) Groundwater Investigation Levels.

Australian and New Zealand Environment and Conservation Council (ANZECC 2000) Freshwater Quality (low to medium reliability)[2]

The investigation levels for low reliability fresh water aquatic ecosystems were adopted after consideration of the likely receptors of surface water leaving the site. A species protection level of 95% was adopted to reflect the moderately disturbed setting of the area.

[2] *The ANZAST (2018) criteria were endorsed by NSW EPA under S105 of the CLM Act on 4 September 2018. At the same time the ANZECC (2000) water quality guidelines were revoked. While the ANZAST (2018) have been endorsed, preliminary review of these guidelines by GHD and others has identified a number of discrepancies with ANZECC (2000) which have yet to be clarified. As such, ANZECC (2000) criteria have still been adopted for the purposes of this report until the issues with ANZAST (2018) have been resolved.*

5.4 Aesthetic Considerations

ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1

According to these guidelines, to protect the aesthetic quality of a waterbody:

- The natural visual clarity should not be reduced by more than 20%
- The natural hue of the water should not be changed by more than 10 points on the Munsell Scale
- The natural reflectance of the water should not be changed by more than 50%

6. Methodology

6.1 General

The following section provides details of the sampling and analysis program developed to address the objectives and the scope of works for the project.

6.2 Workplace health and safety

GHD developed a site specific health safety and environment (HSE) plan for the investigation as part of the overall commitment to provide a healthy and safe working environment for staff and contractors. All work employed the use of personal protection equipment (PPE) in accordance with GHD HSE requirements.

The HSE plan included a job safety and environment analysis detailing the step by step procedures of all aspects of the works and associated hazards and control measures to be implemented. The HSE plan was read by and signed by all GHD personnel, and subcontractors and feedback and discussion provided prior to the works commencing. A site specific pre-start safety assessment was conducted before commencing works.

GHD completed a site inspection prior to on-site intrusive works to finalise the proposed borehole, trenching and sampling locations, which included the following:

- Accessibility and appropriateness of each location was checked by GHD's site representative.
- Services clearance was undertaken by a professional underground services locator to further reduce the risk of intersecting subsurface services during the intrusive works, and Dial Before You Dig plans were also referenced.

6.3 Sampling locations and details

Drilling, trenching, soil and water sampling was undertaken by an environmental engineer and a geologist from GHD on 6 August 2019. Sampling locations across the site were selected to target possible sources of contamination (i.e. fill, former diesel UST etc.) as identified in the site walkover, and to provide an assessment of the whole site based on information collected during the desktop review and site walkover.

Drilling subcontractors, Stratacore, completed four boreholes (BH01 – BH04) using a trailer mounted geoprobe rig, at the former workshop area around the UST and the ASTs. Drilling included a combination of push tube and solid flight auger drilling according to ground conditions. In addition to these holes, three shallow, hand augered boreholes (BH05-BH07) were drilled in selected locations around the workshop area.

Council provided a 12-tonne excavator and operator to complete three trenches at selected locations at the south-western fill area (TPW1 – TPW3), and the eastern fill area (TPE1 – TPE3). Trenches were completed to a depth of 1.0 mbgl (or refusal, whichever came first), and ranged from 3.2 – 5.0 metres wide depending on refusal.

Due to the steepness of the slope of the northern fill area, it was determined that safest method of collecting soil samples was to take grab samples collected by hand at three locations (GS01 – GS03).

One surface water sample was taken from the diversion channel which runs along the base of the northern fill area to test for run-off from the northern fill slope (SW01). An additional surface

water sample was planned for following a major rain event, however the climate remained dry throughout the investigation period, and the additional sample could not be taken.

The sampling locations completed are shown on Figure 3**,** Appendix A, and summarised in

Table 6 Soil sampling investigation summary

Sample ID	Coordinates (MGA 56)		Hole Depth (mbgl)	Analytes	Targeting rationale
	Easting (m E)	Northing (m S)			
BH01	322907.12	6269830.13	4.10	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs, asbestos	Former workshop area - UST (western side)
BH02	322909.03	6269820.36	4.50	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs	Former workshop area - UST (southern side)
BH03	322914.33	6269822.87	6.0	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs	Former workshop area - UST (eastern side)
BH04	322917.08	6269829.27	5.0	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs	Former workshop area - AST (eastern side)
BH05	322900.12	6269812.63	0.3	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs, asbestos	Former workshop area - general
BH06	322898.84	6269809.42	0.4	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs, asbestos	Former workshop area – general
BH07	322894.96	6269815.34	0.3	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs, asbestos	Former workshop area western (rear) side of locked metal building
GS01	323164.05	6269931.78	0.1	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	Northern fill area – grab sample
GS02	323163.84	6269942.87	0.1	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	Northern fill area – grab sample
GS03	323129.75	6269931.14	0.1	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	Northern fill area – grab sample
TPW1	322893.58	6269555.14	1.0	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	South-western fill area
TPW2	322862.91	6269574.10	1.0	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	South-western fill area

Sample ID	Coordinates (MGA 56)		Hole Depth (mbgl)	Analytes	Targeting rationale
	Easting (m E)	Northing (m S)			
TPW3	322860.84	6269600.47	1.0	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	South-western fill area
TPE1	323431.90	6269762.78	1.0	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	Eastern fill area
TPE2	323436.55	6269651.60	1.0	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	Eastern fill area
TPE3	323357.07	6269647.14	0.8	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	Eastern fill area
SW01	323027.23	6269959.09	-	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	Diversion channel along base of northern fill slope

Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc)

Soil sampling method

During drilling, disturbed soil samples were collected whenever the geology changed, any visual or olfactory contamination was noted and/or at the intervals below.

- 1 sample between 0.0 – 0.5 mbgl.
- 1 sample between 0.5 – 1.0 mbgl.
- 1 sample between 1.0 – 2.0 mbgl, and 1 every meter to the target depth.

For the trenches, samples were taken lengthwise along the pit, at one metre intervals.

All samples were collected in accordance with GHD's Standard Field Operating Procedures to ensure that representative samples were collected, information was accurately recorded and quality control maintained throughout the investigation.

Soils penetrated during the investigation were described in general accordance with the Unified Soil Classification system, with features such as seepage, discolouration, staining, odours and other indications of contamination being noted (refer to Appendix I – Bore Logs).

A visual assessment was made of all samples for the potential presence of contamination and/or asbestos.

A small portion of soil was separated from each sample and placed in to zip lock bags for field vapour/headspace screening using a PID. PID readings of collected soil samples and visual and olfactory evidence of potential contamination were recorded on the borehole logs. Copies of the borehole logs including observations and PID readings are included in **Appendix D**.

Waste soil generated during drilling of the soil bores was used to backfill the soil bores following sampling. At completion of sampling, soil bores and trenches were backfilled and the surface re-instated.

Surface water sampling

A single surface water sample was collected from a selected location along the diversion channel which runs along the base of the northern fill slope. The sample was collected in

accordance with GHD's Standard Field Operating Procedures to ensure that the information was accurately recorded and quality control maintained throughout the investigation.

Sample handling, storage and transportation

Samples for chemical analysis were immediately placed into laboratory supplied, appropriate sampling containers. Samples for asbestos screening analysis were placed into zip lock bags. Collected samples were then stored in ice-chilled cool boxes prior to and during transit to the nominated analytical laboratories.

6.4 Laboratory analysis

Selected soil samples were submitted to a NATA certified testing laboratory (MGT Eurofins). A summary of the laboratory results is provided on the tables in **Appendix B** with laboratory analytical certificates in **Appendix E**.

A summary of the analytical schedule is presented in Table 7.

Table 7 Analytical schedule

Sample site	Contaminants of Potential Concern (COPC)	Primary samples analysed	Duplicate samples analysed	Total number of samples
South-western and eastern trenches	Heavy metals, TRH, BTEXN, PAH, OCP. OPP	18	4	22
Workshop area	Heavy metals, TRH, BTEXN, PAH, phenols, PCB, VOCs, SVOCs, asbestos	12	2	13
Northern fill area	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	3	-	3
Surface water	Heavy metals, TRH, BTEXN, PAH, OCP, OPP	1	-	1
QA/QC: Trip spikes (BTEX) - minimum of one spike per shipment of samples sent to laboratory				1
QA/QC: Rinsate (heavy metals) - minimum of one rinsate per day collected from drilling rods / sample tools				1

7. Quality assurance and quality control

7.1 Field program

Fieldwork was conducted in general accordance with GHD's Standard Field Operating Procedures which are aimed at ensuring that all environmental samples are collected by a set of uniform and systematic methods, as required by GHD's Quality Assurance system. Key requirements of these procedures are as follows:

- Appropriately trained and experienced staff who documented site activities using photographs and notes on standard field forms such as daily site records and sampling logs;
- Decontamination procedures - including the use of new disposable gloves for the collection of each sample, decontamination of the sampling equipment between each sampling location (using phosphate free detergent) and the use of dedicated laboratory provided sampling containers;
- Logging procedures - all samples are described using a recognised system;
- Calibration procedures - all field monitoring equipment is appropriately calibrated;
- Sample identification procedures - collected samples were immediately transferred to sample containers of appropriate composition and preservation for the required laboratory analysis. All sample containers were clearly labelled with a sample number, sample location, sample depth (for soil samples) and sample date. The sample containers were then transferred to an ice filled cooler for sample preservation during shipment to the testing laboratory; and
- Chain of custody information requirements - a chain-of-custody form was completed and forwarded to the testing laboratory.

7.2 Field quality control

Field quality control procedures used during the project comprised the collection and analysis of the following:

- **Intra-laboratory (blind) duplicates:** Comprise a single sample that is divided into two separate sampling containers. Both samples are sent to the project laboratory. Blind duplicates provide an indication of the analytical precision of the laboratory, but are inherently influenced by other factors such as sampling techniques and sample media heterogeneity. Blind duplicates were collected and analysed during the investigation at a frequency of 12%.
- **Inter-laboratory (split) duplicates:** Comprise a single sample that is divided into two separate sampling containers. One of these samples is sent to the primary analytical laboratory, whilst the remaining sample is submitted to an independent secondary laboratory for the identical suite of analysis. Split samples are prepared and analysed in order to check the accuracy of data generated by the primary laboratory. Split duplicates were collected and analysed during the investigation at a frequency of 6%
- **Rinsate:** A sample of analyte free water poured over decontaminated field sampling equipment prior to the collection of soil samples. The rinsate sample is used to assess the adequacy of the decontamination process. One rinsate sample was collected as part of this investigation.

7.3 Laboratory program

The project laboratories adopted their internal procedures and NATA accredited methods in accordance with their quality assurance system.

7.3.1 Laboratory quality control

Laboratory quality control procedures used during the project included:

- **Laboratory duplicate samples**: The analytical laboratory collects duplicate sub samples from one sample submitted for analytical testing at a rate equivalent to one in twenty samples per analytical batch, or one sample per batch if less than twenty samples are analysed in a batch. A laboratory duplicate provides data on the analytical precision and reproducibility of the test result.
- **Spiked Samples**: An authentic field sample is 'spiked' by adding an aliquot of known concentration of the target analyte(s) prior to sample extraction and analysis. A spike documents the effect of the sample matrix on the extraction and analytical techniques. Spiked samples are analysed for each batch where samples are analysed for organic chemicals of concern.
- **Certified Reference Standards**: A reference standard of known (certified) concentration is analysed along with a batch of samples. The Certified Reference Standard (CRS) or Laboratory Control Spike provides an indication of the analytical accuracy and the precision of the test method and is used for inorganic analyses.
- **Surrogate Standard / Spikes**: These are organic compounds which are similar to the analyte of interest in terms of chemical composition, extractability, and chromatographic conditions (retention time), but which are not normally found in environmental samples. These surrogate compounds are 'spiked' into blanks, standards and samples submitted for organic analyses by gas-chromatographic techniques prior to sample extraction. Surrogate Standard/Spikes provide a means of checking that no gross errors have occurred during any stage of the test method leading to significant analyte loss.
- **Method Blank**: Usually an organic or aqueous solution that is as free as possible of analytes of interest to which is added all the reagents, in the same volume, as used in the preparation and subsequent analysis of the samples. The reagent blank is carried through the complete sample preparation procedure and contains the same reagent concentrations in the final solution as in the sample solution used for analysis. The reagent blank is used to correct for possible contamination resulting from the preparation or processing of the sample.

The laboratory provided this information to GHD. The individual testing laboratory conducted an assessment of the laboratory QC program internally; however, the results were also independently reviewed and assessed by GHD.

7.4 QA/QC Results

7.4.1 Duplicate samples

The results of the comparison of the intra-lab duplicate analyses for soil samples are provided in Table 1 of Appendix E.

There was one duplicate pair for which the RPD exceeded the nominated RPD acceptance criterion of ± 30% for arsenic and zinc observed between the primary sample TPW2-3_0.5 and the inter laboratory duplicate QA02

This exceedance is likely to be associated with the heterogeneity of soil. The higher of the two values for the analyte was used as a conservative approach. Given that both of the concentrations slightly exceeded the assessment criteria (<250%) this variation is not considered to affect the outcomes of the investigation and the level of precision is considered to be suitable for the purposes of this investigation.

It was also noted that two duplicate pairs (BH02_0.5-0.6 and QC_01 as well as BH03_4.0-4.1 and QC02) returned RPD values which exceeded the nominated RPD for TRH Fractions C_{10}-C_{16} minus Napthalene, C_{10}-C_16 and C_{16}-C_{34},

In all cases these RPD exceedances are caused by one very low concentration, less than or slightly higher than the limit of reporting (LOR), and one slightly larger value. This results in a high RPD value. Given that there were no exceedances of the assessment criteria for TRH, this minor variation is not considered to affect the outcomes of the investigation and the level of precision is considered to be suitable for the purposes of this investigation.

7.4.2 Rinsate samples

One rinsate sample was taken off a trowel and analysed following the soil sampling event. There were no detections of any compound that were greater than the laboratory LOR. Given there were no detections of COPCs in the rinsate sample, cross contamination is unlikely to have had any effect on the results of this investigation.

7.4.3 Field QA/QC assessment

The evaluation of the QA/QC procedures relevant to the site investigation works has been conducted with reference to Appendix V of the *DEC (2006) Guidelines for the NSW Site Auditor Scheme (2nd edition)*. A summary of the evaluation made is presented in Table 8.

Table 8 Field QA/QC assessment

QA/QC Assessment	Comment
QA/QC program includes replicate samples	33 primary soil samples were analysed as part of the soil investigation with six duplicate samples analysed. This meets the program requirements. One primary surface water sample was collected, no duplicate surface water samples were collected.
All relevant media assessed	Soil and surface water samples were collected as proposed for the site investigation.
Appropriateness of sampling strategy	The sampling strategy devised for the investigation was as follows: • Site walkover and inspection of the site to identify sources of potential contamination; • Review of historical information to identify potential areas of concern; and • Targeted sampling of known / possible sources of contamination.
Sample collection, handling and transportation procedures	The works for the site investigation were conducted with reference to GHD's standard operating procedures and are therefore considered appropriate for the purpose of this assessment.
Sampling is representative of site conditions	Soil samples were collected directly from the hand auger and/or push tube and care was taken to sample from larger clods of soil that had not been on contact with the auger blades.

QA/QC Assessment	Comment
Field QA/QC plan	Samples were placed into ice filled coolers and submitted to a NATA accredited laboratory under chain of custody documentation. The sample receipt notifications and laboratory transcripts indicated that the samples were received cool. Samples were analysed within the appropriate holding times. Copies of the chain of custody forms, sample receipt notification identifying the samples collected, the requested analytes and the date of collection are included in Appendix F.

7.4.4 Laboratory QA/QC assessment

Table 8-2 provides an overview of the laboratory QA/QC quality controls.

Table 9 Laboratory QA/QC assessment

QA/QC Assessment	Comment
Appropriate methodologies used for sample analyses	All laboratory transcripts were NATA stamped and signed by a NATA signatory. The primary laboratory used in this investigation was: • Eurofins MGT (Sydney) Statistical data presented in the laboratory QA/QC reports were considered adequate in demonstrating the precision and accuracy of the methods used to analyse field samples.
Appropriate limit of reporting (LORs)	The laboratory LOR was lower than the adopted assessment criteria in all cases therefore the LOR's were considered appropriate. The exception to this was that several of the surface water criteria were less than the laboratory LOR. While there is a potential for minor exceedances of the surface water criteria, this is considered unlikely given there were no detections of any COPCs.
Laboratory QA/QC plan	Copies of signed chain of custody forms are presented in Appendix F of the report. All soil samples were received and analysed within the specified laboratory holding times. The analytical methods used are documented on the laboratory reports presented in Appendix F. Laboratory quality control samples included laboratory control samples, internal duplicates, matrix spike and matrix spike duplicates and method blanks. The types of QA/QC samples analysed by the laboratory were considered appropriate to assess the precision and accuracy of the laboratory methods used. There were two samples for which the matrix spike recovery was outside of the recommended acceptance criteria indicating a sample matrix interference. The statistical data presented in the laboratory QA/QC reports is generally considered adequate in demonstrating the precision and accuracy of the methods used to analyse field samples. Copies of the laboratory QA/QC reports are provided in Appendix F.

8. Results

8.1 Visual Observations

8.1.1 Former workshop area

Four push tube / solid stem drilled augered boreholes (BH01 – BH04) and three shallow hand augered holes (BH05 – BH07) were completed at the former workshop area.

Lithology encountered at all locations was fairly consistent, comprising the following:

- Coarse grained, dark grey, gravelly sand fill of variable thickness from surface to 5.0 mbgl, Gravel fragments generally consisted of angular basalt
- A layer of mottled creamy - orange clays and sandy clay with medium to high plasticity at variable depths from 0.5 to 4.0 mbgl
- Possible natural sandy clays from 4.9 to 6.0 mbgl

Additional observations of note during drilling included:

- Fragments of concrete were intersected at 1.0 mbgl in BH02, and at 0.5 in BH03, indicating the boreholes intersected the edges of the UST foundations
- Hydrocarbon staining and odour in gravelly to clayey sand fill material at BH02 from 0.4 – 0.6 mbgl, and BH03 from 4.0 – 4.1 mbgl, and 4.4 – 4.5 mbgl. Slightly elevated PID readings above background were recorded for these samples (see borehole logs, Appendix D)
- Groundwater was not encountered during drilling.

GHD note that visual and olfactory indicators of hydrocarbon contamination, in addition to raised PID levels, were observed at levels below the base of the UST, suggesting that hydrocarbons have leaked from the tank and subsequently migrated vertically downwards through the soil profile.

8.1.2 South-western fill area

Three trenches (TPW1 – TPW3) were excavated across selected areas of the south-western fill area. The trenches intersected brown gravelly sands with mottled red and tan clays. Anthropogenic fill materials were intersected at TPW2 and included rubber matting, metal rods and wire, plastic sheeting and piping, string and a rubber tyre, suggesting an area of rubbish dumping. Given the presence of anthropogenic materials, consideration should be given to the aesthetics of the final ground surface.

8.1.3 Eastern fill area

Three trenches (TPE1 – TPE3) were excavated at selected sites across the eastern fill area. The trenches intersected tightly compacted brown sandy gravel and sand fill, with anthropogenic materials including metal and plastic piping in all three trenches. Given the presence of anthropogenic materials, consideration should be given to the aesthetics of the final ground surface.

8.1.4 Northern fill area

The northern fill slope is very steep, and three shallow grab samples (GS01 – GS03) were taken at selected locations based on safety and accessibility. The slope material is comprised of loose gravels and rocks with fine grained clay and sand soil. Rock material appears to be consistent with mafic (basaltic) breccia derived from the quarry diatreme. Large, mature trees cover much

of the upper slope, with some land slip scars apparent at lower levels indicating the instability of the slope.

8.1.5 Surface water – diversion channel

A sample of surface water (SW01) was taken from a section of ponded water within the diversion channel. The water along the channel was not flowing at the time of sampling, having formed into several ponded sections along its length. The sampled water was clear and free of sheen and odour. Allowance was made in the proposal for a second water sample to be taken following a rain event. No such event occurred during the sample program, and as a result the second sample was not taken.

8.2 Soil analytical Results

A total of 33 primary soil samples were analysed for various contaminant suites depending on the sampling location. The results of laboratory analysis are presented in Table 2 of Appendix E, and exceedances are summarised in Table 10 below.

Table 10 Soil analytical criteria exceedance summary

Sampling area	Sampling methodology	Sample IDs	Results/ Exceedances
Petrol UST	Push tube or solid stem auger drilling	BH01 – BH04	• 4 out of the 9 samples analysed exceeded the NEPM 2013 EIL- Urban Residential - Public Open Space guideline for nickel at 0 – 2 mbgl (30 mg/kg) with concentrations ranging between 62 – 120 mg/kg • 1 out of the 9 samples analysed exceeded the NEPM 2013 EIL- Urban Residential - Public Open Space guideline for zinc at 0 – 2 mbgl (70 mg/kg) with a concentration of 78 mg/kg
Former workshop area – general	Surface samples using a hand auger	BH05 – BH07	• All nickel concentrations exceeded the NEPM 2013 EIL-Urban Residential - Public Open Space guideline (30 mg/kg) with concentrations ranging between 110 – 130 mg/kg • All zinc concentrations exceeded the NEPM 2013 EIL- Urban Residential - Public Open Space guideline (70 mg/kg) with concentrations ranging between 87 – 130 mg/kg
Eastern fill	Trenches	TPE1 - TPE3	• 1 out of the 9 samples analysed exceeded the NEPM 2013 EIL- Urban Residential - Public Open Space guideline for nickel at 0 – 2 mbgl (30 mg/kg) with a concentration of 50 mg/kg
Southwest fill	Trenches	TPW1 - TPW3	• All nickel concentrations exceeded the NEPM 2013 EIL- Urban Residential - Public Open Space guideline for nickel at 0 – 2 mbgl (30 mg/kg) with concentrations ranging between 56 – 150 mg/kg

Sampling area	Sampling methodology	Sample IDs	Results/ Exceedances
			• 4 out of the 9 samples analysed exceeded the NEPM 2013 EIL- Urban Residential - Public Open Space guideline for zinc at 0 – 2 mbgl (70 mg/kg) with concentrations ranging between 72 - 110 mg/kg
Northern fill	Grab samples at surface using a trowel	GS01 – GS03	• All nickel concentrations exceeded the NEPM 2013 EIL-Urban Residential - Public Open Space guideline (30 mg/kg) with concentrations ranging between 100 – 180 mg/kg • All zinc concentrations exceeded the NEPM 2013 EIL- Urban Residential - Public Open Space guideline (70 mg/kg) with concentrations ranging between 88 – 170 mg/kg

Measured concentrations of heavy metals, phenols, PCB, VOCs and SVOCs were found to be less than the limit of reporting in all samples analysed.

Measured concentrations of PAH, TRH and BTEX were detected in several samples collected from the workshop area and the Eastern Fill area, however these concentrations were within one order of magnitude of the laboratory limit of reporting and in all cases were less than the adopted guidelines for the investigation.

Heptachlor, an organochlorine pesticide compound was detected at a low concentration in one sample from the eastern fill area however this result was an order of magnitude lower than the adopted NEPM HIL C guideline value.

No measurement of soil pH, cation exchange capacity (CEC) or clay content were made for the site, and, as a result, site specific EIL levels for nickel and zinc have not been calculated. The lowest and therefore most conservative screening levels have been applied for the purposes of this assessment. It is noted that for a near neutral pH soil with a low CEC, the observed concentrations of nickel and zinc would likely be below a site specific EIL.

Concentrations of heavy metals, arsenic, chromium, copper, lead, nickel and zinc were detected in almost all of the samples analysed during this investigation. Nineteen of the 33 samples analysed exceeded the NEPM EIL for nickel whilst 12 samples exceeded the NEPM EIL for zinc. The maximum nickel concentration was 180 mg/kg, exceeding the guideline value of 30 mg/kg at location GS02, a surface grab sample from the northern fill area. The maximum zinc concentration was 170 mg/kg exceeding the guideline value of 70 mg/kg at location GS03, also a surface grab sample from the northern fill area.

The nickel and zinc concentrations elevated above the screening level in these samples are potentially related to the natural mafic rock characteristics of the fill material. Background ranges of zinc in soil, taken from the *Field Geologist's Manual*, compiled by D.A. Berkman, Third Revised Edition (1995), indicate the average abundance of zinc in basalt is 150 parts per million (ppm), and zinc in soil is 300 ppm. The average abundance of nickel in basalt is 150 ppm and in soil it is up to 500 ppm. The zinc and nickel analysed in the gravelly soils on site are therefore likely attributable to background levels, rather than being indicative of contamination.

No asbestos containing materials were observed on the ground surface during the field program. Four soil samples from the drilling program at the former workshop area were

analysed for the presence / absence of asbestos. The samples were all taken from the top 0.1 metre of fill material, in order to test for the presence of asbestos fibres which may have remained on site following the removal of the asbestos cement sheeting associated with the historical buildings in the former workshop area. All four samples returned negative results for the presence of asbestos. We note, however, that given the age of the buildings/previous buildings present on site, that some latent ACM fragments ma.

8.3 Surface water results

Analytical results returned from the surface water sample were below the laboratory limit of reporting (LOR) for all analytes, and the LOR for all metals were below the selected screening criteria guidelines (See Table 3, Appendix E).

GHD note that for some OCP and OPP analytes, the LOR value was higher than the selected guideline criterion. These analytes are not expected to be of concern given that soil samples in the northern fill area directly above the diversion channel returned results below LOR, and well below the selected criteria guidelines.

9. Revised conceptual site model

Based on the current information, the following revised CSM has been developed for the site as show in Table 11.

Table 11 Revised CSM

Potential Source	Potential pathway	Potential Receptors	SPR linkage
Uncharacterised fill material	**Human exposure** Direct contact with contaminated soils Ingestion and inhalation of soils and dust **Environmental exposure** Vertical migration through the unsaturated zone into groundwater and subsequent infiltration into river system	**Human** Current and future occupants, construction and maintenance workers (both on- and off-site); Recreational users of the site; Surrounding residential receptors **Environmental** Groundwater and ecological systems such as the tributaries to Waitara and/or Berowra Creek and natural vegetation	Incomplete – Analytical results were returned below the selected human health and ecological guideline criteria, or can be explained by the natural rock properties of the gravel fill
Spill and leaks of fuels and oils from USTs, ASTs, and historical workshop equipment and maintenance activities	**Human exposure** Direct contact with contaminated soils Ingestion and inhalation of soils, vapours and dust **Environmental exposure** Vertical migration through the unsaturated zone into groundwater and subsequent infiltration into river system	**Human** Current and future occupants, construction and maintenance workers (both on- and off-site); Recreational users of the site; Surrounding residential receptors **Environmental** Groundwater and ecological systems such as the tributaries to Waitara and/or Berowra Creek and natural vegetation	Unlikely - Analytical results were reported below the selected human health and ecological guideline criteria, or can be explained by the natural rock properties of the gravel fill. Groundwater is deep at the site and is unlikely to be impacted by vertical migration of contaminants through the unsaturated zone.

Potential Source	Potential pathway	Potential Receptors	SPR linkage
Herbicides / pesticides	**Human exposure** Direct contact with contaminated soils and groundwater Ingestion of soils and dust **Environmental exposure** Vertical migration through the unsaturated zone into groundwater and subsequent infiltration into river system	**Human** Current and future occupants, construction and maintenance workers (both on- and off-site); Recreational users of the site; Surrounding residential receptors **Environmental** Groundwater and ecological systems such as the tributaries to Waitara and/or Berowra Creek and natural vegetation	Incomplete - Analytical results were returned below the selected human health and ecological guideline criteria
Hazardous building materials (including lead paint and asbestos)	**Human exposure** Direct contact with contaminated soils (lead and asbestos). Ingestion of soils and dust. Inhalation of asbestos fibres **Environmental exposure** Vertical migration through the unsaturated zone into groundwater and subsequent infiltration into river system (for lead)	**Human** Current and future occupants, construction and maintenance workers (both on- and off-site); Recreational users of the site; Surrounding residential receptors **Environmental** Groundwater and ecological systems such as the tributaries to Waitara and/or Berowra Creek and natural vegetation	Unlikely – No asbestos was identified in samples taken from the former workshop area where asbestos cement sheeting has previously been removed from site. Lead levels in all samples were below selected human health and ecological guideline criteria

9.1 Assessment of exposure risks for on-site receptors

Based on human health criteria discussed in Section 5.2.1 and Section 5.3.1, there were no exceedances of the adopted human health criteria for soil or surface water.

There were several exceedances of the selected ecological criteria for nickel and zinc, however, it is likely that these may be attributed to the natural rock properties of the fill material and are therefore considered to be unlikely to be related to contamination.

Based on the current and historical site usage, the CSM linkage potential (see Section 3 and Table 4), and the analytical results from the soil and surface water sampling program, the risk of exposure to on-site receptors is considered to be low.

9.2 Assessment of exposure risks to off-site receptors

Based on the current and historical site usage, the CSM linkage potential (see Section 3 and Table 4) and the analytical results from the soil and surface water sampling program, the risk of exposure to off-site receptors is considered to be very low.

9.3 Remaining data gaps

The extent of hydrocarbon contamination associated with the UST is currently unknown and requires further investigation, or removal of the potentially contaminated soils during removal of the UST.

10. Conclusions and recommendations

10.1 Conclusions

In accordance with the objectives detailed in Section 1.2, and based on the information contained within this assessment, the following conclusions are made (subject to the limitations outlines in Section 11):

- The site has a history of quarrying since 1930, with quarrying operations ceasing in the early 2000s.
- During quarrying operations, quarry spoil was deposited in three locations around the larger quarry site: the northern fill area; the eastern fill area; and the south-western fill area.
- Following cessation of the quarry operations, the quarry was partially infilled with spoil from the NorthConnex development.
- The site walkover and desktop study identified several key areas requiring further investigation:
  - The former workshop area including two ASTs, one UST, one petrol bowser, and historical activities associated with machinery and equipment maintenance
  - The northern, eastern and south-western fill areas.
- On the northern and south-western fill areas, the fill is currently covered in mature trees and grasses, however the northern fill slope is considered to be unstable and will require removal of vegetation and re-shaping. Council has indicated that the eastern fill area will be reshaped to accommodate future playing fields.
- Council intend to remove spoil from the northern and south-western fill area and infill the western base of the quarry, following which Council then intend to create a lake at the eastern end of the quarry and preserve the geologically significant eastern quarry wall.
- Visual and olfactory indicators of hydrocarbon contamination were noted in two boreholes adjacent to the southern and eastern sides of the UST. These samples returned reported below the selected site assessment criteria.
- No asbestos was identified in the samples analysed.
- All samples returned results below selected human health and ecological site assessment criteria, with the exception of nickel and zinc at a number of locations. These exceedances are attributed to the natural rock and soil properties of the fill material, and are not considered indicative of contamination.
- Based on the findings of this investigation, GHD consider the risk of exposure to COPC for on-site and off-site receptors to be low, however, we acknowledge the potential for contamination to exist associated with the UST.

10.2 Recommendations

Based on the completed scope of work, and in consideration of the proposed future recreational land use for the site, GHD recommend the following:

- Removal of the UST in accordance with the Department of Environment, Climate Change and Water NSW, *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008,* which states that “where two years have elapsed since fuel was put into or taken from a tank, it must be abandoned (after removing the fuel) in accordance with the Occupational Health and Safety

(Dangerous Goods) Regulation 2001". This would include site validation following removal and preparation of a validation report prepared by a suitable qualified person, such as a contaminated land consultant, in addition to completion of any soil or groundwater remediation following decommissioning of the UST, if remediation is required.

- A construction environment and management plan (CEMP) developed for the redevelopment works, should include:
  - An unexpected finds protocol should be developed to manage potential unexpected finds, including ACM, at the workshop area and the fill areas.
  - The management of surface aesthetics (with regard to anthropogenic materials in soils) during removal and reshaping of spoil in the fill areas.
- A remedial action plan (RAP) should be developed for the removal of the UST and associated impacted soils (if required).

11. Limitations

This report: has been prepared by GHD for Hornsby Shire Council and may only be used and relied on by Hornsby Shire Council for the purpose agreed between GHD and the Hornsby Shire Council as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Hornsby Shire Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer sections 1.3, 3 and 9 of this report). GHD disclaim liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Hornsby Shire Council and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

Appendices

Appendix A - Figures

Paper Size A4

0 75 150 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Legend

- Site boundary
- Parks and reserves
- Watercourses
- Railway

DRAFT

Hornsby Shire Council
Hornsby Quarry Rehabilitation

Job Number 21-26457
Revision A
Date 19 Sep 2019

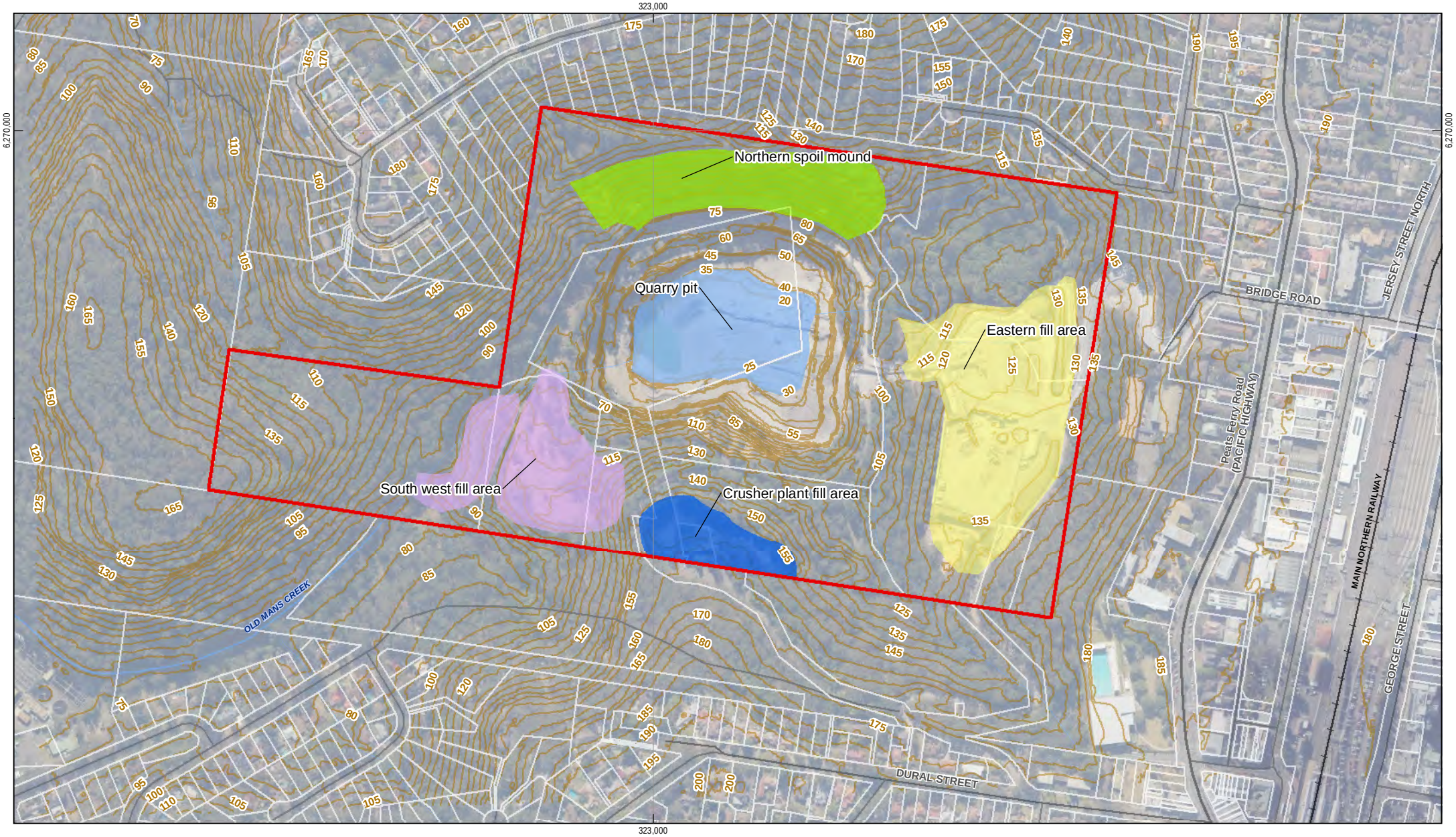
Site Layout

Figure 1

G:\21\26457\GIS\Maps\Deliverables\21_26457_Z012_SiteLocation.mxd

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

Data source: NSW LPI (DTDB), Topographic base data, 2012; NSW LPI (DCDB), Topographic base data, 2015. Created by:eibbertson



Paper Size A4

0 25 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Site boundary
- Eastern fill area
- Northern spoil mound
- South western fill area
- Crusher plant fill area
- Lots
- Watercourses
- Contours

Hornsby Shire Council
Hornsby Quarry Rehabilitation

Job Number 21-26457
Revision A
Date 20 Sep 2019

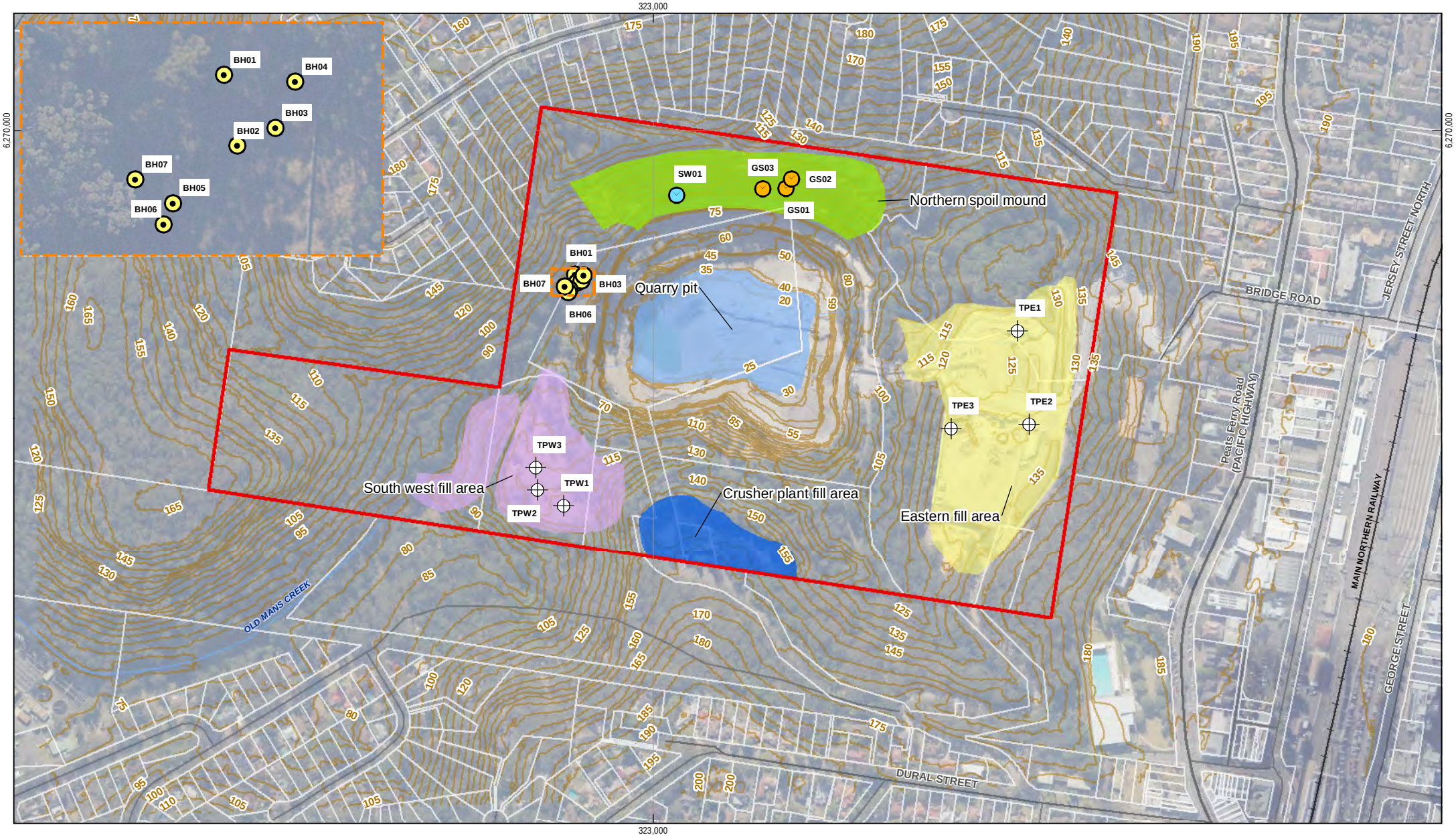
Historical fill areas

Figure 2

G:\21\26457\GIS\Maps\Deliverables\21_26457_Z013_SiteLayout.mxd

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

Data source: Sixmaps imagery, NSW LPI (DTDB), Topographic base data, 2012; NSW LPI (DCDB), Topographic base data, 2015. Created by:eibbertson



Paper Size A4

0 25 50 100 150 200

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

LEGEND

- Sample location
- Borehole
- Grab sample
- Surface water grab sample
- Eastern fill area
- Northern spoil mound
- South western fill area
- Crusher plant fill area
- Site boundary
- Lots
- Watercourses
- Contours

Hornsby Shire Council
Hornsby Quarry Rehabilitation

Job Number 21-26457
Revision A
Date 20 Sep 2019

Sample locations

Figure 3

G:\21\26457\GIS\Maps\Deliverables\21_26457_Z014_SampleLocations.mxd

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

Data source: Sixmaps imagery, NSW LPI (DTDB), Topographic base data, 2012; NSW LPI (DCDB), Topographic base data, 2015. Created by:eibbertson

Appendix B – Lot Search Report and SafeWork NSW Site Search for Storage of Hazardous Chemicals

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 06 Aug 2019 15:01:37

Reference: LS007759 EP

Address: Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

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Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

LC Code	Location Confidence
Premise match	Georeferenced to the site location / premise or part of site
General area or suburb match	Georeferenced with the confidence of the general/approximate area
Road match	Georeferenced to the road or rail
Road intersection	Georeferenced to the road intersection
Feature is a buffered point	Feature is a buffered point
Land adjacent to geocoded site	Land adjacent to Georeferenced Site
Network of features	Georeferenced to a network of features

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	05/08/2019	05/08/2019	Daily	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	17/07/2019	09/07/2019	Monthly	1000	0	0	3
Contaminated Land Records of Notice	Environment Protection Authority	10/07/2019	10/07/2019	Monthly	1000	0	0	1
Former Gasworks	Environment Protection Authority	02/08/2019	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	07/05/2019	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	02/08/2019	02/08/2019	Monthly	2000	0	0	1
Defence PFAS Investigation & Management Program	Department of Defence	02/08/2019	02/08/2019	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	02/08/2019	02/08/2019	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	02/08/2019	02/08/2019	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/12/2018	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	26/07/2019	26/07/2019	Monthly	1000	1	1	3
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	26/07/2019	26/07/2019	Monthly	1000	0	0	2
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	26/07/2019	26/07/2019	Monthly	1000	4	5	6
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	1	1	1
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	3
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	1	3	3
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	5	5
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	6	6
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	5	5
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	4	4
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	3	3
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	1
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	1
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	1
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	242
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	13
Points of Interest	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	Quarterly	1000	0	1	59
Tanks (Areas)	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	1
Tanks (Points)	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	Quarterly	1000	0	0	1
Major Easements	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	1	1	44
State Forest	NSW Department of Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	16/01/2019	14/11/2018	Annually	1000	1	1	2
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	6
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	2	-	3
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	3	-	9
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	2	2	2
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning and Environment	22/07/2019	28/06/2019	Weekly	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	2	2	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	0
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning and Environment	22/07/2019	07/12/2018	Weekly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning and Environment	22/07/2019	05/07/2019	Weekly	1000	1	5	57
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	31/07/2018	Unknown	1000	0	0	0
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	28/09/2018	Unknown	1000	0	0	0
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	15/07/2019	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning and Environment	22/07/2019	28/06/2019	Weekly	1000	1	9	95
Bush Fire Prone Land	NSW Rural Fire Service	28/05/2019	05/04/2019	Quarterly	1000	3	3	3

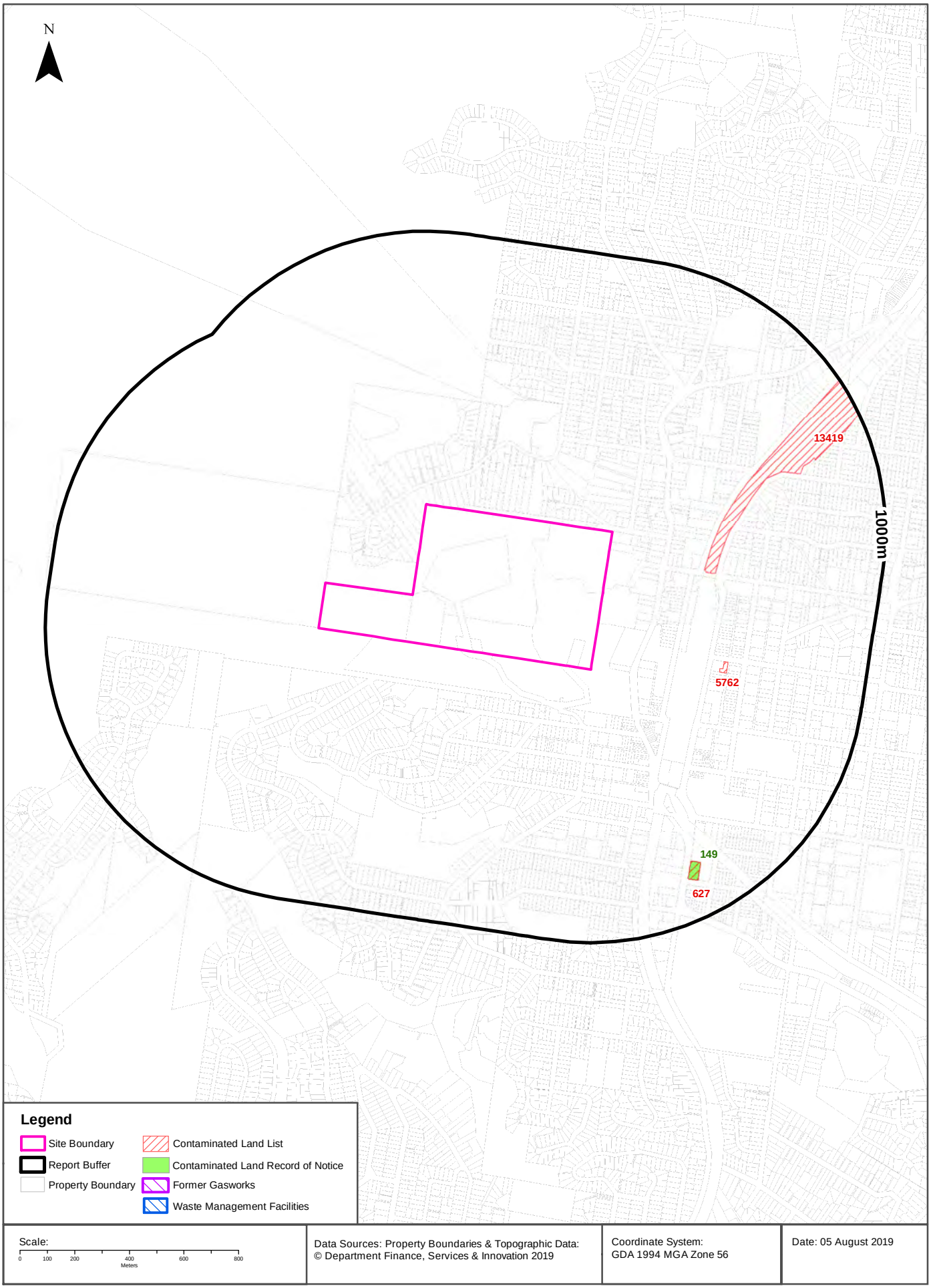
Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Remnant Vegetation of the Cumberland Plain	NSW Office of Environment & Heritage	07/10/2014	04/08/2011	Unknown	1000	7	8	10
Ramsar Wetlands of Australia	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	2	2	3
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	2	3	6
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	02/08/2019	02/08/2019	Weekly	10000	-	-	-

Aerial Imagery 2018

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Contaminated Land & Waste Management Facilities

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Contaminated Land & Waste Management Facilities

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
13419	Hornsby Train Maintenance Centre	1B Stephen Street	Hornsby	Other Industry	Regulation under CLM Act not required	Current EPA List	Premise Match	354m	North East
5762	Midas Car Care Centre Hornsby	2A Linda Street	Hornsby	Unclassified	Regulation under CLM Act not required	Current EPA List	Premise Match	465m	East
627	Coles Express Hornsby	194- 206 Pacific Highway	Hornsby	Service Station	Contamination currently regulated under CLM Act	Current EPA List	Premise Match	791m	South East

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

Contaminated Land & Waste Management Facilities

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
149	Coles Express Hornsby	194-206 Pacific Highway	Hornsby	4 current and 5 former	3305	Premise Match	791m	South East

Contaminated Land Records of Notice Data Source: Environment Protection Authority

Former Gasworks

Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority

National Waste Management Site Database

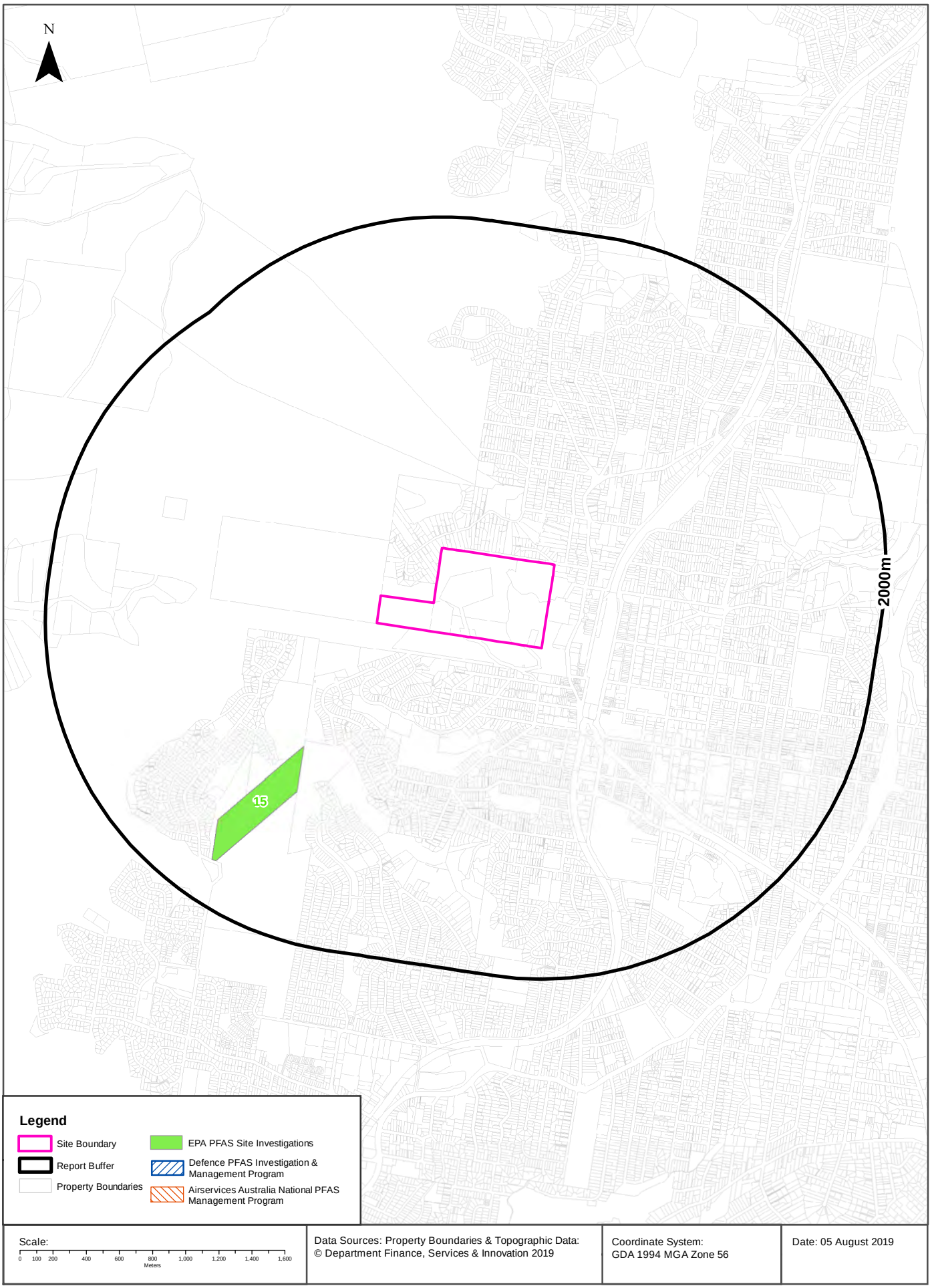
Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist (m)	Direction
N/A	No records in buffer											

Waste Management Facilities Data Source: Geoscience Australia

PFAS Investigation Program

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



PFAS Investigation Sites

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Id	Site	Address	Loc Conf	Dist	Dir
15	Westleigh NSW Rural Fire Service	12 Warrigal Drive, Westleigh	Premise Match	866m	South West

EPA PFAS Investigation Program: Environment Protection Authority

Defence PFAS Investigation & Management Program

Sites being investigated or managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation & Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Defence 3 Year Regional Contamination Investigation Program

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

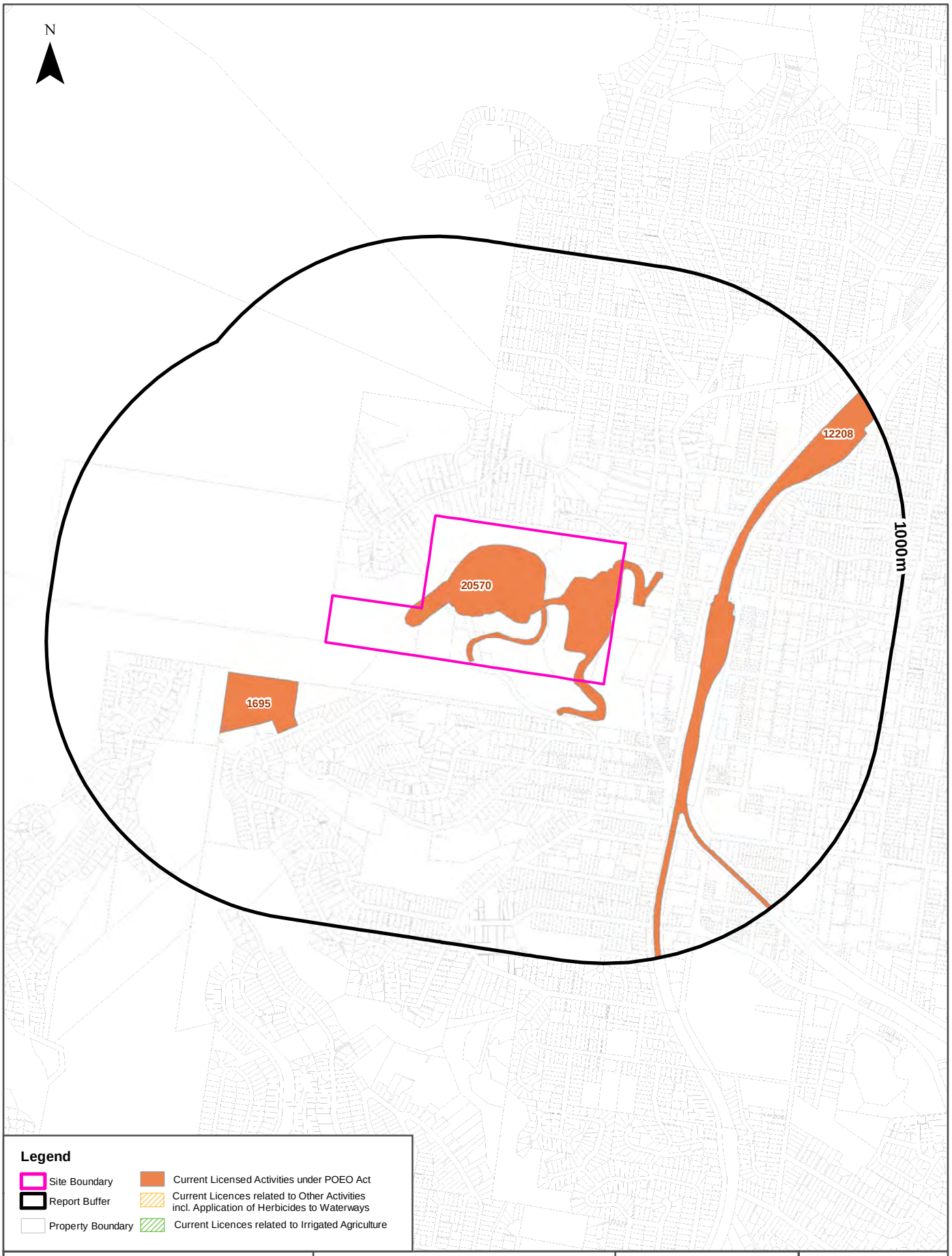
Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority

Current EPA Licensed Activities

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



EPA Activities

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Licensed Activities under the POEO Act 1997

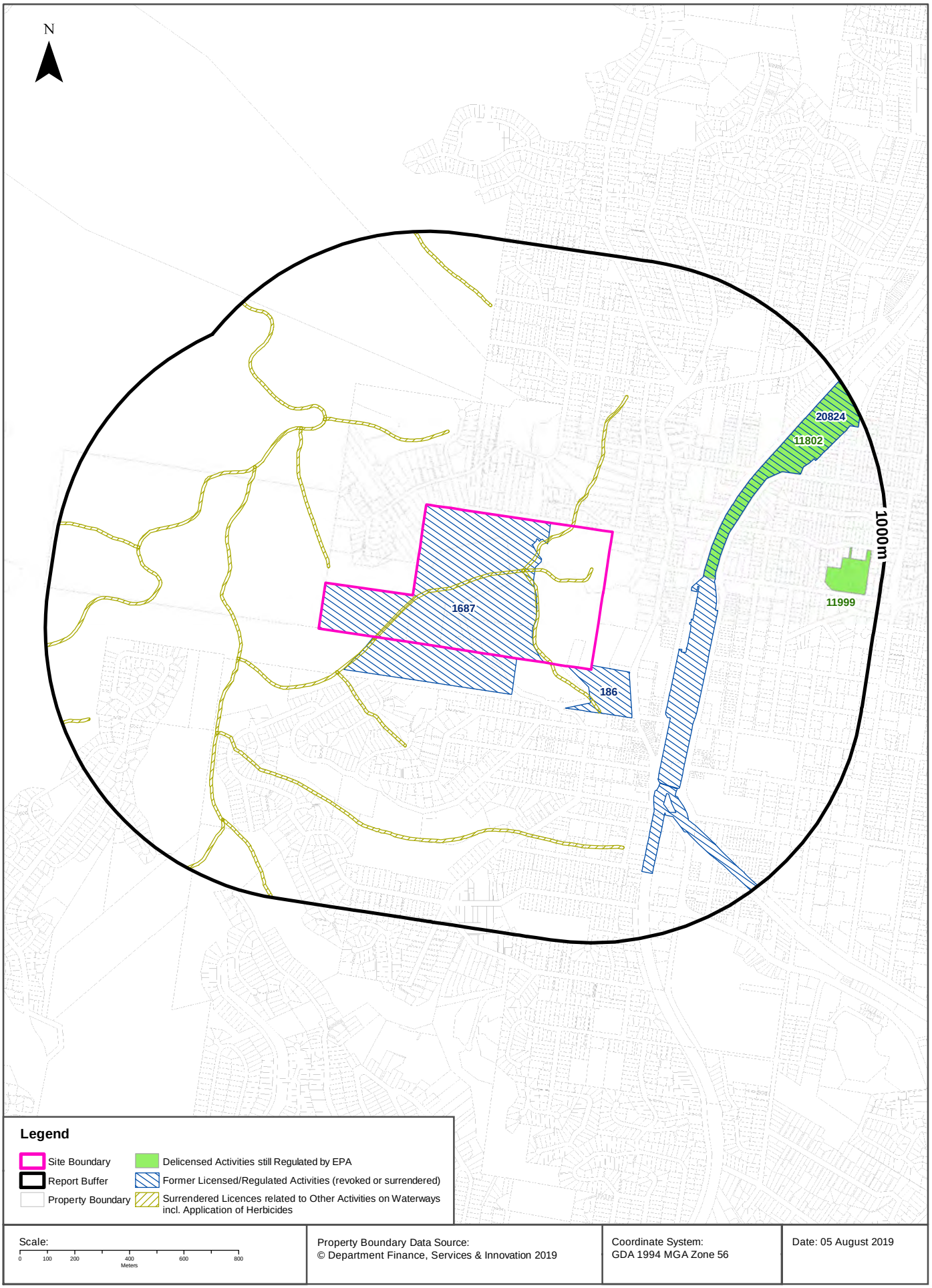
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
20570	LENDLEASE ENGINEERING PTY LIMITED	NorthConnex Project	BETWEEN WINDSOR ROAD, BAULKHAM HILLS and M2 MOTORWAY, PENNANT HILLS AND M1 MOTORWAY., WAHROONGA, NSW 2076	WAHROONGA	Crushing, grinding or separating; Road construction	Premise Match	0m	Onsite
1695	SYDNEY WATER CORPORATION	WEST HORNSBY SEWAGE TREATMENT SYSTEM including the STP	OFF VALLEY ROAD	HORNSBY	Sewage treatment processing by small plants	Premise Match	175m	West
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Network of Features	331m	East

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



EPA Activities

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
11802	RAIL CORPORATION NEW SOUTH WALES	HORNSBY MAINTENANCE CENTRE	1B STEPHEN STREET	HORNSBY	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	352m	North East
11999	AUSGRID	Energy Australia	51-59 Bridge Road	HORNSBY	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	795m	East

Delicensed Activities Data Source: Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

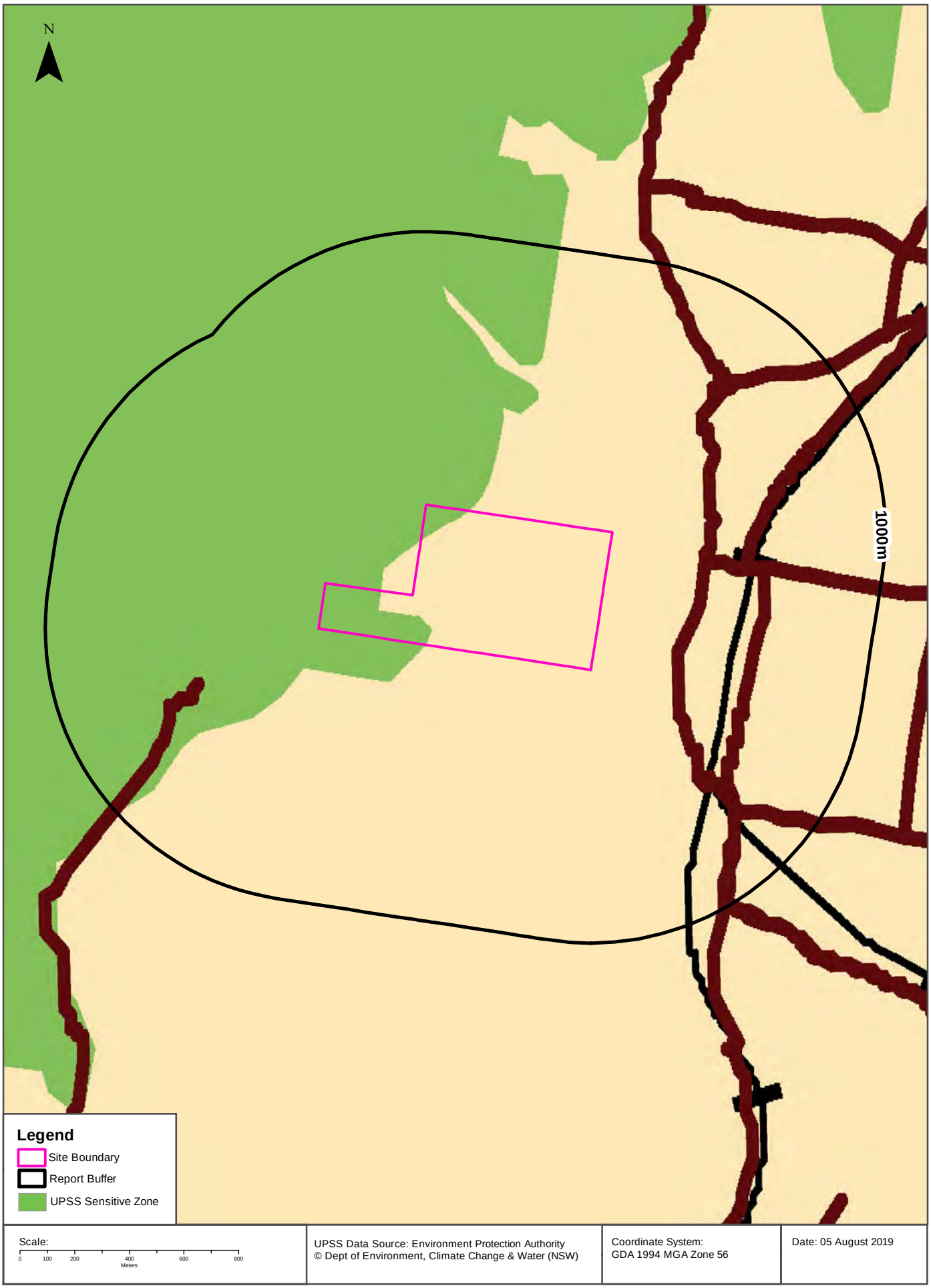
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
1687	CSR LIMITED	QUARRY ROAD, HORNSBY, NSW 2077	Surrendered	04/09/2000	Land-based extractive activity	Premise Match	0m	Onsite
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
186	HORNSBY SHIRE COUNCIL	203 PACIFIC HIGHWAY, HORNSBY, NSW 2077	Surrendered	27/09/1999	Miscellaneous licensed discharge to waters (at any time)	Premise Match	0m	South East
20824	Laing O'Rourke Australia Construction Pty Ltd	, RAIL CORRIDOR BETWEEN PRETORIA PDE, WAITARA AND COLAH RD, ASQUITH, HORNSBY, NSW 2077,	Surrendered	13/09/2016	Railway systems activities	Network of Features	300m	East

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1991 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1991 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1991 Business to Business Directory Records Road or Area Matches

Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

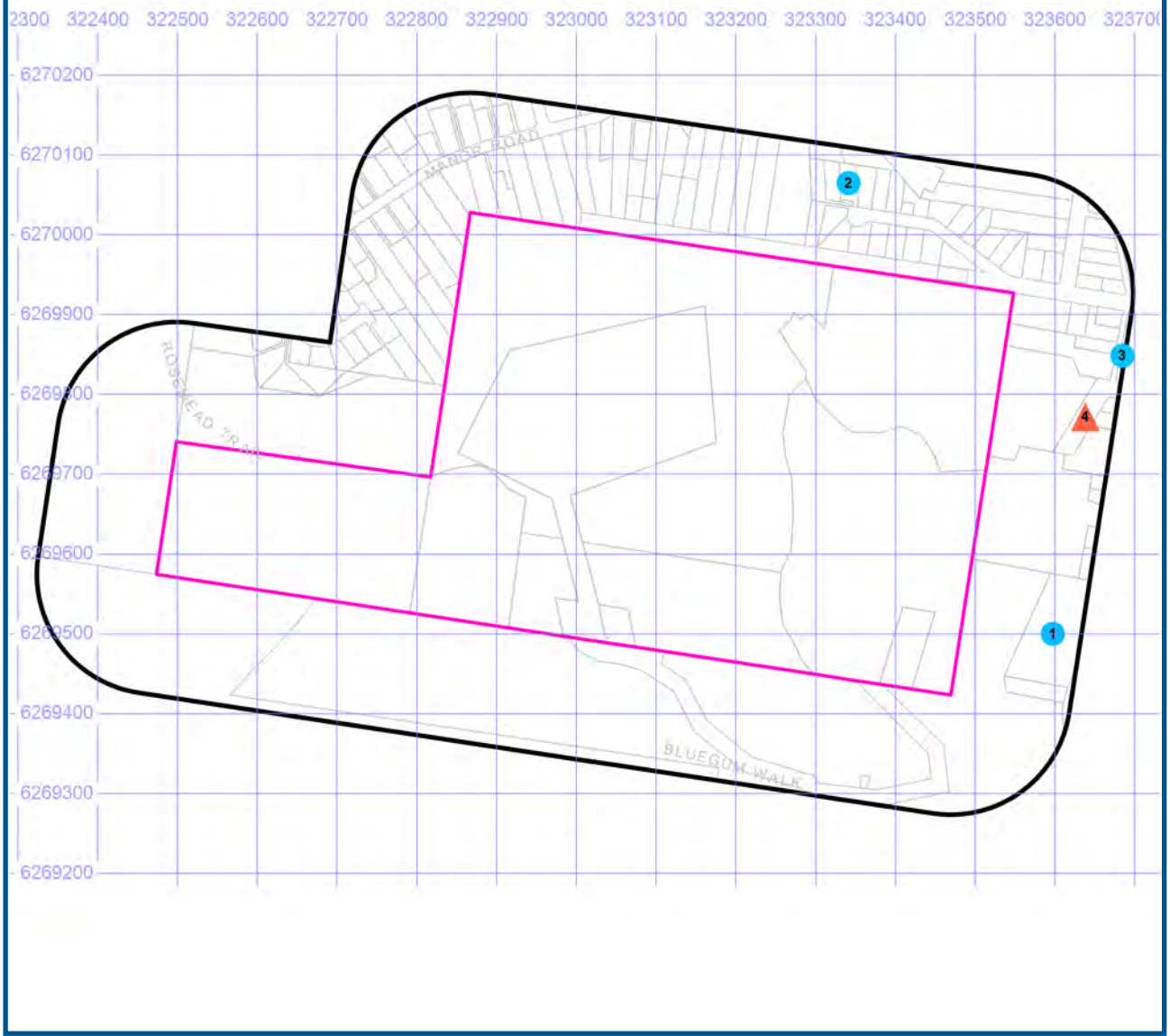
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1986 Business to Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

N

Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1986 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1986 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	SCHOOLS, COLLEGES -TECHNICAL.	Hornsby Technical College, 207 Pacific H'way., Hornsby. 2077.	84770	Premise Match	62m	South East
2	FLOOR LAYERS.	Cork Flooring Experts, 28 Fern Tree Cl., Hornsby. 2077	33496	Premise Match	77m	North East
3	MEDICAL PRACTITIONERS.	Segra, K. V., 225 Pacific H'way., Hornsby. 2077	57463	Premise Match	144m	East

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1986 Business to Business Directory Records Road or Area Matches

Records from the 1986 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
4	PUBLISHERS.	Australasian Publishing Co., Bridge Rd., Hornsby. 2077.	78175	Road Match	79m
	PUBLISHERS REPRESENTATIVES.	Bookstocks Pty. Ltd., Bridge Rd., Hornsby. 2077.	78365	Road Match	79m
	PUBLISHERS.	Bookstocks Pty. Ltd., Bridge Rd., Hornsby. 2077.	78188	Road Match	79m

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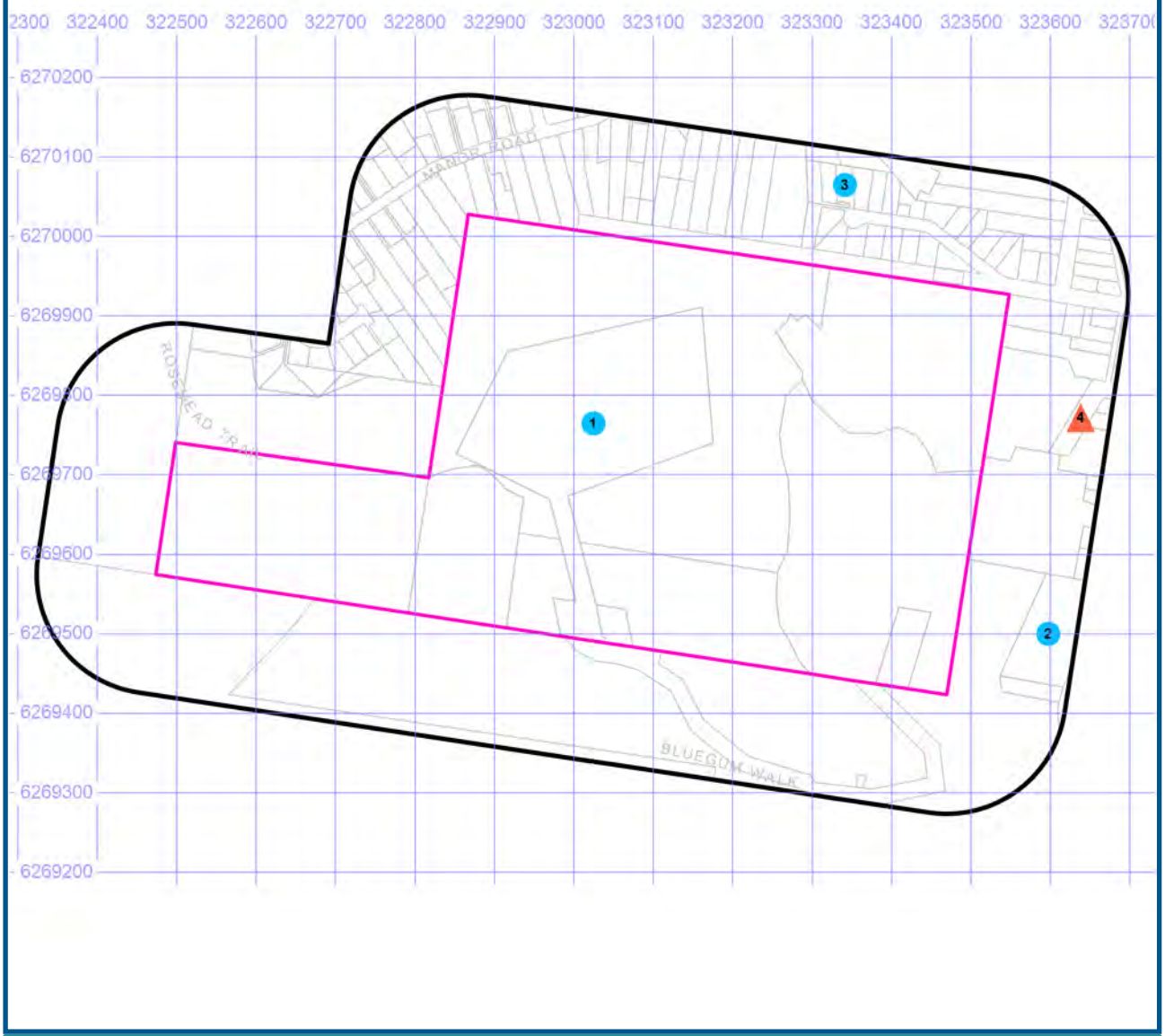
Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1982 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

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Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
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Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1982 Business Directory Records
Premise or Road Intersection Matches

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	QUARRY PROPRIETORS. (Q0100)	Hornsby Blue Metal Quarry, The Valley, Hornsby. 2077.	68136	Premise Match	0m	On-site
2	SCHOOLS, COLLEGES-TECHNICAL, (S1425)	Hornsby Technical College, 207 Pacific H'way., Hornsby. 2077.	73365	Premise Match	62m	South East
3	FLOOR LAYERS. (F3625)	Cork Flooring Experts, 28 Fern Tree Cl., Hornsby. 2077.	31245	Premise Match	77m	North East

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1982 Business Directory Records
Road or Area Matches

Records from the 1982 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
4	PUBLISHERS. (P9240)	Australasian Publishing Co., Bridge Rd., Hornsby. 2077.	67758	Road Match	79m
	PUBLISHERS REPRESENTATIVES. (P9280)	Bookstocks Pty. Ltd., Bridge Rd., Hornsby. 2077.	67942	Road Match	79m
	PUBLISHERS. (P9240)	Bookstocks Pty. Ltd., Bridge Rd., Hornsby. 2077.	67778	Road Match	79m
	ADVERTISING- NOVELTIES - MFRS.&/OR DISTS. (A1680)	Clark Lane & Associates Pty. Ltd., Bridge Rd., Hornsby. 2077.	1542	Road Match	79m
	COASTER MFRS. &/OR DISTS.(C5875)	Clark Lane & Associates Pty. Ltd., Bridge Rd., Hornsby. 2077.	17370	Road Match	79m

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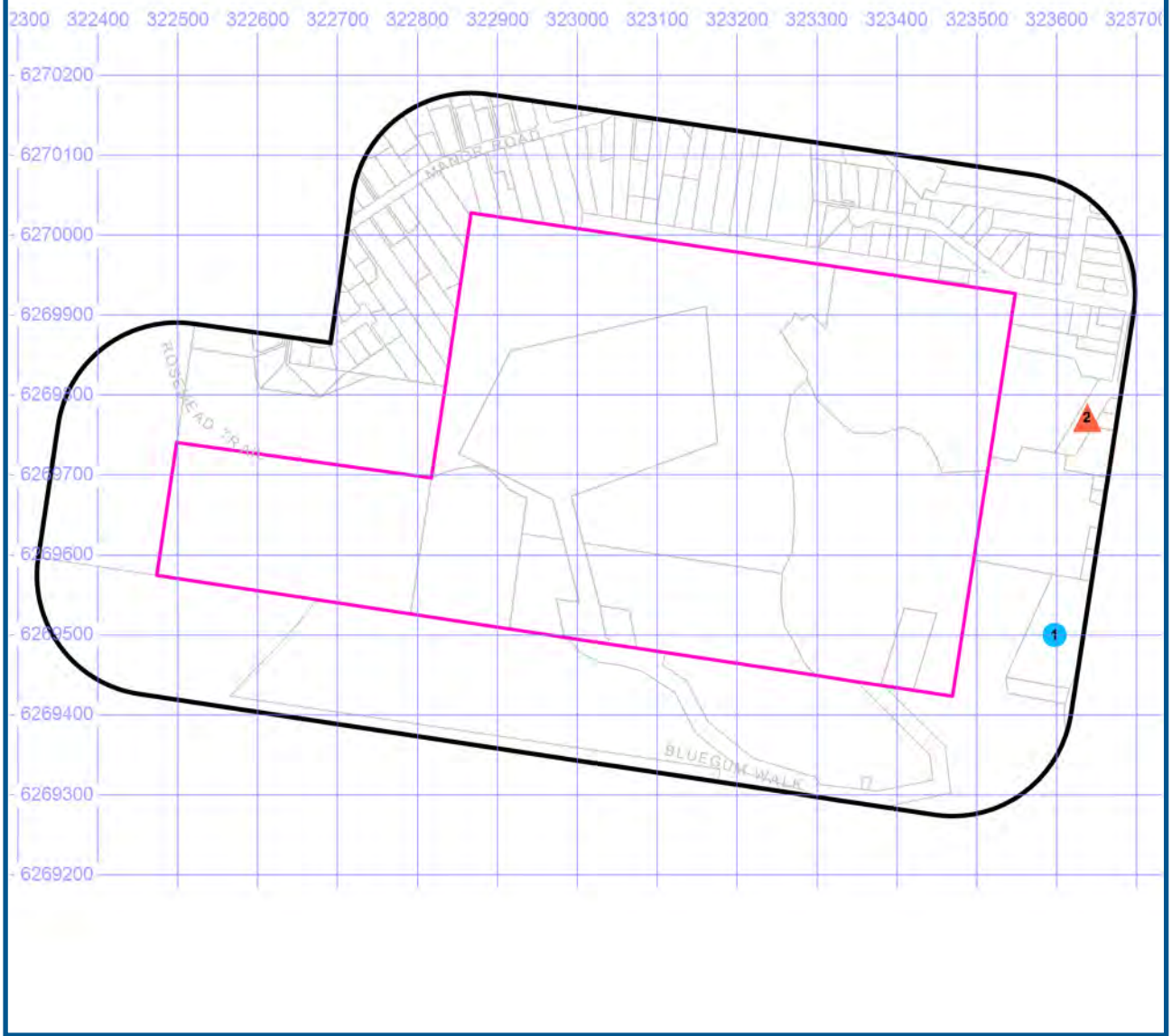
Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1978 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

N

Projected Coordinate System:
GDA94 MGA Zone 56

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Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1978 Business Directory Records
Premise or Road Intersection Matches

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	SCHOOLS, COLLEGES-TECHNICAL.	Hornsby Technical College, 207 Pacific Highway, Hornsby. 2077	64911	Premise Match	62m	South East

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1978 Business Directory Records
Road or Area Matches

Records from the 1978 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	PUBLISHERS.	Allen & Unwin Ltd., Bridge Rd., Hornsby. 2077	60506	Road Match	79m
	PUBLISHERS.	Australasian Publishing Co., Bridge Rd., Hornsby. 2077	60512	Road Match	79m
	PUBLISHERS.	Australasian Publishing Co., Pty. Ltd., Bridge Rd., Hornsby. 2077	60511	Road Match	79m
	PUBLISHERS REPRESENTATIVES.	Bookstocks Pty. Ltd., Bridge Rd., Hornsby. 2077	60705	Road Match	79m
	PUBLISHERS.	Bookstocks Pty. Ltd., Bridge Rd., Hornsby. 2077	60532	Road Match	79m
	PUBLISHERS.	Bookstocks Pty. Ltd., Bridge Rd., Hornsby. 2077	60533	Road Match	79m

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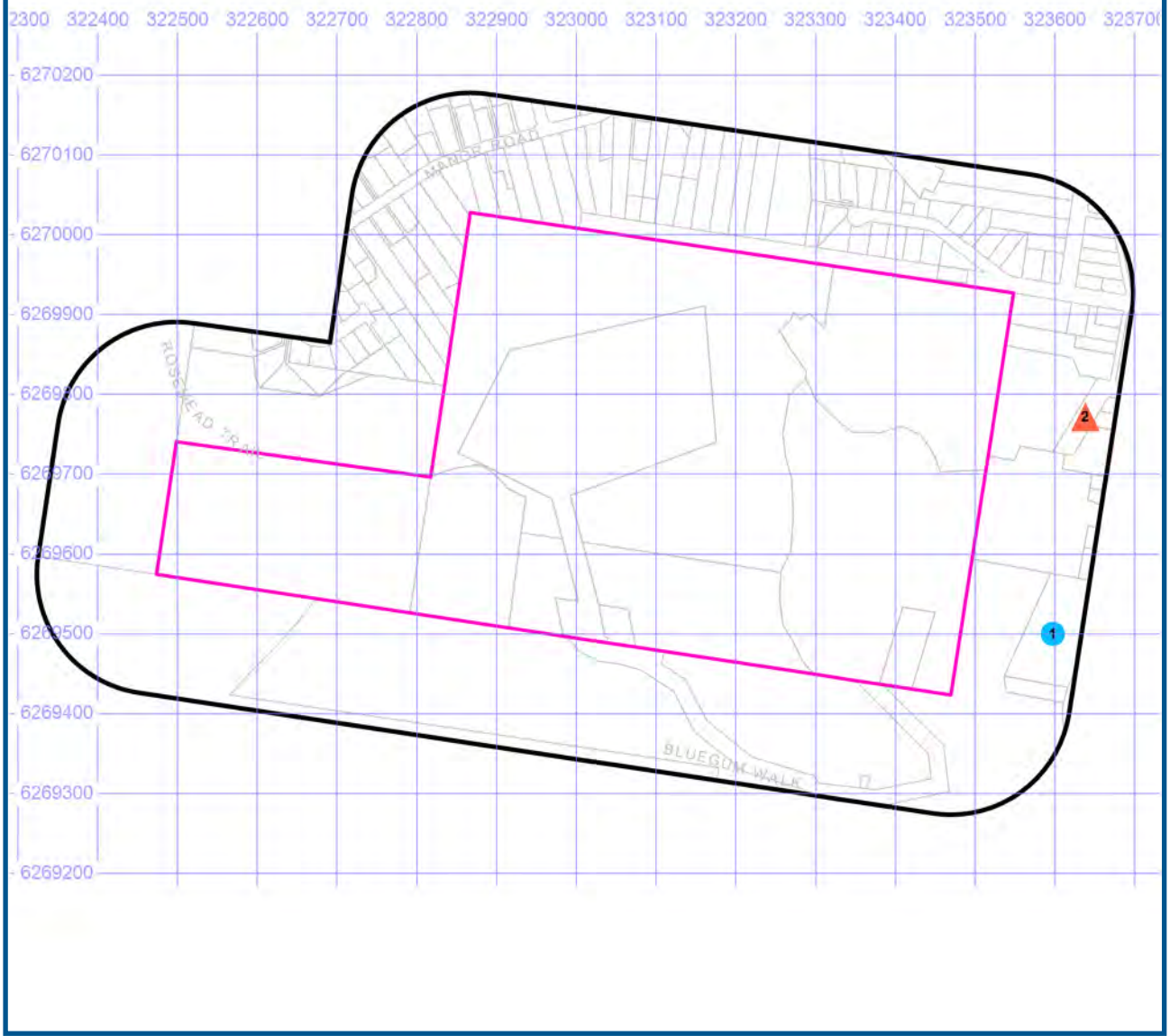
Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1975 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

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Business directory records mapped to a general area

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Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1975 Business Directory Records
Premise or Road Intersection Matches

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	SCHOOLS, COLLEGES-TECHNICAL	Hornsby Technical College., 207 Pacific H'way., Hornsby. 2077	75933	Premise Match	62m	South East

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1975 Business Directory Records
Road or Area Matches

Records from the 1975 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

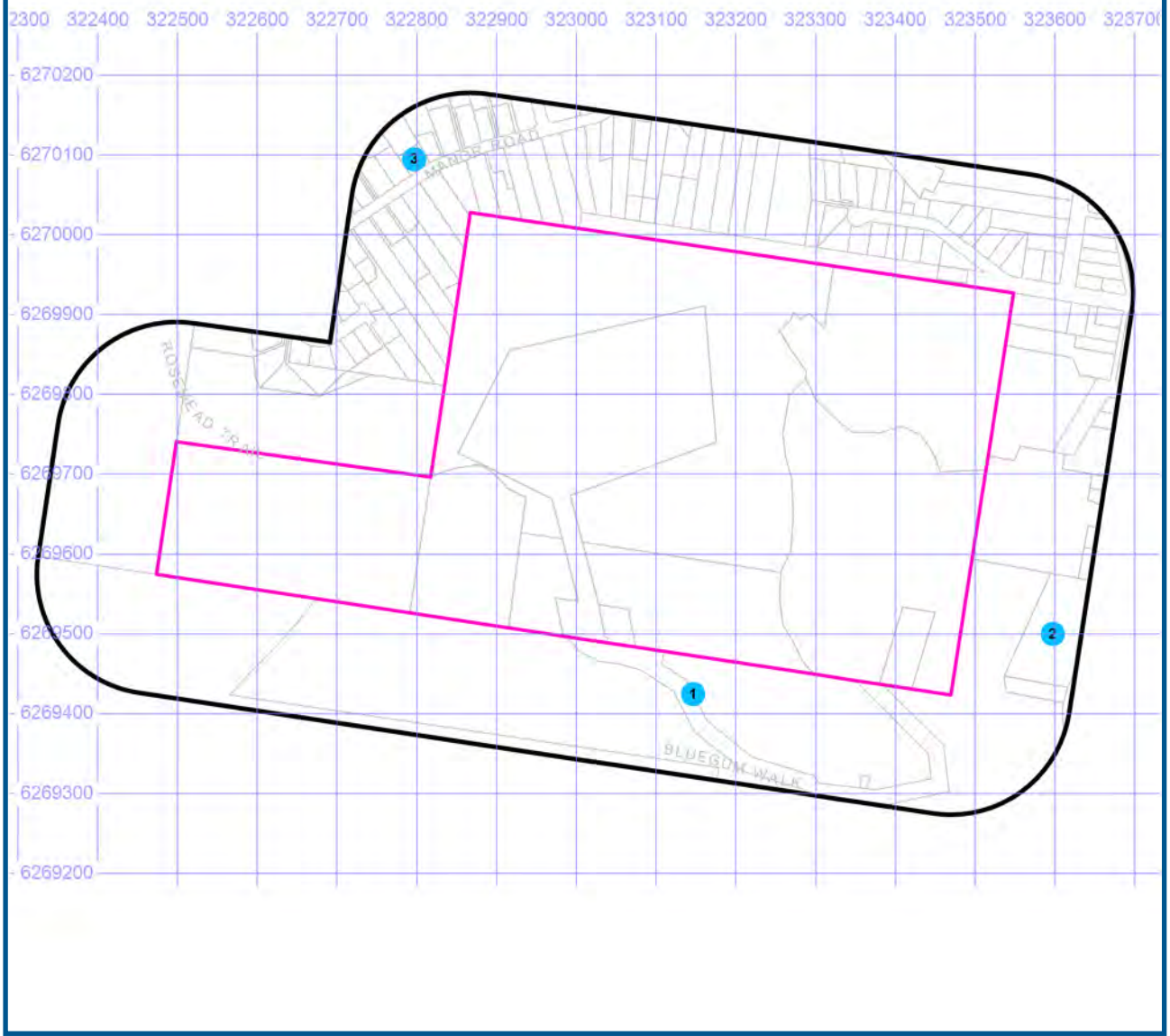
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	PUBLISHERS	Allen & Unwin Ltd., Bridge Rd., Hornsby.2077	70954	Road Match	79m
	PUBLISHERS	Australasian Publishing Co. Pty. Ltd., Bridge Rd., Hornsby.2077	70959	Road Match	79m
	PUBLISHERS	Bookstocks Pty. Ltd., Bridge Rd., Hornsby.2077	70977	Road Match	79m
	PUBLISHERS REPRESENTATIVES.	Bookstocks Pty. Ltd., Bridge Rd., Hornsby.2077	71155	Road Match	79m
	PUBLISHERS	Hodder & Stoughton (Aust.) Pty. Ltd., Bridge Rd., Hornsby.2077	71038	Road Match	79m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1970 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

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Business directory records mapped to a road intersection

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Business directory records mapped to a general area

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Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1970 Business Directory Records
Premise or Road Intersection Matches

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	BATHS-SWIMMING (B165)	Hornsby Olympic Pool., Pacific Highway., Hornsby	265141	Premise Match	0m	South
2	SCHOOLS/COLLEGES-TECHNICAL(S146)	Hornsby Technical College, 207-219 Pacific Highway., Hornsby	359590	Premise Match	62m	South East
	CLUBS & SPORTING BODIES (C487)	Hornsby Women's Rest Centre (Shire Council)., 205 Pacific Highway., Hornsby	284306	Premise Match	62m	South East
3	MEDICAL PRACTITIONERS (M216)	Doyle Evelyn., 52 Manor Rd., Hornsby	326695	Premise Match	80m	North West

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1970 Business Directory Records
Road or Area Matches

Records from the 1970 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

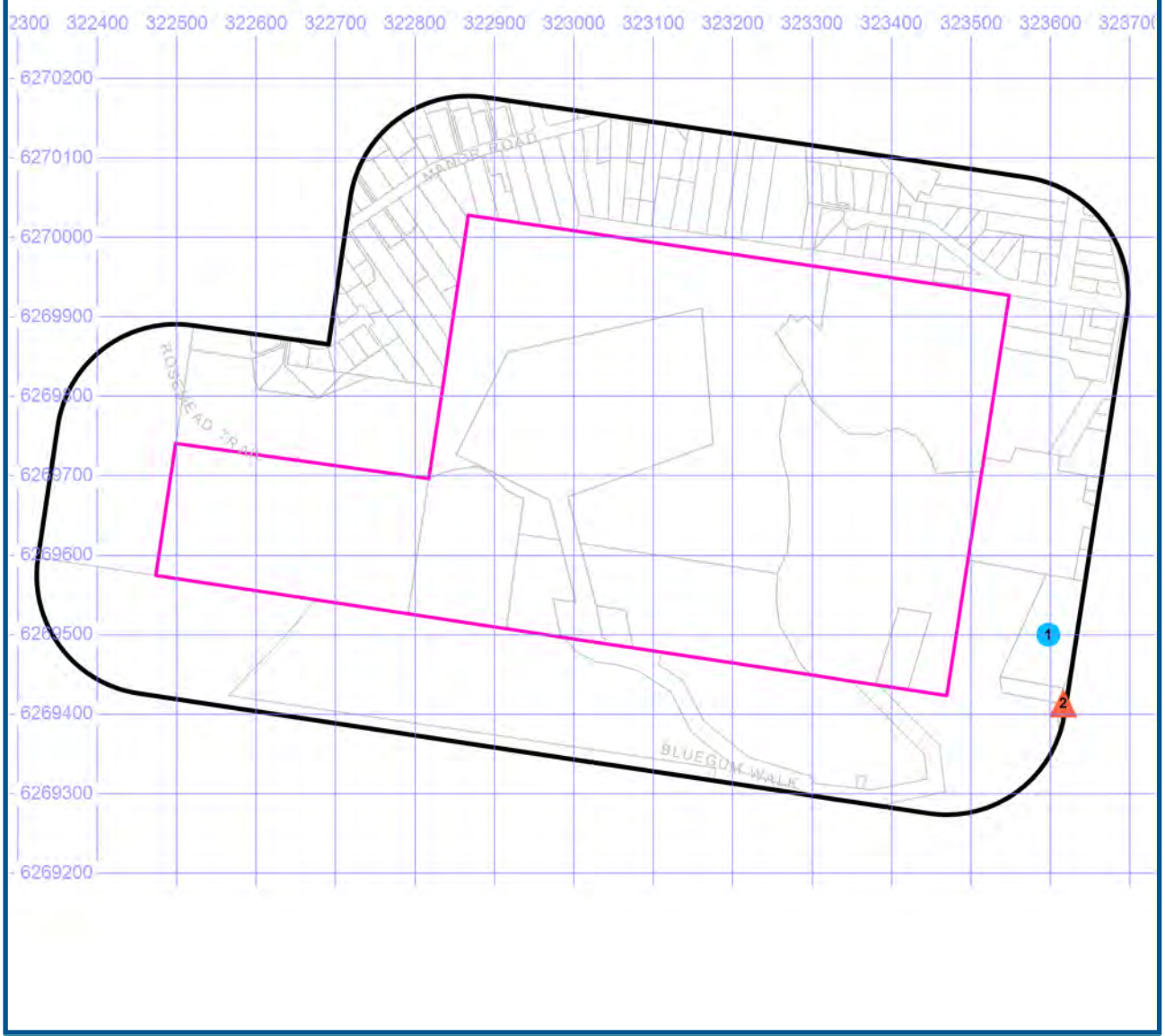
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1965 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

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Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
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Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1965 Business Directory Records
Premise or Road Intersection Matches

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Schools/Colleges - Technical	Hornsby Technical College., 207-219 Pacific Highway., Hornsby	143018	Premise Match	62m	South East
	Clubs & Sporting Bodies	Hornsby Women's Rost Centre (Shire Council), 205 Pacific Highway., Hornsby	68984	Premise Match	62m	South East
	BOOT & SHOE REPAIRERS	Newman's, Hornsby, 205 Pacific Highway., Hornsby	53542	Premise Match	62m	South East

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1965 Business Directory Records
Road or Area Matches

Records from the 1965 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

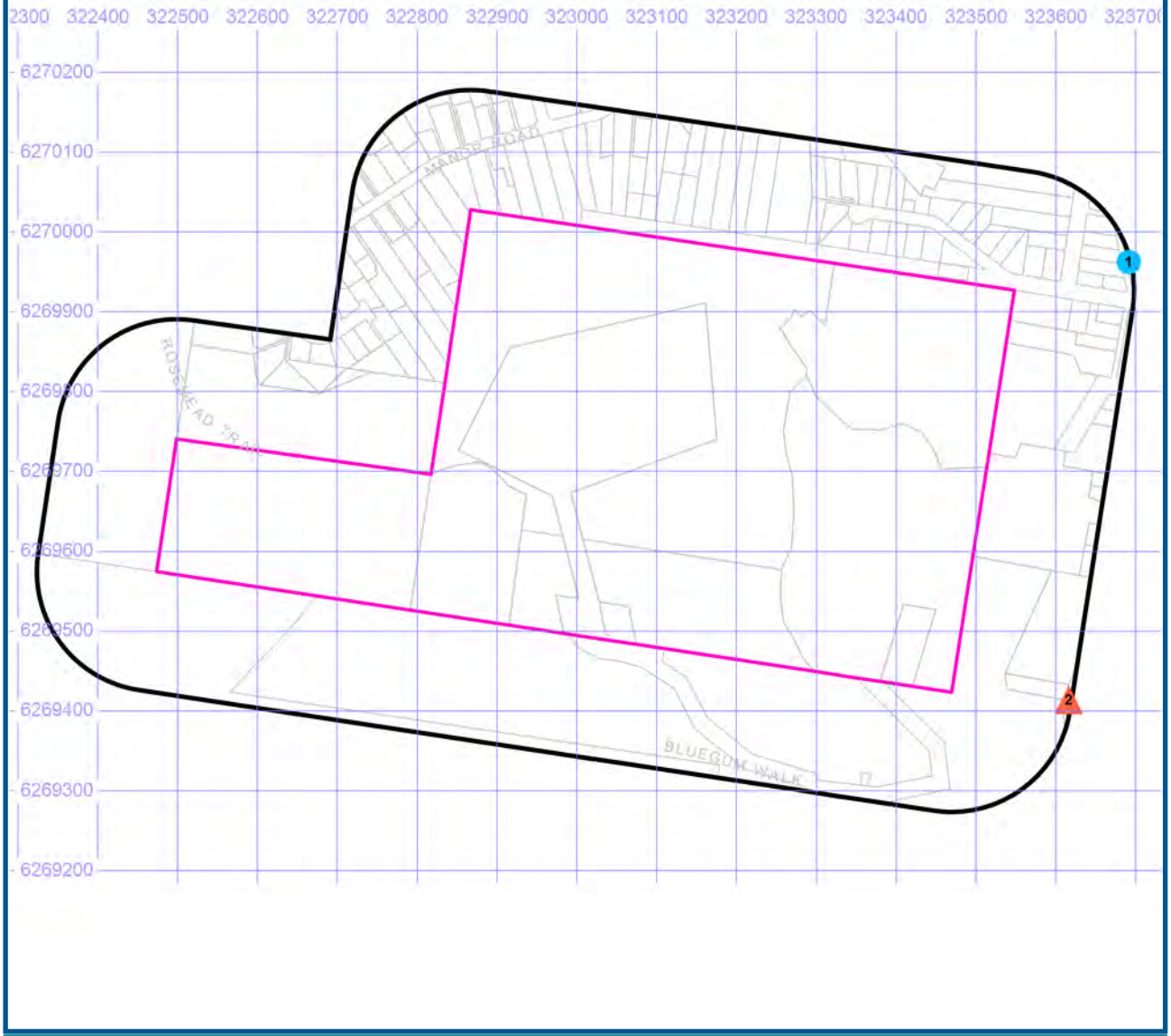
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	Schools/Colleges - Private/Public	Hornsby Public School., Peats Ferry Rd., Hornsby	142830	Road Match	141m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1961 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

N

Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1961 Business Directory Records
Premise or Road Intersection Matches

Records from the 1961 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	PAINTERS, PAPERHANGERS/DECORATORS	Hains, C. F., 233 Pacific Highway., Hornsby	356108	Premise Match	145m	North East

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1961 Business Directory Records
Road or Area Matches

Records from the 1961 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

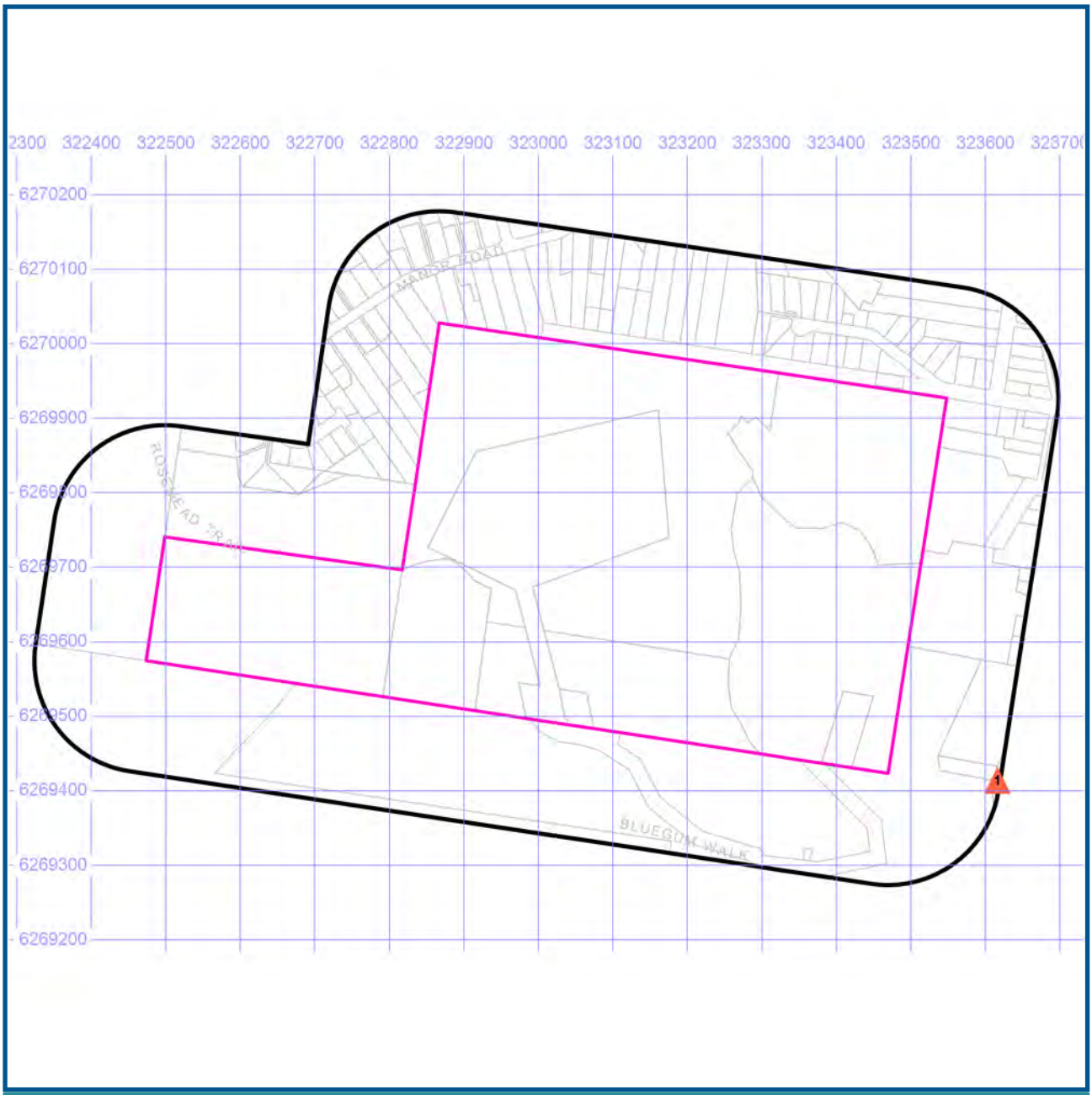
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	SCHOOLS/COLLEGES-PRIVATE/PUBLIC	Hornsby Public School, Peats Ferry Rd., Hornsby	248311	Road Match	141m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1950 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

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Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

1950 Business Directory Records
Premise or Road Intersection Matches

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1950 Business Directory Records
Road or Area Matches

Records from the 1950 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	SCHOOLS & COLLEGES-GENERAL	Hornsby Public School, Peats Ferry Rd., Hornsby	100908	Road Match	141m

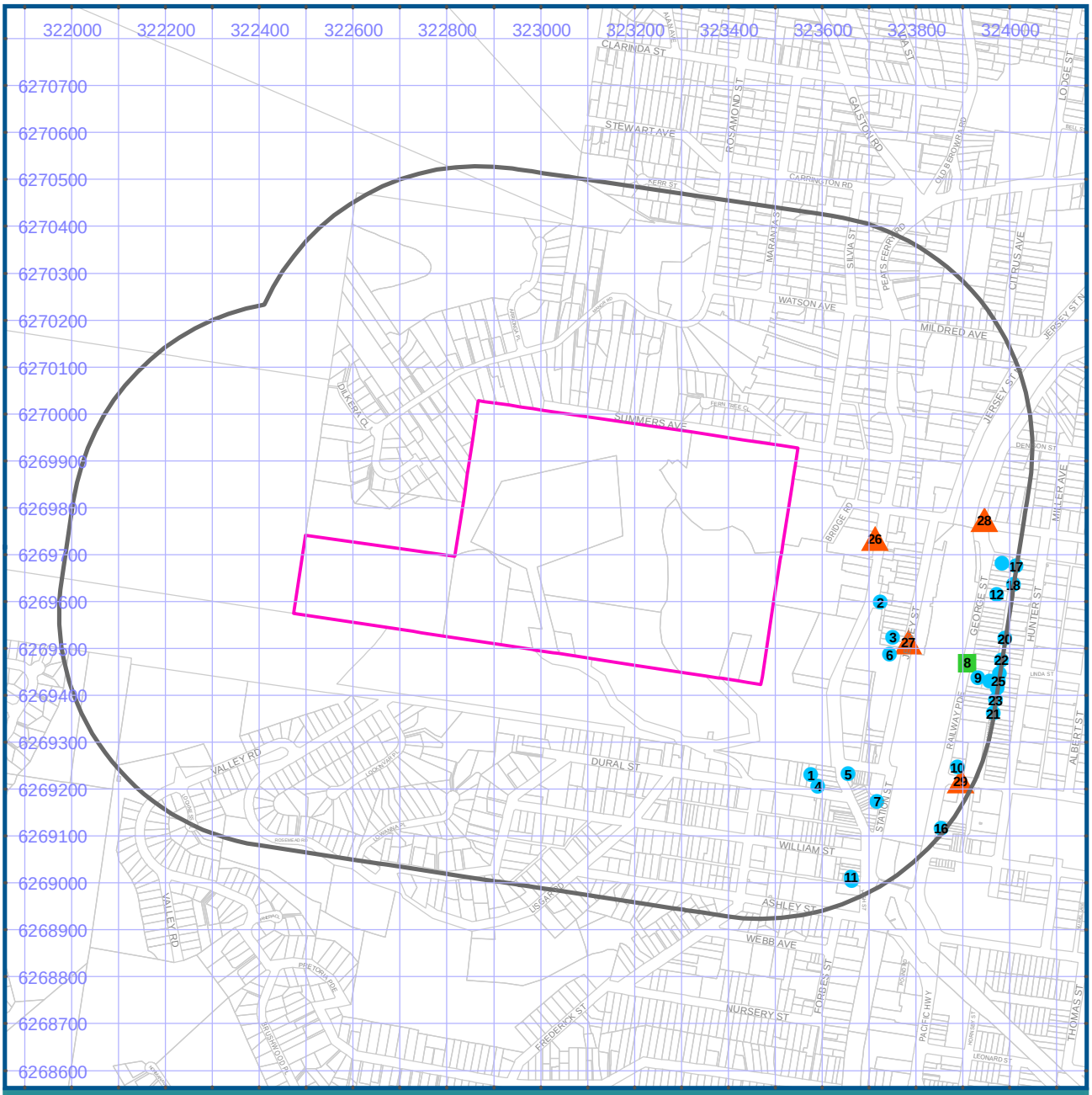
Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

[redacted]

Dry Cleaners, Motor Garages & Service Stations



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Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches (1948-1993)

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTOR GARAGES & SERVICE STATIONS.	Central Auto Repairs, Rear 2 Dural Rd., Hornsby. 2077	53980	1988	Premise Match	198m	South East
	MOTOR GARAGES & SERVICE STATIONS.	Central Auto Repairs, Rear 2 Dural Rd., Hornsby. 2077	64447	1986	Premise Match	198m	South East
	MOTOR GARAGES & SERVICE STATIONS.	Central Auto Repairs, Rear 2 Dural Rd., Hornsby. 2077	39440	1985	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Central Auto Repairs, 2 Rear Dural Rd., Hornsby. 2077	28029	1984	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Central Auto Repairs. Rear., 2 Dural Rd., Hornsby 2077	14448	1983	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Central Auto Repairs, Rear 2 Dural Rd., Hornsby. 2077.	56505	1982	Premise Match	198m	South East
	MOTOR GARAGES & ENGINEERS.	McCredle's Garage., 2 Dural St., Hornsby	19287	1959	Premise Match	198m	South East
	MOTOR GARAGE/ENGINEERS.	Mccredie's Garage., 2 Dural St Hornsby	4492	1958	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Mccredie's Garage., 2 Dural St Hornsby	57993	1956	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Mccredie's Garage., 2 Dural St Hornsby	49609	1954	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Mccredie's Garage., 2 Dural St., Hornsby	40296	1953	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Mccredie's Garage., 2 Dural St., Hornsby	31895	1952	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS	McCredie's Garage, 2 Dural St., Hornsby	84056	1950	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS	MeCredie's Garage, 2 Dural St., Hornsby	84079	1950	Premise Match	198m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Mccredie G., 2 Dural St Hornsby	22575	1948-49	Premise Match	198m	South East
2	MOTOR GARAGES &/OR ENGINEERS.	Thompson. & Bourke., 304 Pacific Hghwy., Hornsby	12334	1972	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS.	Thompson & Bourke., 304 Pacific Hghwy., Hornsby	56941	1971	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS(M6S6)	Thompson & Bourke., 304 Pacific Highway., HORNSBY	338725	1970	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS.	Thompson & Bourke., 304 Pacific Hghwy, Hornsby	42357	1969	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS	Thompson & Bourke., 304 Pacific Hghwy., Hornsby	25871	1968	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS.	Thompson & Bourke., 304 Pacific Hghwy., Hornsby	10372	1967	Premise Match	212m	East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
2	MOTOR GARAGES & ENGINEERS.	Thompson & Bourke., 304 Pacific Hghway., Hornsby	60120	1966	Premise Match	212m	East
	Motor Garages & Engineers	Thompson & Bourke, 304 Pacific Highway. Hornsby	122779	1965	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS	Thompson & Bourke., 304 Pacific Highway Hornsby	48050	1964	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS.	Thompson & Bourke., 304 Pacific Hghwy., Hornsby	29597	1962	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS	Thompson & Bourke, 304 Pacific Highway. Hornsby	348279	1961	Premise Match	212m	East
	MOTOR GARAGES & ENGINEERS.	Thompson & Bourke., 304 Pacific Hghwy., Hornsby	19288	1959	Premise Match	212m	East
	MOTOR GARAGE/ENGINEERS.	Thompson And Bourke., 304 Pacific Hghwy., Hornsby	9149	1958	Premise Match	212m	East
	MOTOR SERVICE STATIONS-PETROL, ETC.	Pacific Garage, 304 Pacific Hghwy., Hornsby	62087	1956	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS.	Thompson And Bourke., 304 Pacific Hghwy., Hornsby	61572	1956	Premise Match	212m	East
	MOTOR SERVICE STATIONS-PETROL, ETC.	Pacific Garage., 304 Pacific Hghwy., Hornsby	54607	1954	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS.	Thompson And Bourke., 304 Pacific Hghwy., Hornsby	54208	1954	Premise Match	212m	East
	MOTOR SERVICE STATIONS–PETROL, ETC.	Pacific Garage., 304 Pacific Hghwy., Hornsby	44162	1953	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS.	Thompson And Bourke., 304 Pacific Hghwy., Hornsby	40777	1953	Premise Match	212m	East
	MOTOR SERVICE STATIONS–PETROL, ETC.	Pacific Garage (J.D. Mcintyre)., 304 Pacific Hghwy., Hornsby	35944	1952	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS.	Thompson And Bourke., 304 Pacific Hghwy., Hornsby	32331	1952	Premise Match	212m	East
	MOTOR SERVICE STATIONS-PETROL, Etc.	Pacific Garage (J. D. Mclntyre), 304 Pacific Highway., Hornsby	86255	1950	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS	Thompson and Bourke, 304 Pacific Highway., Hornsby	84466	1950	Premise Match	212m	East
	MOTOR SERVICE STATIONS-PETROL, Etc.	Thompson, C. and Bourke, W. T., 304 Pacific Highway., Hornsby	86461	1950	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS.	Pacific Garage., 304 Pacific Hghwy., Hornsby	22701	1948-49	Premise Match	212m	East
	MOTOR GARAGES &/OR ENGINEERS.	Thompson And Bourke., 304 Pacific Hghwy., Hornsby	22941	1948-49	Premise Match	212m	East
	MOTOR SERVICE STATIONS-PETROL, ETC.	Thompson, C. and Bourke, W. T., 304 Pacific Hghwy., Hornsby	26829	1948-49	Premise Match	212m	East
3	MOTOR GARAGES &/OR ENGINEERS.	Barsby T. B., 33 Jersey St Hornsby	56932	1971	Premise Match	237m	East
	MOTOR GARAGES & ENGINEERS(M6S6)	Barsby, T. B., 33 Jersey St., HORNSBY	337269	1970	Premise Match	237m	East
	MOTOR GARAGES & ENGINEERS.	Barsby T. B., 33 Jersey St Hornsby	42350	1969	Premise Match	237m	East
	MOTOR GARAGES & ENGINEERS	Barsby T. B., 33 Jersey St Hornsby	25867	1968	Premise Match	237m	East
	MOTOR GARAGES & ENGINEERS.	Barsby T. B., 33 Jersey St Hornsby	10369	1967	Premise Match	237m	East
	MOTOR GARAGES & ENGINEERS.	Barsby T. B., 33 Jersey St Hornsby	60117	1966	Premise Match	237m	East
	Motor Garages & Engineers	Barsby, T. B., 33 Jersey St. Hornsby	122776	1965	Premise Match	237m	East
	MOTOR GARAGES & ENGINEERS	Barsby T. B., 33 Jersey St Hornsby	48045	1964	Premise Match	237m	East
4	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	McCredie, C., 2a Dural St., HORNSBY	341318	1970	Premise Match	239m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Mccredie C., 2A Dural St Hornsby	47896	1969	Premise Match	239m	South East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Mccredie C., 2A Dural St Hornsby	31321	1968	Premise Match	239m	South East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Mccredie C., 2A Dural St Hornsby	15797	1967	Premise Match	239m	South East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Mccredie C., 2A Dural St Hornsby	1371	1966	Premise Match	239m	South East
	Motor Service Stations - Petrol, Oil, Etc.	McCredie, C., 2a Dural St. Hornsby	125773	1965	Premise Match	239m	South East
	MOTOR GARAGES & ENGINEERS	Mccredie C., 2A Dural St Hornsby	48049	1964	Premise Match	239m	South East
	MOTOR GARAGES & ENGINEERS.	Mccredie C., 2A Dural St Hornsby	29596	1962	Premise Match	239m	South East
	MOTOR GARAGES & ENGINEERS	McCredie, C., 2a Dural St., HORNSBY	347671	1961	Premise Match	239m	South East
5	DRY CLEANERS, PRESSERS & DYERS	Lindfield Laundry and Dry Cleaners Pty. Ltd. 286a Pacific Highway., Hornsby	35410	1950	Premise Match	256m	South East
	DRY CLEANERS, PRESSERS & DYERS.	Lindfield Laundry And Dry Cleaners Pty. Ltd., 286A Pacific Hghwy., Hornsby	17281	1948-49	Premise Match	256m	South East
6	MOTOR GARAGES & ENGINEERS.	Kookaburra Tyre & Service Station., 25-27 Jersey St Hornsby	29595	1962	Premise Match	261m	East
	MOTOR GARAGES & ENGINEERS	Kookaburra Tyre & Service Station, 25-27 Jersey St. HORNSBY	347526	1961	Premise Match	261m	East
	MOTOR GARAGE/ENGINEERS.	Kookaburra Tyre & Service Station., 25-27 Jersey St Hornsby	4420	1958	Premise Match	261m	East
	MOTOR GARAGES &/OR ENGINEERS.	Kookaburra Tyre & Service Station., 25-27 Jersey St Hornsby	57939	1956	Premise Match	261m	East
	MOTOR GARAGES &/OR ENGINEERS.	Garrett & Lewis Pty. Ltd., 25-27 Jersey St., Hornsby	49296	1954	Premise Match	261m	East
	MOTOR GARAGES &/OR ENGINEERS.	Kookaburra Tyre & Service Station., 25-27 Jersey St Hornsby	49543	1954	Premise Match	261m	East
	MOTOR GARAGES &/OR ENGINEERS.	Garrett & Lewis Pty. Ltd., 25-27 Jersey St Hornsby	40027	1953	Premise Match	261m	East
	MOTOR GARAGES &/OR ENGINEERS.	Kookaburra Tyre A Service Station., 25-27 Jersey St Hornsby	40245	1953	Premise Match	261m	East
7	DRY CLEANERS & PRESSERS.	Thrift Macks Dry Cleaning Service, 25 Station St., Hornsby. 2077	53311	1988	Premise Match	341m	South East
	DRY CLEANERS & PRESSERS.	Thrift Macks Dry Cleaning Service, 25 Station St., Hornsby. 2077	25542	1986	Premise Match	341m	South East
	DRY CLEANERS & PRESSERS.	Thrift Macks Dry Cleaning Service, 25 Station St., Hornsby. 2077	38819	1985	Premise Match	341m	South East
	DRY CLEANERS & PRESSERS.	Red Robin Dry Cleaning Service, 25 Station St., Hornsby. 2077	22155	1984	Premise Match	341m	South East
	DRY CLEANERS & PRESSERS.	Red Robin Dry Cleaning Service., 25 Station St., Hornsby 2077	8751	1983	Premise Match	341m	South East
	DRY CLEANERS & PRESSERS.(D8500)	Red Robin Dry Cleaning Service, 25 Station St., Hornsby. 2077.	24021	1982	Premise Match	341m	South East
	DRY CLEANERS & PRESSERS.	Red Robin Dry Cleaning Service., 25 Station St., Hornsby. 2077	63509	1981	Premise Match	341m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Red Robin Dry Cleaning Service., 25 Station St., Hornsby. 2077	49988	1980	Premise Match	341m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Red Robin Dry Cleaning Service., 25 Station St., Hornsby. 2077.	35525	1979	Premise Match	341m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS	Red Robin Dry Cleaning Service, 25 Station St., Hornsby. 2077	20929	1978	Premise Match	341m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Page Boy., 25 Station St Hornsby 2077	23738	1976	Premise Match	341m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
7	DRY CLEANERS, PRESSERS &/OR DYERS.	Page Boy, 25 Station St., Hornsby. 2077	24262	1975	Premise Match	341m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Red Robin., 25 Station St Hornsby	7206	1972	Premise Match	341m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS	Red Robin., 25 Station St Hornsby	51282	1971	Premise Match	341m	South East
	DRY CLEANERS,PRESSERS /DYERS (D710)	Red Robin., 25 Station St., Hornsby	292469	1970	Premise Match	341m	South East
8	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Golden Fleece Service Station., Cnr George & Linda Sts Hornsby	47894	1969	Road Intersection	427m	East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Golden Fleece Service Station., Cnr George & Linda Sts Hornsby	31320	1968	Road Intersection	427m	East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Golden Fleece Service Station., Cnr George & Linda Sts Hornsby	15796	1967	Road Intersection	427m	East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Golden Fleece Service Station., Cnr George & Linda Sts Hornsby	1370	1966	Road Intersection	427m	East
	Motor Service Stations - Petrol, Oil, Etc.	Golden Fleece Service Station, Cnr. George & Linda Sts. Hornsby	125772	1965	Road Intersection	427m	East
9	MOTOR GARAGES & SERVICE STATIONS.	Caltex Homsby Service Station, 108 George St., Hornsby. 2077	18775	1993	Premise Match	434m	East
	Motor Garages & Service Stations	Cattex Hornsby Service Station, 108 George St, Hornsby 2077	97579	1991	Premise Match	434m	East
	MOTOR GARAGES & SERVICE STATIONS.	Caltex Hornsby Service Station, 108 George St., Hornsby. 2077	11313	1990	Premise Match	434m	East
	MOTOR GARAGE & SERVICE STATIONS.	Caltex Hornsby Service Station, 108 George St., Hornsby. 2077	64753	1989	Premise Match	434m	East
	MOTOR GARAGES & SERVICE STATIONS.	Caltex Hornsby Service Station, 108 George St., Hornsby. 2077	53873	1988	Premise Match	434m	East
	MOTOR GARAGES & SERVICE STATIONS.	Caltex Service Station, 108 George St., Hornsby. 2077	64399	1986	Premise Match	434m	East
	MOTOR GARAGES & SERVICE STATIONS.	Golden Fleece Hornsby Service Station, 108 George St., Hornsby. 2077	39772	1985	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Hornsby Service Station, 108 George St., Hornsby. 2077	28350	1984	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Hornsby Service Station., 108 George St., Hornsby. 2077	14773	1983	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Golden Fleece Hornsby Service Station, 108 George St., Hornsby. 2077.	56834	1982	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Hornsby Service Station., 108 George St., Hornsby. 2077	3393	1981	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Hornsby Service Station., 108 George St., Hornsby. 2077	58127	1980	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Service Station., 108 George St., Hornsby. 2077.	41613	1979	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Service Station, 108 George St., Hornsby. 2077	50141	1978	Premise Match	434m	East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
9	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Service Station., 108 George St., Hornsby 2077	30121	1976	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS.	Golden Fleece Service Station., 108 George St., Hornsby.2077	58945	1975	Premise Match	434m	East
	MOTOR GARAGES &/OR ENGINEERS.	McColl G. K., M. I. & S. U. Pty Ltd., 108 George St., Hornsby 2077	12330	1972	Premise Match	434m	East
10	MOTOR GARAGES & SERVICE STATIONS.	BP Plaza Service Station, 84 George St., Hornsby. 2077	18679	1993	Premise Match	436m	South East
	Motor Garages & Service Stations	BP Plaza Service Station, 84 George St., Hornsby 2077	53593	1991	Premise Match	436m	South East
	MOTOR GARAGES & SERVICE STATIONS.	BP Plaza Service Station, 84 George St., Hornsby. 2077	11190	1990	Premise Match	436m	South East
	MOTOR GARAGE & SERVICE STATIONS.	BP Plaza Service Station, 84 George St., Hornsby. 2077	64625	1989	Premise Match	436m	South East
	MOTOR GARAGES & SERVICE STATIONS.	BP Plaza Service Station, 84 George St., Hornsby. 2077	53740	1988	Premise Match	436m	South East
	MOTOR GARAGES & SERVICE STATIONS.	BP Plaza Service Station, 84 George St., Hornsby. 2077	64204	1986	Premise Match	436m	South East
	MOTOR GARAGES & SERVICE STATIONS.	BP Plaza Service Station, 84 George St., Hornsby. 2077	39212	1985	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Plaza Service Station, 84 George St., Hornsby. 2077	27816	1984	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Plaza Service Station., 84 George St., Hornsby 2077	14252	1983	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	BP Plaza Service Station, 84 George St., Hornsby. 2077.	56281	1982	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Plaza Service Station., 80 George St., Hornsby. 2077	63959	1981	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Plaza Service Station., 80 George St., Hornsby. 2077	51460	1980	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Plaza Service Station., 80 George St., Hornsby. 2077.	41059	1979	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Plaza Service Station, 80 George St., Hornsby. 2077	49597	1978	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Plaza Service Station., 80 George St., Hornsby 2077	25311	1976	Premise Match	436m	South East
	MOTOR GARAGES &/OR ENGINEERS.	BP Plaza Service Station., 80 George St., Hornsby.2077	58548	1975	Premise Match	436m	South East
11	MOTOR GARAGES & ENGINEERS.	Knight's Service Station., 143 Pacific Hghwy., Hornsby	29594	1962	Premise Match	440m	South East
	MOTOR GARAGES & ENGINEERS	Knight's Service Station, 143 Pacific Highway., Hornsby	347520	1961	Premise Match	440m	South East
	MOTOR GARAGES & ENGINEERS.	Knight's Service Station., 143 Pacific Hghwy., Hornsby	19285	1959	Premise Match	440m	South East
	MOTOR GARAGE/ENGINEERS.	Knights Service Station., 143 Pacific Hghwy., Hornsby	4417	1958	Premise Match	440m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Knights Service Station., 143 Pacific Hghwy., Hornsby	57936	1956	Premise Match	440m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Knights Service Station., 143 Pacific Hghwy., Hornsby	49539	1954	Premise Match	440m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Knight's Service Station., 143 Pacific Hghwy., Hornsby	49537	1954	Premise Match	440m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
11	MOTOR GARAGES &/OR ENGINEERS.	Knights Service Station., 143 Pacific Hghwy., Hornsby	40240	1953	Premise Match	440m	South East
12	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ku-Ring-Gai Motors., 142 George St., Hornsby 2077	3618	1981	Premise Match	444m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ku-Ring-Gai Motors., 142 George St., Hornsby. 2077	58353	1980	Premise Match	444m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ku-Ring-Gai Motors., 142 George St., Hornsby. 2077.	45870	1979	Premise Match	444m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ku-Ring-Gai Motor Engineers, 142 George St., Hornsby. 2077	50351	1978	Premise Match	444m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Ku-Ring-Gai Motor Engineers Pty. Ltd., 142 George St., Hornsby 2077	30351	1976	Premise Match	444m	East
	MOTOR GARAGES &/OR ENGINEERS.	Ku-Ring-Gal Motor Engineers Pty. Ltd., 142 George St., Hornsby.2077	59130	1975	Premise Match	444m	East
	MOTOR GARAGES &/OR ENGINEERS.	Ku-Ring-Gai Motor Engineers Pty. Ltd., 142 George St Hornsby	12329	1972	Premise Match	444m	East
	MOTOR GARAGES &/OR ENGINEERS.	Ku-Ring-Gai., 142 George St Hornsby	56937	1971	Premise Match	444m	East
	MOTOR GARAGES & ENGINEERS(M6S6)	Ku-ring-gai., 142 George St., Hornsby	338125	1970	Premise Match	444m	East
13	MOTOR GARAGES & SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	18716	1993	Premise Match	447m	East
	Motor Garages & Service Stations	Brownlee Des Automotives, 156 George St., Hornsby. 2077	53602	1991	Premise Match	447m	East
	MOTOR GARAGES & SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	11240	1990	Premise Match	447m	East
	MOTOR GARAGE & SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	64676	1989	Premise Match	447m	East
	MOTOR GARAGES & SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	53801	1988	Premise Match	447m	East
	MOTOR GARAGES & SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	64269	1986	Premise Match	447m	East
	MOTOR GARAGES & SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	39271	1985	Premise Match	447m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	27882	1984	Premise Match	447m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	65772	1983	Premise Match	447m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Brownlee Des Automotives, 156 George St., Hornsby. 2077	56348	1982	Premise Match	447m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	64026	1981	Premise Match	447m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Brownlee Des Automotives, 156 George St., Hornsby. 2077	51531	1980	Premise Match	447m	East
14	MOTOR GARAGES &/OR ENGINEERS.	Kookaburra Tyre & Service Station., 141 Pacific Hghwy., Hornsby	31845	1952	Premise Match	450m	South East
	MOTOR GARAGES &/OR ENGINEERS	Kookaburra Tyre and Service Station, 141 Pacific Highway., Hornsby	83973	1950	Premise Match	450m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
14	MOTOR SERVICE STATIONS-PETROL, Etc.	Kookaburra Tyre Service, 141 Pacific Highway., Hornsby	86117	1950	Premise Match	450m	South East
	MOTOR GARAGES &/OR ENGINEERS.	Kookaburra Tyre And Service Station., 141 Pacific Hghwy., Hornsby	22530	1948-49	Premise Match	450m	South East
15	MOTOR GARAGES & SERVICE STATIONS.	Town & Country Towing Pty. Ltd., 2A Linda St., Hornsby. 2077	65638	1986	Premise Match	465m	East
	MOTOR GARAGES & SERVICE STATIONS.	Town & Country Garage Pty. Ltd., 2A Linda St., Hornsby. 2077	45761	1985	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Town & Country Garage Pty. Ltd., 2A Linda St., Hornsby. 2077	34322	1984	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Town & Country Garage Pty. Ltd., 2A Linda St., Hornsby 2077	21765	1983	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Town & Country Garage Pty. Ltd., 2A Linda St., Hornsby. 2077.	57762	1982	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Town & Country Garage Pty. Ltd., 2A Linda St., Hornsby 2077	8344	1981	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Town & Country Garage Pty. Ltd., 2A Linda St., Hornsby. 2077	59034	1980	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Town & Country Garage Pty Ltd., 2a Linda St., Hornsby. 2077.	46535	1979	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Town & Country Garage Pty. Ltd., 2a Linda St., Hornsby. 2077	51018	1978	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Town & Country Garage Pty. Ltd., 2A Linda St., Hornsby 2077	35109	1976	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS.	Town & Country Garage Pty. Ltd., 2a Linda St., Hornsby.2077	59697	1975	Premise Match	465m	East
	MOTOR GARAGES &/OR ENGINEERS.	Town. & Country Garage Pty Ltd., 2A Linda St Hornsby	12335	1972	Premise Match	465m	East
16	DRY CLEANERS, PRESSERS &/OR DYERS	Lindfield Dry Cleaners, 9 Eastside Centre Hornsby. 2077	20853	1978	Premise Match	483m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Lindfield Dry Cleaners., 9 Eastside Centre, Hornsby 2077	23644	1976	Premise Match	483m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Lindfield Dry Cleaners, 9 Eastside Centre, Hornsby. 2077	24169	1975	Premise Match	483m	South East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Lindfield Dry Cleaners., 9 Eastside Centre, Hornsby 2077	3026	1972	Premise Match	483m	South East
17	MOTOR GARAGES & SERVICE STATIONS.	Adroit Automotives, 7/113 Hunter St., Hornsby. 2077	53357	1988	Premise Match	496m	East
	MOTOR GARAGES & SERVICE STATIONS.	Adroit Automotives, 7/113 Hunter St., Hornsby. 2077	63862	1986	Premise Match	496m	East
	MOTOR GARAGES & SERVICE STATIONS.	Adroit Automotives., 7/113 Hunter St., Hornsby. 2077	38876	1985	Premise Match	496m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Adroit Automotives, 7/113 Hunter St., Hornsby. 2077	22257	1984	Premise Match	496m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Adroit Automotives, 7/113 Hunter St., Hornsby 2077	8849	1983	Premise Match	496m	East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
17	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Adroit Automotives, 10/113 Hunter St., Hornsby. 2077.	55934	1982	Premise Match	496m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Adroit Automotives., 10/113 Hunter St., Hornsby. 2077	63607	1981	Premise Match	496m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Tildora Pty. Ltd., 7/113 Hunter St., Hornsby. 2077	58962	1980	Premise Match	496m	East
18	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Cotton, Auto Marine, 105 Hunter St., Hornsby. 2077	49850	1978	Premise Match	497m	East
19	MOTOR GARAGES & SERVICE STATIONS.	Hornsby Brake Service Pty Ltd., 81A Hunter St., Hornsby. 2077	19022	1993	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Hornsby Brake Service Pty. Ltd., 81A Hunter St., Hornsby. 2077	11701	1990	Premise Match	498m	East
	MOTOR GARAGE & SERVICE STATIONS.	Hornsby Brake Service Pty. Ltd., 81A Hunter St., Hornsby. 2077	5093	1989	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Hornsby Brake Service Pty. Ltd., 81A Hunter St., Hornsby. 2077	59430	1988	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Hornsby Brake Service Pty. Ltd., 81A Hunter St., Hornsby. 2077	64871	1986	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Hornsby Brake Service Pty. Ltd., 81A Hunter St., Hornsby. 2077	44973	1985	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hornsby Brake Service Pty. Ltd., 81A Hunter St., Hornsby. 2077	28471	1984	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hornsby Brake Service., 81A Hunter St., Hornsby 2077	14902	1983	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Hornsby Brake Service, 81A Hunter St., Hornsby. 2077.	56970	1982	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hornsby Brake Service., 81A Hunter St., Hornsby 2077	3527	1981	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hornsby Brake Service., 81A Hunter St., Hornsby. 2077	58262	1980	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hornsby Brake Service., 81A Hunter St., Hornsby. 2077.	41727	1979	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hornsby Brake Service, 81A Hunter St., Hornsby. 2077	50262	1978	Premise Match	498m	East
20	MOTOR GARAGES & SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	19071	1993	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	11777	1990	Premise Match	498m	East
	MOTOR GARAGE & SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	5179	1989	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	59530	1988	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	64989	1986	Premise Match	498m	East
	MOTOR GARAGES & SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	45092	1985	Premise Match	498m	East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
20	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	28592	1984	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	15021	1983	Premise Match	498m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Lingane Motors Pty. Ltd., 91 Hunter St., Hornsby. 2077	57095	1982	Premise Match	498m	East
21	MOTOR GARAGES & SERVICE STATIONS.	Northgate Auto Repairs Pty Ltd., 3/65 Hunter St., Hornsby. 2077	19195	1993	Premise Match	499m	East
	Motor Garages & Service Stations	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St, Hornsby 2077	97826	1991	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077	11936	1990	Premise Match	499m	East
	MOTOR GARAGE & SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077	5345	1989	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077	59717	1988	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077	65195	1986	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077	45298	1985	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077	33875	1984	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby 2077	15227	1983	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077.	57307	1982	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Northgate Auto Repairs Pty Ltd., 3/65 Hunter St., Hornsby 2077	3860	1981	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Northgate Auto Repairs Pty. Ltd., 3/65 Hunter St., Hornsby. 2077	58607	1980	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	R. & D. Auto Repairs., 3/65 Hunter St., Hornsby. 2077.	46204	1979	Premise Match	499m	East
22	MOTOR GARAGES & SERVICE STATIONS.	Scdleria Veloce Motors Pty Ltd., 83 Hunter La., Hornsby. 2077	20307	1993	Premise Match	499m	East
	Motor Garages & Service Stations	Scuderia Veloce Motors Pty. Ltd., 83 Hunter La., Hornsby 2077	97776	1991	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Scuderia Veloce Motors Pty. Ltd., 83 Hunter La, Hornsby. 2077	12081	1990	Premise Match	499m	East
	MOTOR GARAGE & SERVICE STATIONS.	Scudena Veloce Motors Pty. Ltd., 83 Hunter La., Hornsby. 2077	5504	1989	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Scuderia Veloce Motors Pty. Ltd., 83 Hunter La., Hornsby. 2077	59893	1988	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Scuderia Veloce Motors Pty. Ltd., 83 Hunter La., Hornsby. 2077	65397	1986	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Scudena Veloce Motors Pty. Ltd., 83 Hunter La Hornsby. 2077	45514	1985	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Scuderia Veloce Motors Pty. Ltd., 83 Hunter La Hornsby. 2077	34083	1984	Premise Match	499m	East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
22	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Scuderia Veloce Motors Pty Ltd., 83 Hunter La., Hornsby 2077	21536	1983	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Scuderia Veloce Motors Pty. Ltd., 83 Hunter La., Hornsby. 2077.	57526	1982	Premise Match	499m	East
23	MOTOR GARAGES & SERVICE STATIONS.	Colpar Motors, Rear 71 Hunter St., Hornsby. 2077	59093	1988	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	R.C. Repair Centre (Waitara) Pty. Ltd., Rear 71 Hunter St., Hornsby. 2077	59820	1988	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	R.C. Repair Centre (Waitara) Pty. Ltd., Rear 71 Hunter St., Hornsby. 2077	65308	1986	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	R C Repair Centre (Waitara) Pty. Ltd., Rear 71 Hunter St., Hornsby. 2077	45417	1985	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	R.C. Repair Centre (Waitara) Pty. Ltd., Rear 71 Hunter St., Hornsby. 2077	33988	1984	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	R.C. Repair Centre (Waitara) Pty. Ltd., 71 Hunter St., Hornsby 2077	21441	1983	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	R.C. Repair Centre (Waitara) Pty. Ltd., 71 Hunter St., Hornsby. 2077.	57429	1982	Premise Match	499m	East
24	MOTOR GARAGES & SERVICE STATIONS.	Hunter Motors Pty. Ltd., 77 Hunter St., Hornsby. 2077	64878	1986	Premise Match	499m	East
	MOTOR GARAGES & SERVICE STATIONS.	Hunter Motors Pty. Ltd., 77 Hunter St., Hornsby. 2077	44980	1985	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hunter Motors Pty. Ltd., 77 Hunter St., Hornsby. 2077	28481	1984	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hunter Motors., 77 Hunter St., Hornsby 2077	14911	1983	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Hunter Motors, 77 Hunter St., Hornsby. 2077.	56978	1982	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hunter Motors., 77 Hunter St., Hornsby 2077	3534	1981	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hunter Motors., 77 Hunter St., Hornsby. 2077	58269	1980	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hunter Motors., 77 Hunter St., Hornsby. 2077.	41733	1979	Premise Match	499m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hunter Motors, 77 Hunter St., Hornsby. 2077	50270	1978	Premise Match	499m	East
25	MOTOR GARAGES &/OR ENGINEERS.	Hornsby-Ku-Rin-Gai Automatics., 79 Hunter St., Hornsby 2077	12328	1972	Premise Match	499m	East

Dry Cleaners, Motor Garages & Service Stations Road or Area Matches (1948-1993)

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
26	MOTOR GARAGES & ENGINEERS.	Butler Bros. Motors Pty. Ltd., 139 Pacific Hghwy., Hornsby	19283	1959	Road Match	141m
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Fig Tree Service Station., Pacific Hghwy., Hornsby	24235	1959	Road Match	141m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Fig Tree Service Station., Pacific Hghwy., Hornsby	9522	1958	Road Match	141m
27	MOTOR GARAGES & ENGINEERS.	Gilbert John A. Pty. Ltd., Jersey St Hornsby	42354	1969	Road Match	279m
	MOTOR GARAGES & ENGINEERS	Gilbert John A. Pty. Ltd., Jersey St Hornsby	25870	1968	Road Match	279m
28	MOTOR GARAGES &/OR ENGINEERS.	Hornsby Travel Centre Pty. Ltd., George St., Hornsby 2077	12327	1972	Road Match	399m
	MOTOR GARAGES &/OR ENGINEERS.	BP Plaza Service Station., George St Hornsby	56933	1971	Road Match	399m
	MOTOR GARAGES &/OR ENGINEERS.	Hornsby Golden Fleece Service Station., George St Hornsby	56936	1971	Road Match	399m
	MOTOR GARAGES & ENGINEERS(M6S6)	BP Plaza Service Station., George St., HORNSBY	337393	1970	Road Match	399m
	MOTOR GARAGES & ENGINEERS(M6S6)	Hornsby Golden Fleece Service Station., George St., HORNSBY	338020	1970	Road Match	399m
	MOTOR GARAGES & ENGINEERS.	BP Plaza Service Station., George St Hornsby	42351	1969	Road Match	399m
	MOTOR GARAGES & ENGINEERS.	Hornsby Golden Fleece Service Station., George St Hornsby	42355	1969	Road Match	399m
29	MOTOR GARAGES &/OR ENGINEERS.	Complete Car Service., Burdett St., Hornsby.2077	58685	1975	Road Match	446m

Aerial Imagery 2009

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

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Coordinate System: GDA 1994 MGA Zone 56

Date: 01 August, 2019

Aerial Imagery 2003

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Scale:
0 100 200 400
Meters

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Coordinate System:
GDA 1994 MGA Zone 56

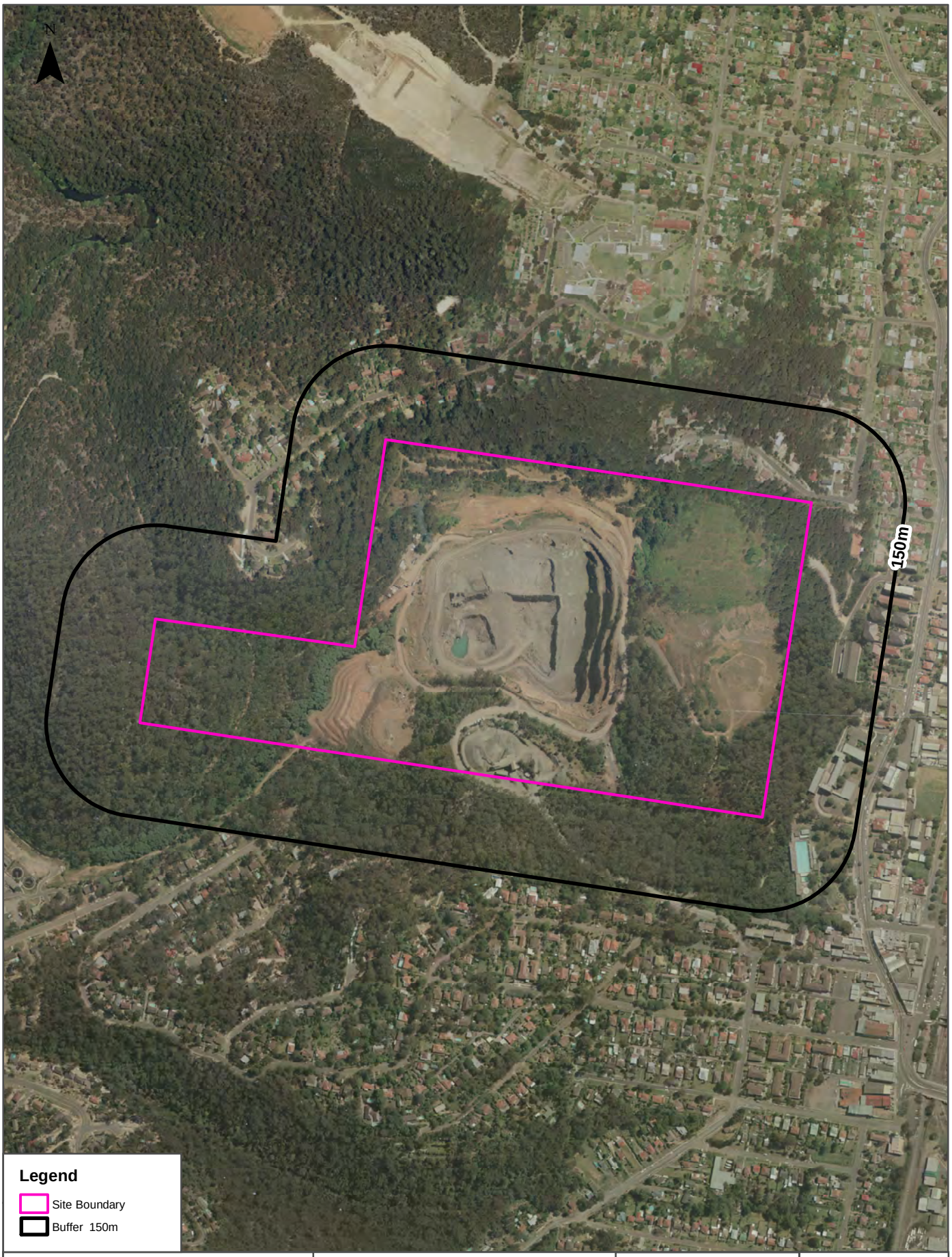
Date: 01 August, 2019

Aerial Imagery 1991

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Aerial Imagery 1982

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Aerial Imagery 1970

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Aerial Imagery 1965

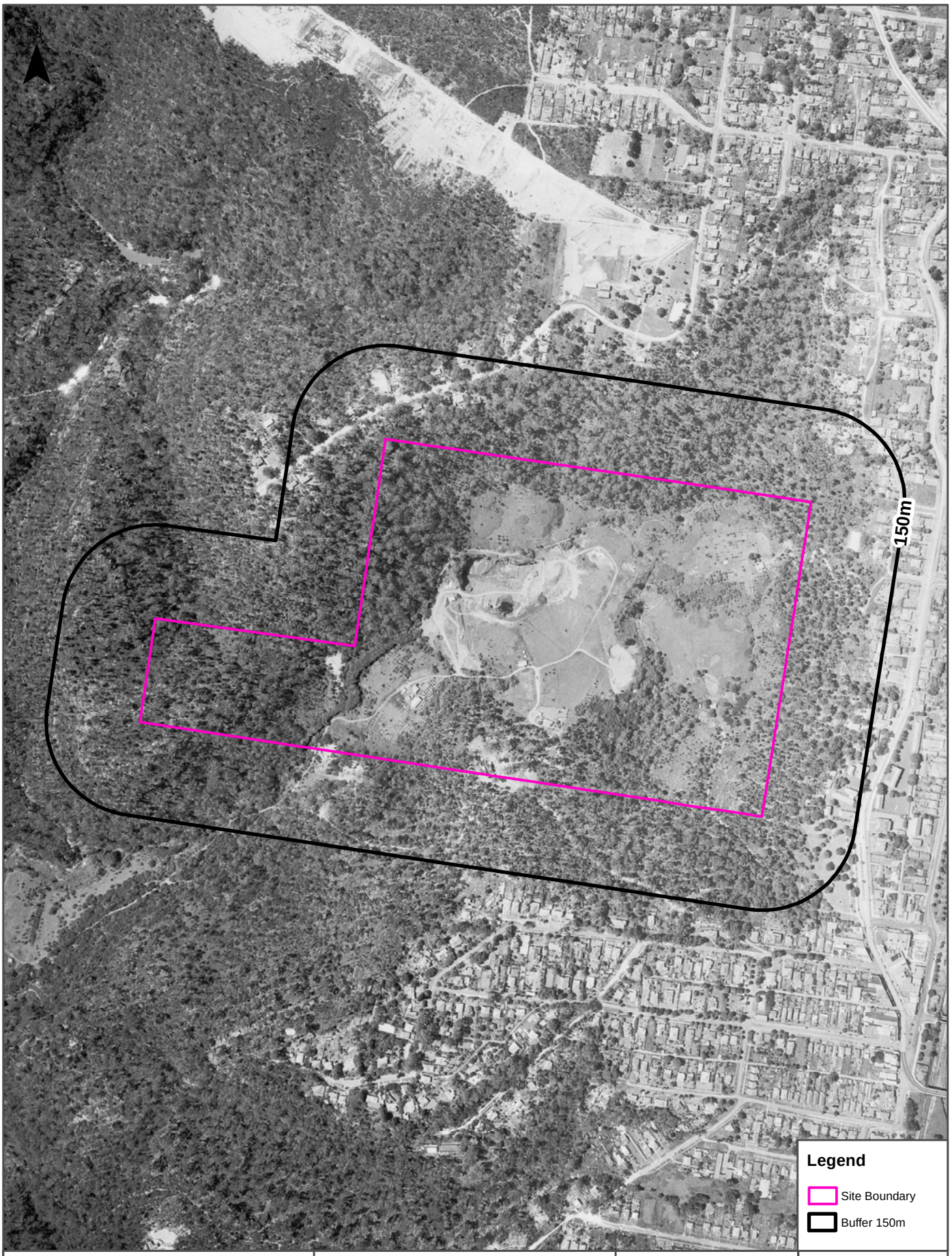
Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Aerial Imagery 1961

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Aerial Imagery 1956

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Aerial Imagery 1951

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Scale:
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Meters

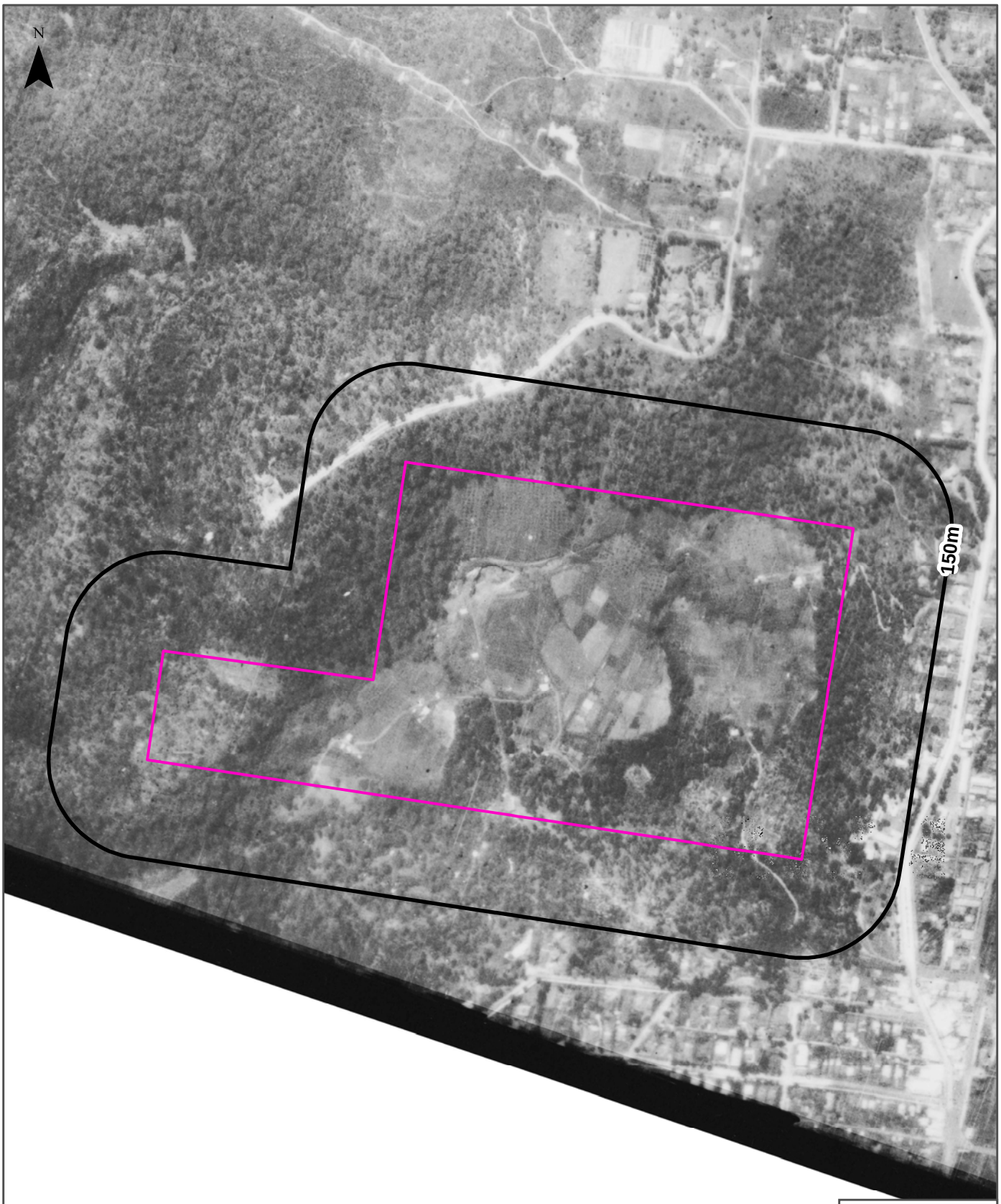
Data Source Aerial Imagery:
© NSW Department of Finance, Services & Innovation

Coordinate System:
GDA 1994 MGA Zone 56

Date: 01 August, 2019

Aerial Imagery 1930

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Scale:
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Meters

Data Source Aerial Imagery:
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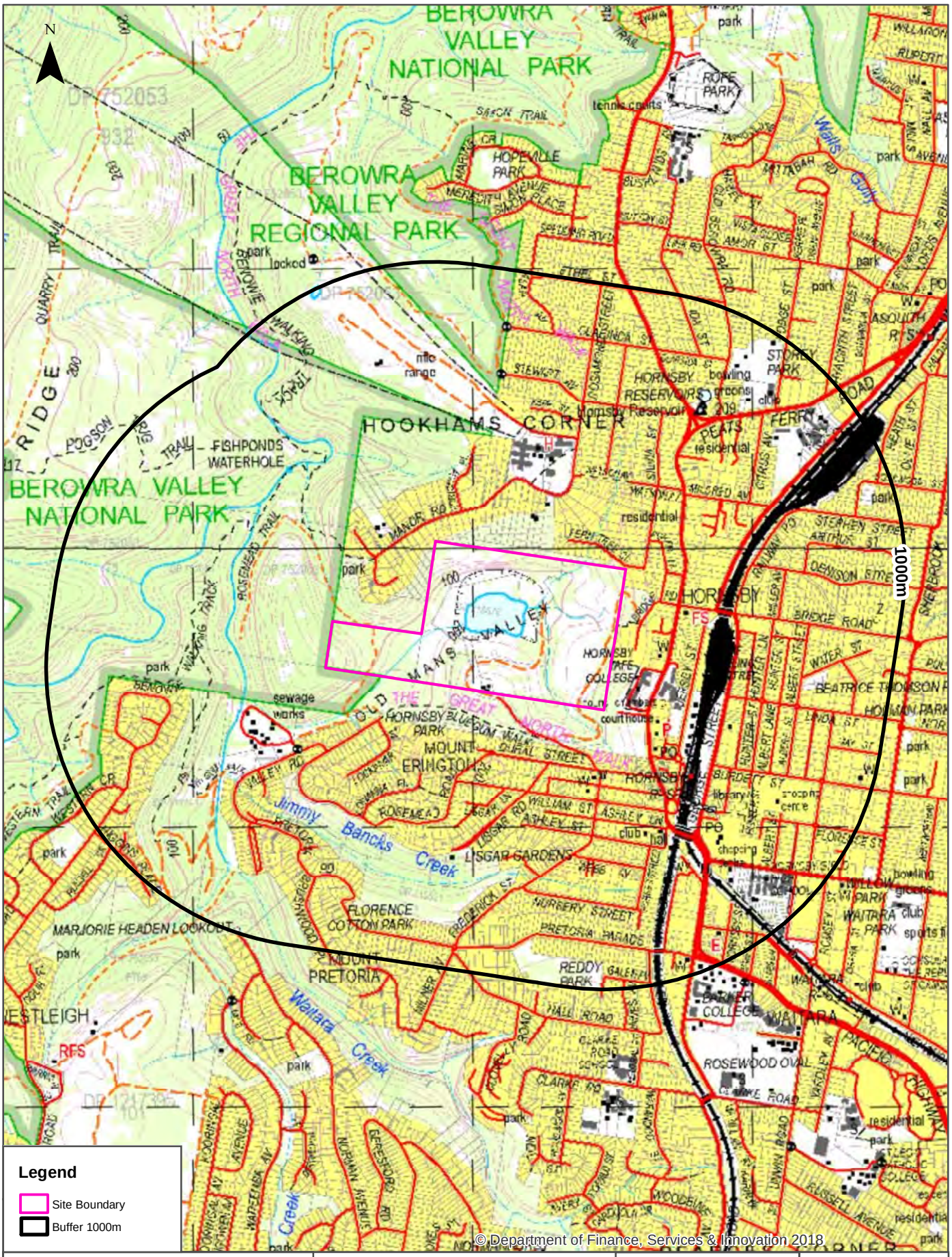
Coordinate System:
GDA 1994 MGA Zone 56

Date: 01 August, 2019

Topographic Map 2015

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Scale: 0 100 200 400 600 800 Meters

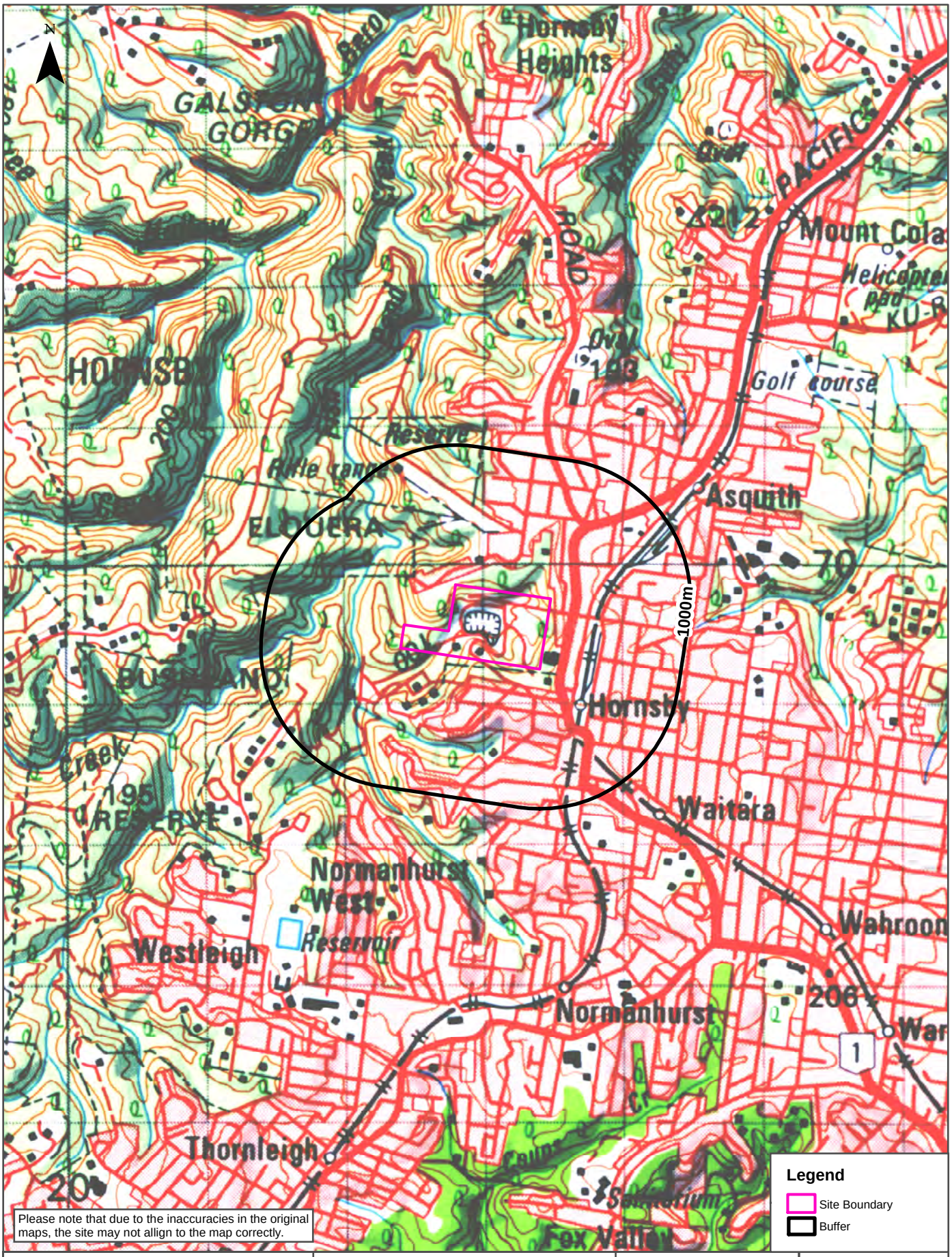
Data Sources: Topographic Map Data
© NSW Land and Property Information

Coordinate System:
GDA 1994 MGA Zone 56

Date: 05 August 2019

Historical Map 1975

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Scale: 0 175 350 700 1,050 1,400 1,750 Meters

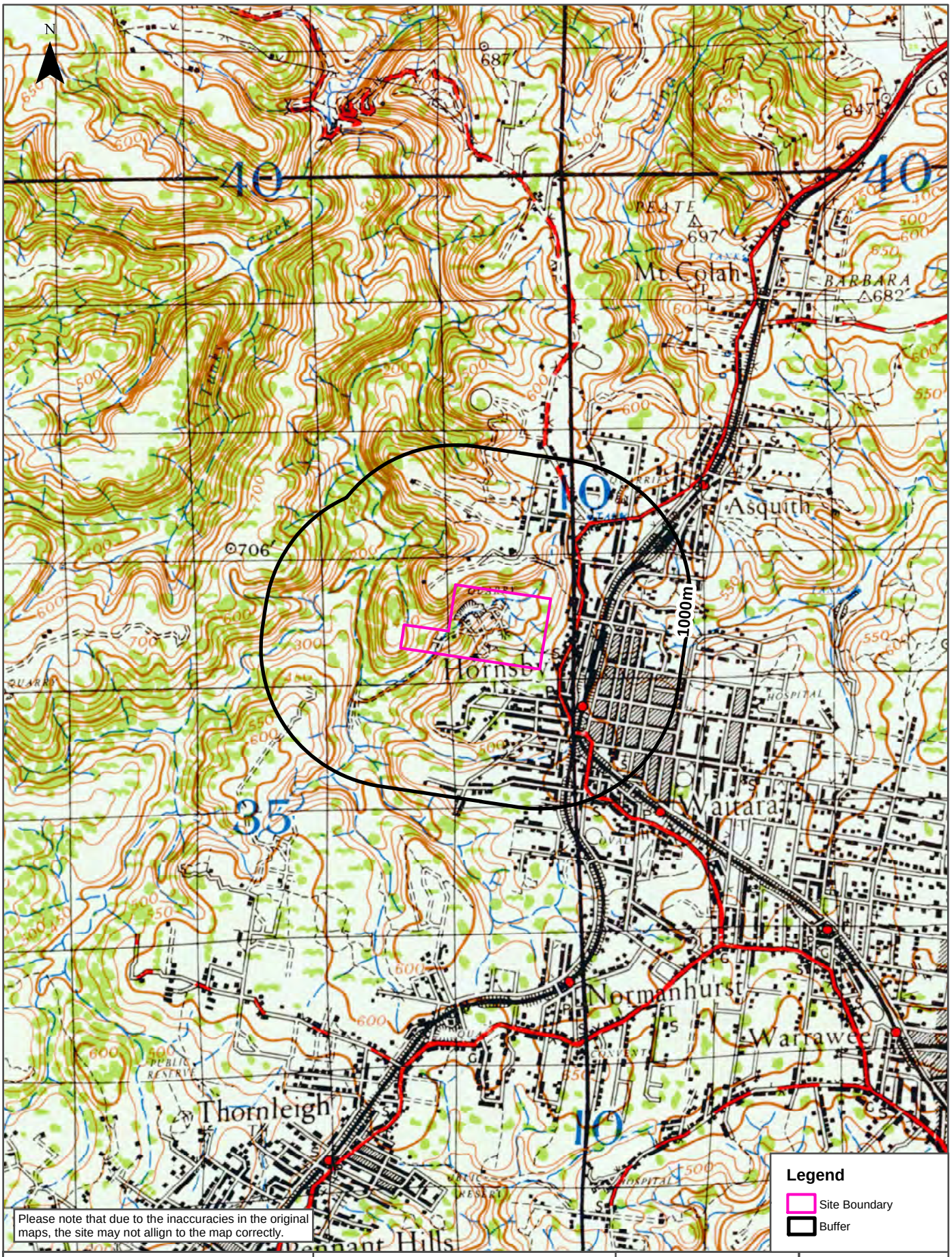
Data Sources: NATMAP 1:100,000 Topographic Maps Geoscience Australia

Coordinate System: GDA 1994 MGA Zone 56

Date: 05 August 2019

Historical Map c.1942

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Scale: 0 175 350 700 1,050 1,400 1,750 Meters

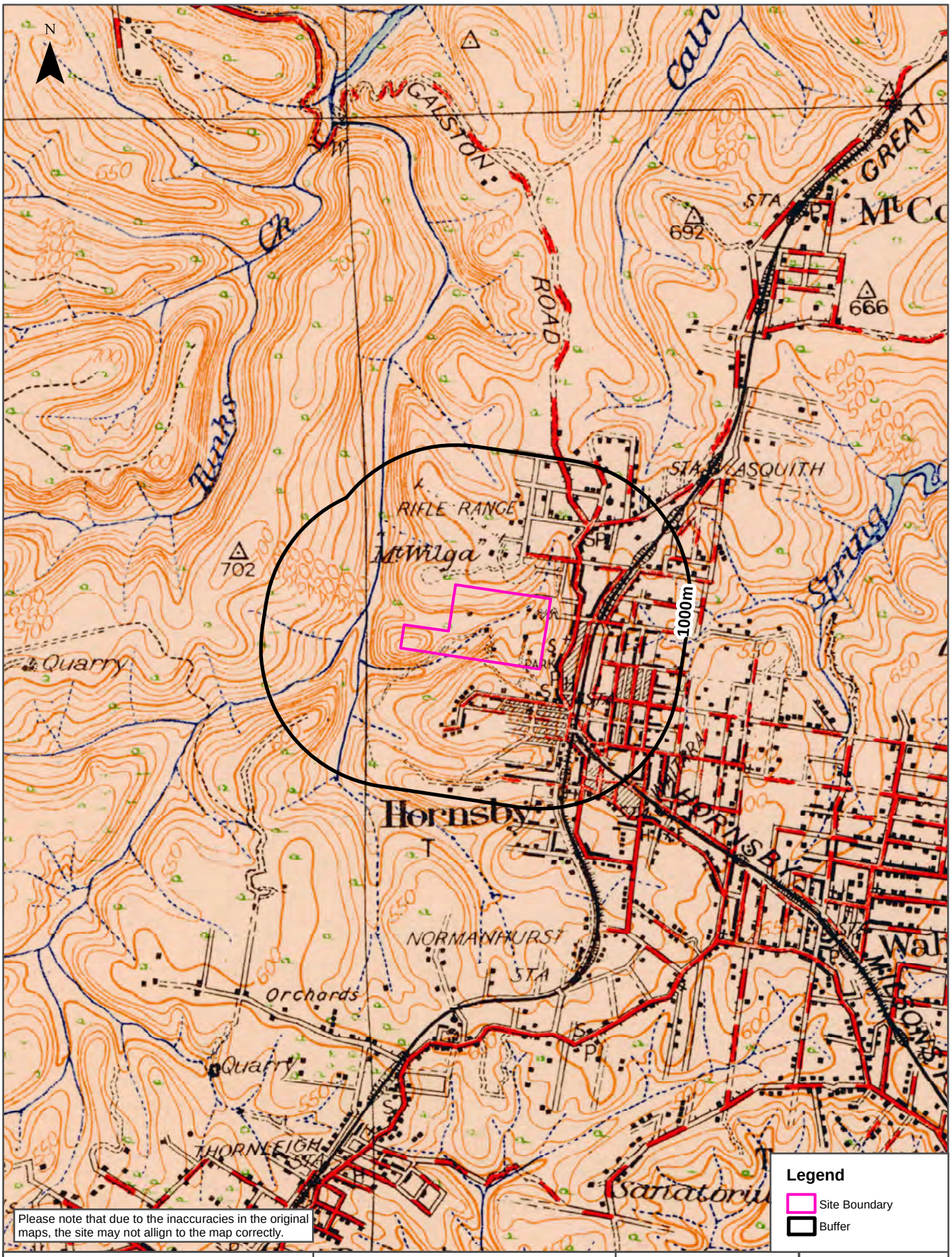
Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff

Coordinate System: GDA 1994 MGA Zone 56

Date: 05 August 2019

Historical Map c.1920

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Scale: 0 175 350 700 1,050 1,400 1,750 Meters

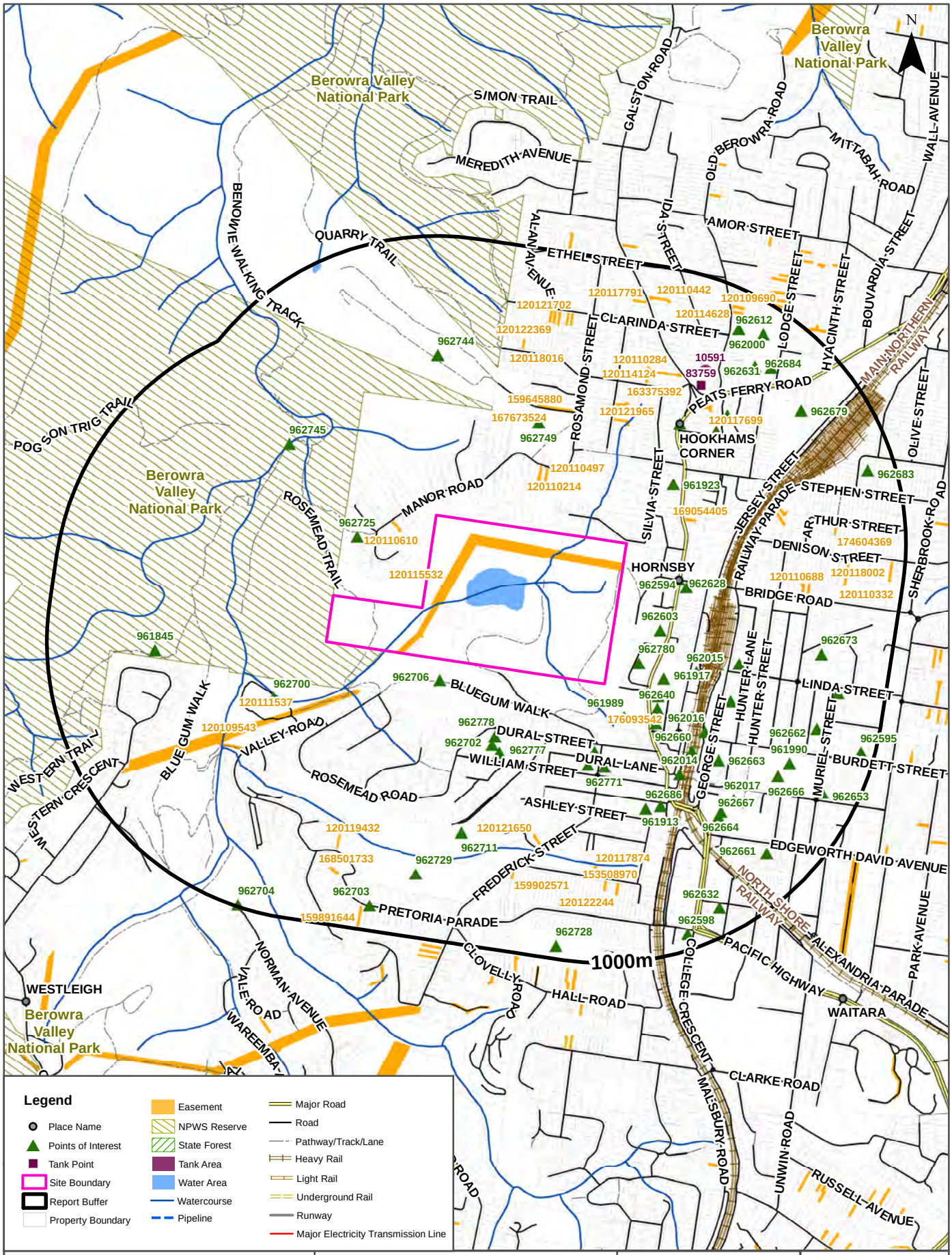
Data Sources: Australia 1:63360,
Produced by Australian Section Imperial General Staff

Coordinate System:
GDA 1994 MGA Zone 56

Date: 05 August 2019

Topographic Features

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Topographic Features

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
962706	Park	HORNSBY PARK	74m	South West
962780	TAFE College	HORNSBY TAFE COLLEGE	109m	South East
961989	Swimming Pool Facility	HORNSBY AQUATIC CENTRE	137m	South East
962603	Place Of Worship	ANGLICAN CHURCH	167m	East
962593	Court House	HORNSBY LOCAL COURT	196m	South East
962628	Suburb	HORNSBY	205m	East
961917	Local Government Chambers	THE COUNCIL OF THE SHIRE OF HORNSBY	205m	South East
962640	Police Station	HORNSBY POLICE STATION	208m	South East
962725	Park	Park	218m	North West
962637	Post Office	HORNSBY POST OFFICE	232m	South East
962594	Fire Station	HORNSBY FIRE STATION	236m	East
962778	Retirement Village	CAMELLIA COURT	245m	South
962697	Place Of Worship	CHRISTIAN SCIENTIST CHURCH	246m	South East
961923	Nursing Home	REGIS HORNSBY	269m	North East
962700	Sewage Works	WEST HORNSBY TREATMENT PLANT	276m	South West
962702	Mountain/Hill/Peak	MOUNT ERINGTON	277m	South
962694	Place Of Worship	UNITING CHURCH	296m	South East
962771	Retirement Village	KARINYA INDEPENDENT LIVING	297m	South East
962777	Retirement Village	AZALEA COURT	300m	South
962015	Parking Area	Parking Area	318m	East
962749	General Hospital	MOUNT WILGA PRIVATE HOSPITAL	381m	North
962660	Railway Station	HORNSBY RAILWAY STATION	394m	South East
962016	Parking Area	Parking Area	397m	South East
962014	Bus Interchange	HORNSBY BUS INTERCHANGE	422m	South East
961909	Community Facility	HORNSBY KU-RING-GAI PCYC	455m	South East
962665	Sports Centre	AMF BOWLING CENTRE	464m	East
961934	Urban Place	HOOKHAMS CORNER	467m	North East
962686	Club	HORNSBY RSL CLUB	471m	South East
961913	Community Facility	HORNSBY WAR MEMORIAL HALL	482m	South East
962663	Library	HORNSBY LIBRARY	490m	South East

Map Id	Feature Type	Label	Distance	Direction
962761	Retirement Village	CHRISTOPHORUS HOUSE RETIREMENT VILLAGE	512m	North East
962745	Manmade Waterbody	FISHPONDS WATERHOLE	565m	North West
962744	Target Range	RIFLE RANGE	573m	North
962770	Community Home	CHRISTOPHORUS HOUSE HOSTEL	582m	North East
962711	Park	LISGAR GARDENS	603m	South
961845	Park	Park	613m	West
962664	Post Office	HORNSBY WESTFIELD POST OFFICE	619m	South East
962017	Parking Area	Parking Area	620m	South East
962667	Shopping Centre	HORNSBY WESTFIELD	626m	South East
962666	Shopping Centre	NORTHGATE SHOPPING CENTRE	702m	South East
961990	Parking Area	Parking Area	720m	South East
962673	Park	BEATRICE THOMSON PARK	750m	East
962729	Park	FLORENCE COTTON PARK	774m	South
962662	Retirement Village	PRIMROSE COURT	776m	East
962684	Sports Field	BOWLING GREENS	783m	North East
962679	High School	ASQUITH BOYS HIGH SCHOOL	783m	North East
962631	Club	ASQUITH BOWLING AND RECREATION CLUB	814m	North East
962671	Child Care Centre	HORNSBY NURSERY AND PRE-SCHOOL	830m	East
962661	High School	HORNSBY GIRLS HIGH SCHOOL	839m	South East
962000	Parking Area	Parking Area	865m	North East
962653	Medical Centre	HORNSBY CHILD AND FAMILY HEALTH CENTRE	871m	South East
962612	Park	STOREY PARK	894m	North East
962683	Park	Park	900m	East
962632	SES Facility	SYDNEY NORTHERN SES	902m	South East
962703	Mountain/Hill/Peak	MOUNT PRETORIA	912m	South West
962598	Place Of Worship	BAPTIST CHURCH	945m	South East
962595	Place Of Worship	SALVATION ARMY CHURCH	948m	South East
962728	Park	REDDY PARK	954m	South
962704	Lookout	MARJORIE HEADEN LOOKOUT	995m	South West

Topographic Features

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
10591	Water	Operational	HORNSBY RESERVOIRS	04/08/2018	660m	North East

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
83759	Water	Operational		04/08/2018	626m	North East

Major Easements

What Major Easements exist within the dataset buffer?
Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120115532	Primary	Undefined		0m	Onsite
120110610	Primary	Undefined		118m	North West
120110497	Primary	Undefined		140m	North
120111537	Primary	Undefined		155m	South West
120110214	Primary	Undefined		188m	North
169054405	Primary	Right of way	3.65m & 4m	229m	North East
176093542	Primary	Right of way	Var.	252m	South East
120121965	Primary	Undefined		417m	North East
159645880	Primary	Right of way		437m	North
167673524	Primary	Right of way	3.05 Wide	437m	North
120114215	Primary	Undefined		482m	North East
120109543	Primary	Undefined		486m	South West
174604220	Primary	Right of way	Var	541m	East

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120121529	Primary	Undefined		551m	North East
174604452	Primary	Right of way	2.5m & var	553m	East
120117699	Primary	Undefined		556m	North East
120121650	Primary	Undefined		573m	South
163375392	Primary	Right of way		580m	North East
120110284	Primary	Undefined		580m	North East
120114124	Primary	Undefined		621m	North East
120118016	Primary	Undefined		634m	North
120110688	Primary	Undefined		640m	East
120117874	Primary	Undefined		654m	South
120110547	Primary	Undefined		666m	East
120119432	Primary	Undefined		677m	South West
159902571	Primary	Right of way	3.5m and VAR	697m	South
153508970	Primary	Right of way		710m	South
120122244	Primary	Undefined		719m	South
120121702	Primary	Undefined		734m	North
120122017	Primary	Undefined		741m	North
120122325	Primary	Undefined		741m	North
120122369	Primary	Undefined		742m	North
166833028	Primary	Right of way	3.2m & 4m	742m	North
174604369	Primary	Right of way	2.44m	743m	East
120110332	Primary	Undefined		790m	East
168501733	Primary	Right of way	Variable	796m	South West
120117791	Primary	Undefined		858m	North East
120110442	Primary	Undefined		872m	North East
120114628	Primary	Undefined		910m	North East
159891644	Primary	Right of way		920m	South West
120109690	Primary	Undefined		925m	North East
120118002	Primary	Undefined		946m	East
120118243	Primary	Undefined		992m	North East
120110064	Primary	Undefined		992m	North East

Topographic Features

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

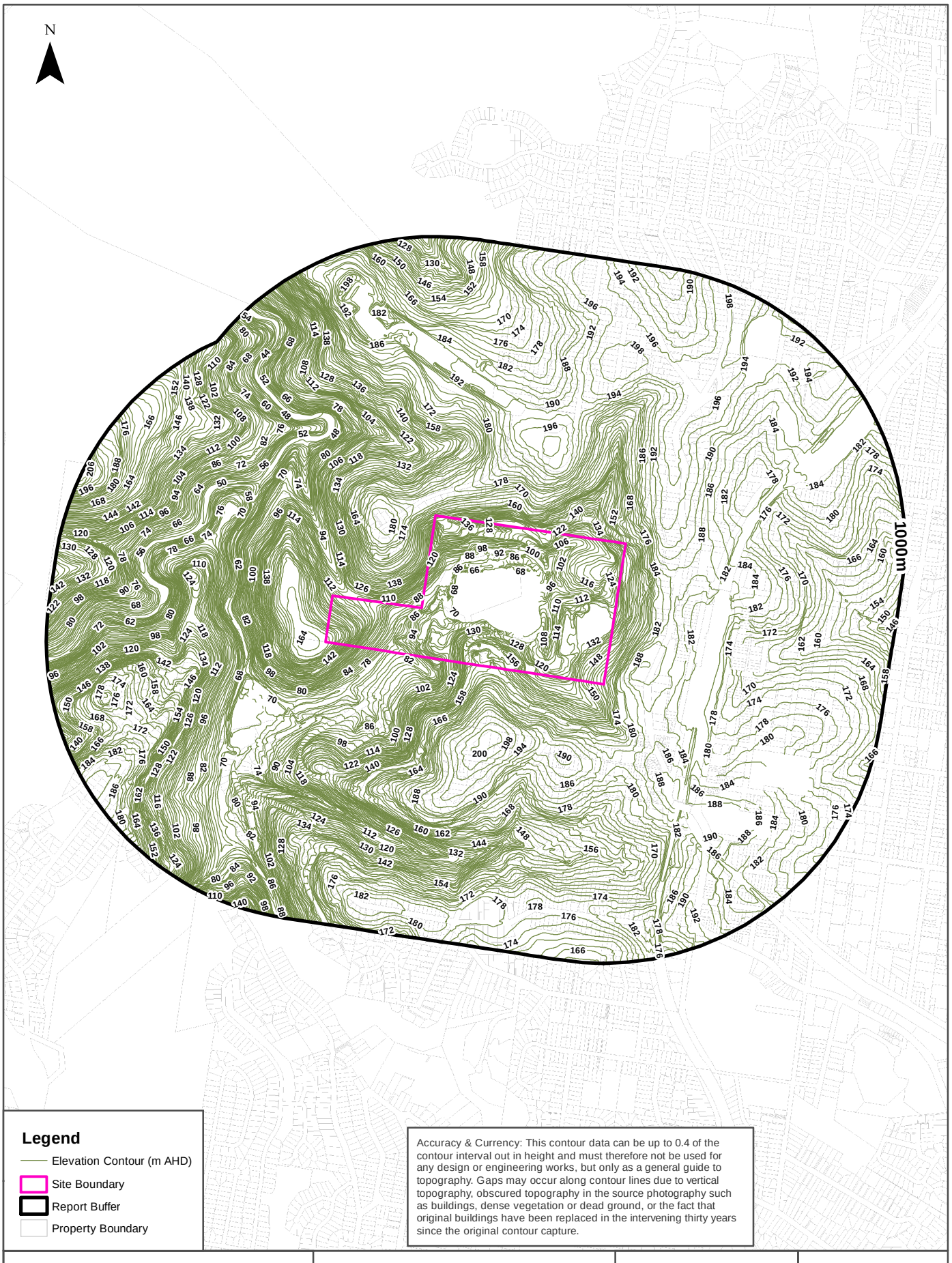
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N1187	NATIONAL PARK	Berowra Valley National Park	10/09/2012	0m	Onsite
N0630	REGIONAL PARK	Berowra Valley Regional Park	27/03/1998	782m	South West

Elevation Contours (m AHD)

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Hydrogeology & Groundwater

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)

Botany Groundwater Management Zones

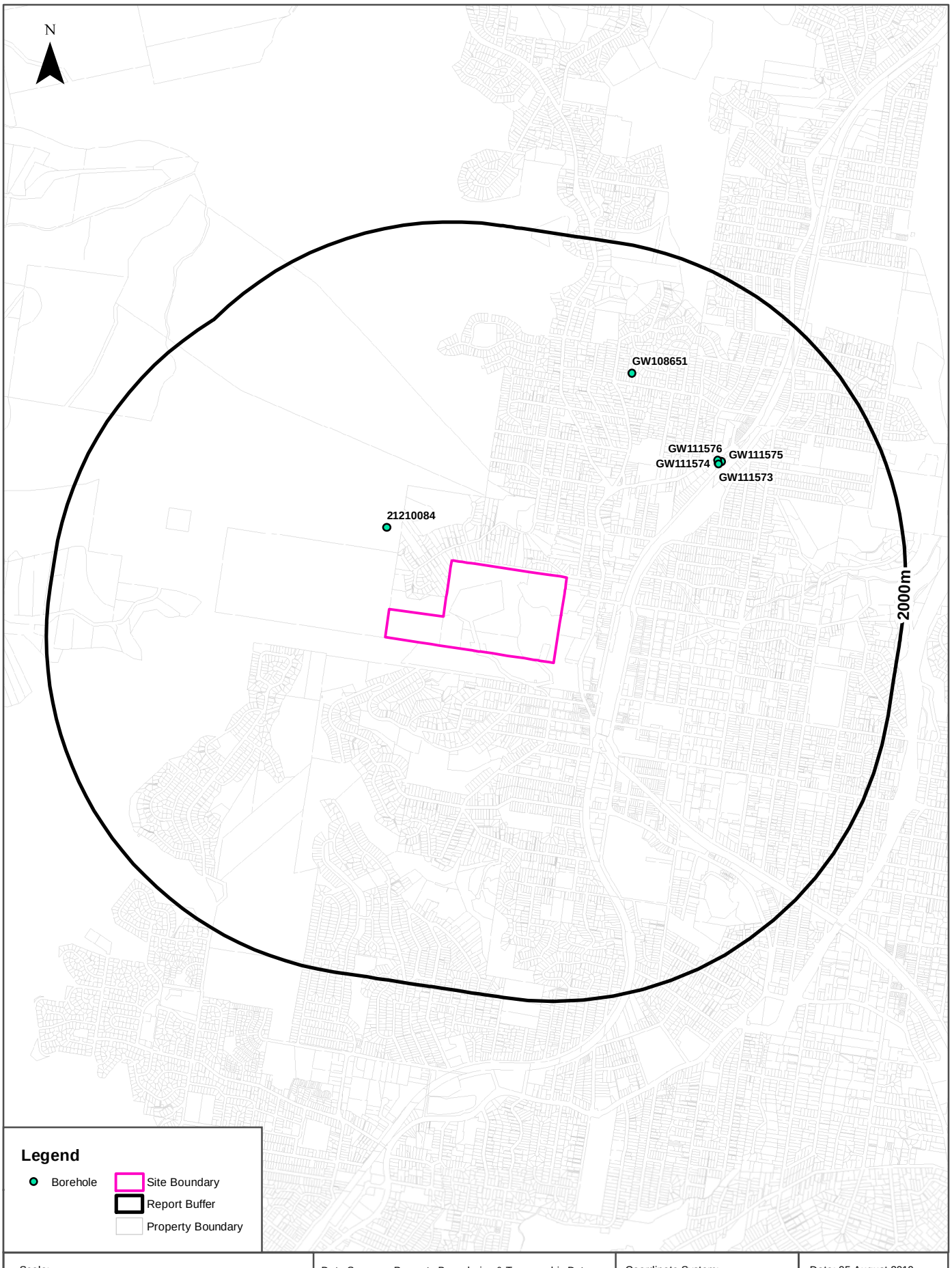
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

Management Zone No.	Restriction	Distance	Direction
N/A	No records in buffer		

Botany Groundwater Management Zones Data Source : NSW Department of Primary Industries

Groundwater Boreholes

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Hydrogeology & Groundwater

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
21210084					UNK								94.36	427m	North West
GW111573	10BL604930	Bore	Private	Monitoring Bore	Monitoring Bore		26/07/2011	5.00	5.00		1.13			1118m	North East
GW111574	10BL604930	Bore	Private	Monitoring Bore	Monitoring Bore		26/07/2011	5.00	5.00		0.90			1119m	North East
GW111576	10BL604930	Bore	Private	Monitoring Bore	Monitoring Bore		24/11/2011	5.00	5.00		0.63			1128m	North East
GW111575	10BL604930	Bore	Private	Monitoring Bore	Monitoring Bore		26/07/2011	6.00	6.00		1.35			1141m	North East
GW108651	10BL600877, 10WA109127	Spear	Private	Domestic	Domestic		09/03/2007	6.00	6.00	Good	2.00	0.500		1265m	North East

Hydrogeology & Groundwater

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

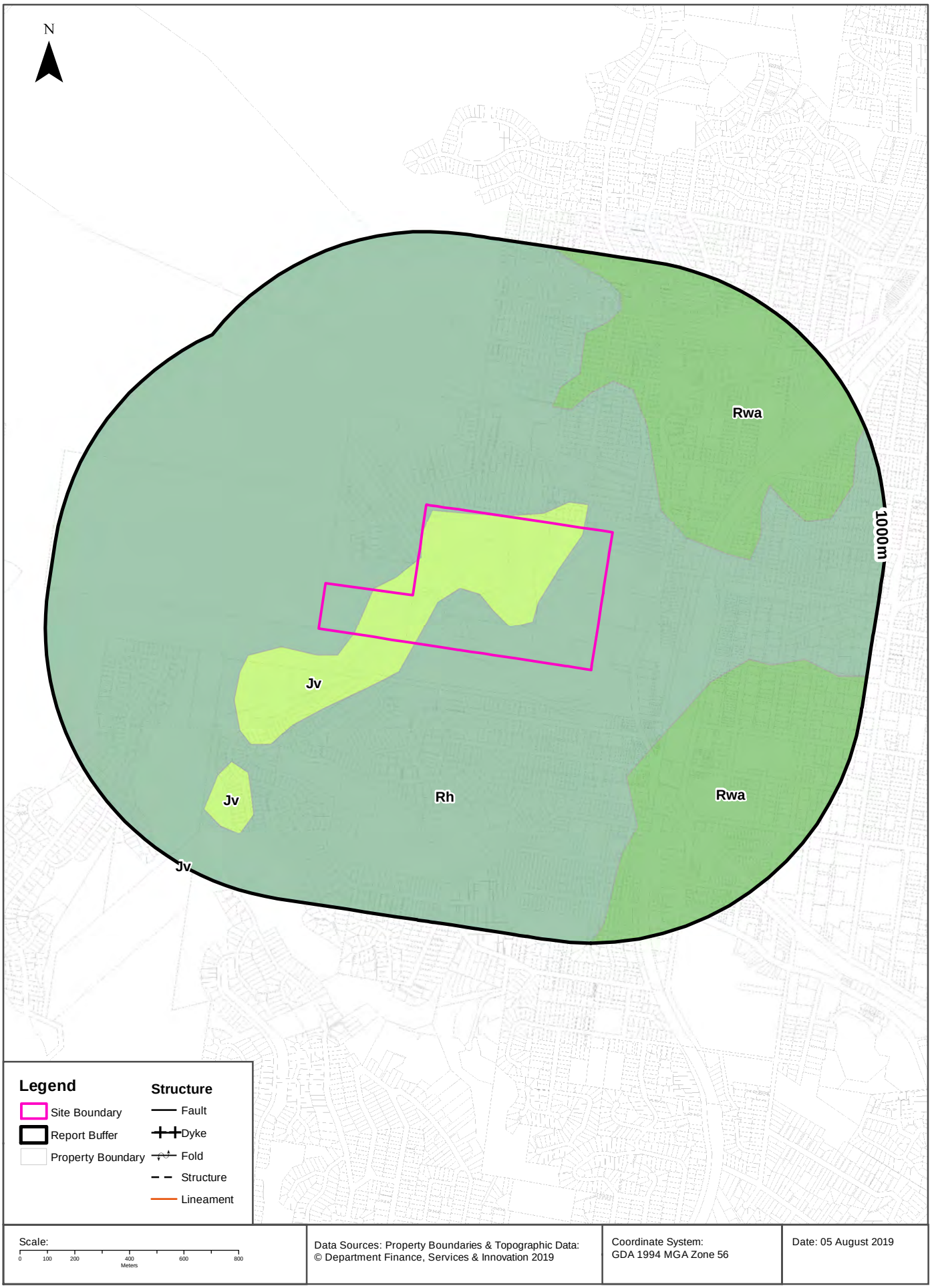
Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

Groundwater No	Drillers Log	Distance	Direction
GW111573	0.00m-0.19m CONCRETE 0.19m-0.28m GRAVEL,FINE,ANGULAR,GREY 0.28m-0.90m SILTY CLAY,MINOR GRAVEL AND SAND,BROWN MOTTLED ORANGE RED 0.90m-3.80m SILTY CLAY RED BROWN 3.80m-4.40m SHALE WEATHERED,L/RED BROWN GREY 4.40m-5.00m SANDSTONE HIGH WEATHERED,LT GREY BROWN	1118m	North East
GW111574	0.00m-0.28m SILTY SAND BROWN 0.28m-0.50m GRAVEL,FINE,ANGULAR 0.50m-1.50m SILTY CLAY,ORANGEY BROWN MOTTLED RED 1.50m-2.50m CLAY,MINOR SANDSTONE GRAVEL,LT/BROWN,MOTTLED GREY RED 2.50m-4.30m SHALE WEATHERED,GREY BROWN TO LT/GREY 4.30m-5.00m SANDSTONE HIGHLY WEATHERED,LT/GREY BROWN	1119m	North East
GW111576	0.00m-0.15m CONCRETE 0.15m-0.68m GRAVELLY SANDY SILTY CLAY,LT GREY BROWN 0.68m-1.60m SANDY SILTY CLAY,MINOR FINE GRABVEL,ORANGEY BROWN 1.60m-2.50m SANDSTONE RED BROWN 2.50m-4.70m WEATHERED SHALE,LT GREY RED BROWN 4.70m-5.00m SANDSTONE,LT RED BROWN	1128m	North East
GW111575	0.00m-0.18m CONCRETE 0.18m-0.30m GRAVELLY SANDY SILT , BROWN 0.30m-0.50m SILTY CLAY, MINOR GRAVEL,ORANGEY BROWN 0.50m-1.70m SILTY CLAY , RED BROWN 1.70m-6.00m SHALE WEATHERED,LT GREY RED BROWN	1141m	North East
GW108651	0.00m-0.30m topsoil 0.30m-3.00m sand, brown 3.00m-5.00m sand, dakr, silty brown 5.00m-6.00m sand, light brown	1265m	North East

Geology 1:100,000

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Geology

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Jv	Volcanic breccia, varying amounts of sedimentary breccia, and basalt.				Jurassic		Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Jv	Volcanic breccia, varying amounts of sedimentary breccia, and basalt.				Jurassic		Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

Geological Data Source : NSW Department of Industry, Resources & Energy

Naturally Occurring Asbestos Potential

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Naturally Occurring Asbestos Potential

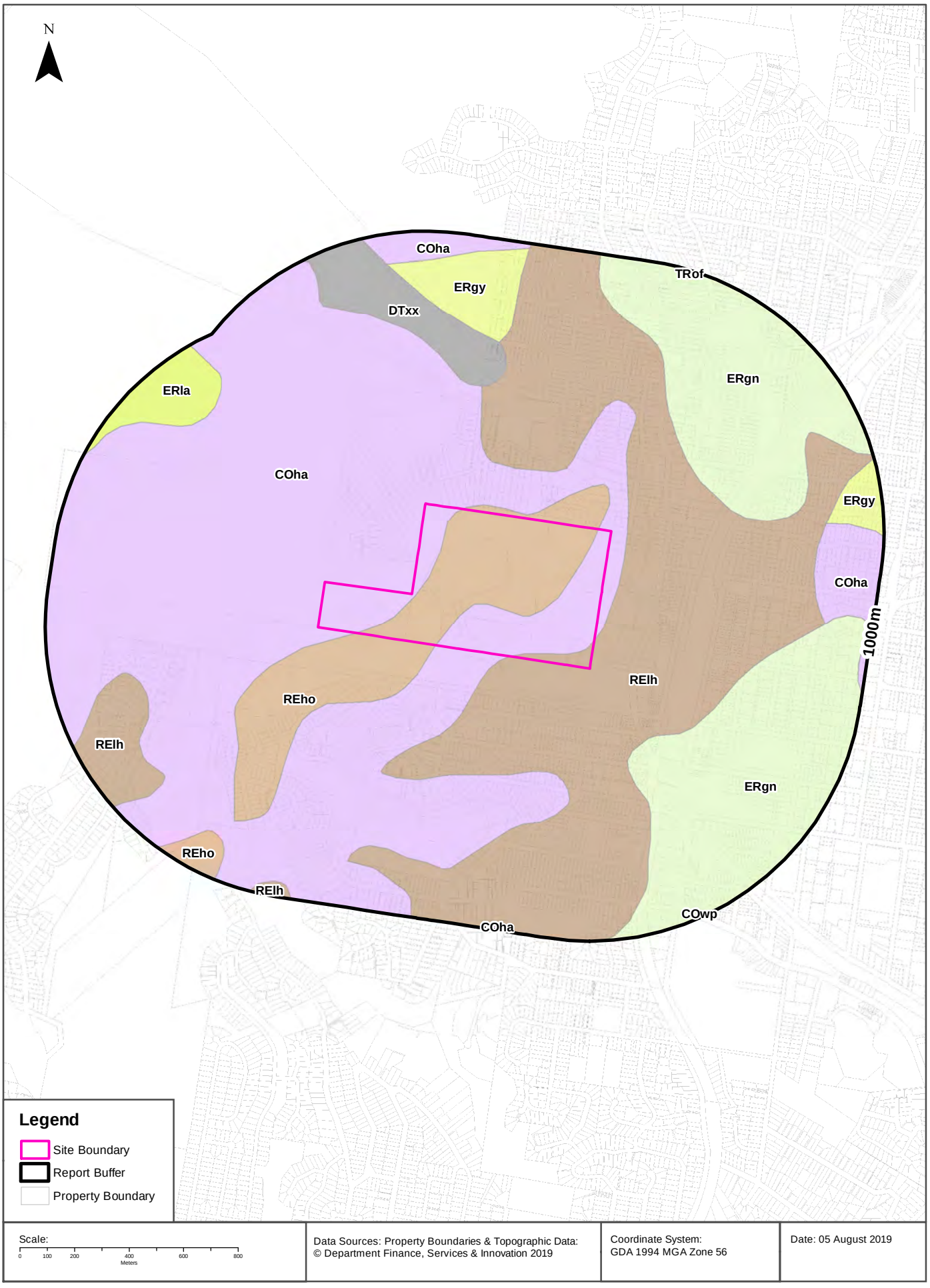
Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Soil Landscapes

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Soils

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Soil Landscapes

What are the onsite Soil Landscapes?

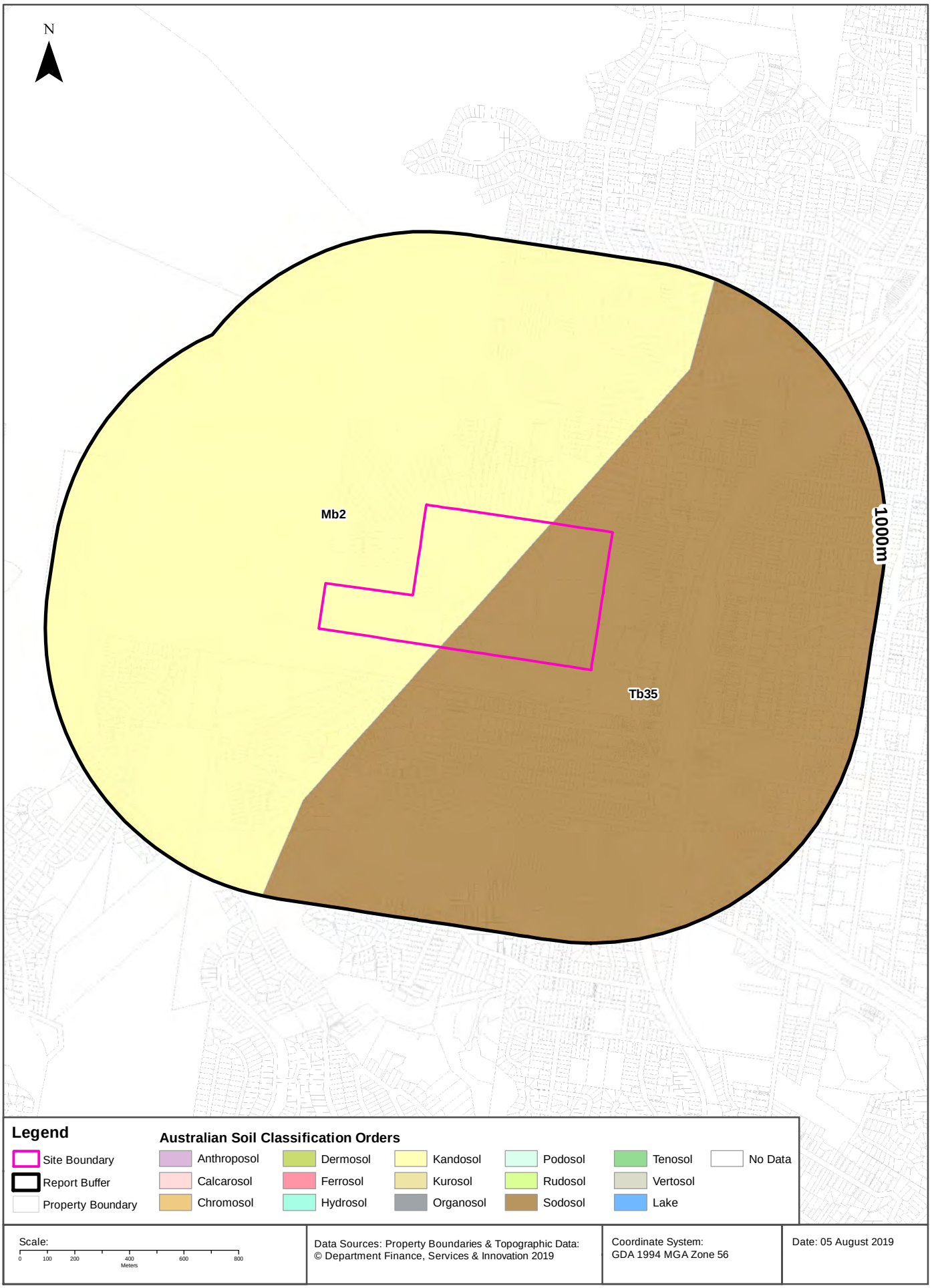
Soil Code	Name	Group	Process	Map Sheet	Scale
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
REho	HORNSBY		RESIDUAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
COwp	WEST PENNANT HILLS		COLLUVIAL	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
ERla	LAMBERT		EROSIONAL	Sydney	1:100,000
REho	HORNSBY		RESIDUAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000
TRof	OXFORD FALLS		TRANSFERRAL	Sydney	1:100,000

Atlas of Australian Soils

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Soils

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

Map Unit Code	Soil Order	Map Unit Description	Distance
Mb2	Kandosol	Dissected sandstone plateau of moderate to strong relief with sandstone pillars, ledges, and slabs-- level to undulating ridges, irregularly benched slopes, steep ridges, cliffs, canyons, narrow sandy valleys: chief soils are (i) on areas of gentle to moderate relief, acid yellow leached earths (Gn2.74) and (Gn2.34) and acid leached yellow earths (Gn2.24)-sometimes these soils contain ironstone gravel; and (ii) on, or adjacent to, areas of strong relief, siliceous sands (Uc1.2), leached sands (Uc2.12) and (Uc2.2), and shallow forms of the above (Gn2) soils. Associated are: (i) on flat to gently undulating remnants of the original plateau surface, leached sands (Uc2.3), siliceous sands (Uc1.2), sandy earths (Uc5.22), and (Gn2) soils as for (i) above (these areas are in part comparable with unit Cb29); (ii) on flat ironstone gravelly remnants of the original plateau surface, (Gn2) soils as for unit Mb5(i); (iii) on gently undulating ridges where interbedded shales are exposed, shallow, often stony (Dy3.41), (Dr2.21), and related soils similar to unit Tb35; (iv) narrow valleys of (Uc2.3) soils flanked by moderate slopes of (Dy3.41) soils; (v) escarpments of steep hills with shallow (Dy) and (Dr) soils between sandstone pillars; and (vi) shallow (Um) soils, such as (Um6.21) on steep hills of basic rocks. As mapped, minor areas of units Mg20, Mm1, and Mw8 are included. Data are limited.	0m
Tb35	Sodosol	Dissected plateau remnants--flat to undulating ridge tops with moderate to steep side slopes: chief soils are hard acidic yellow and yellow mottled soils (Dy3.41), (Dy2.21), and (Dy2.41) and hard acidic red soils (Dr2.21); many shallow profiles occur and profile thickness varies considerably over short distances. Associated are: (Gn3.54), (Gn3.14), and possibly other (Gn3) soils; (Db1.2) soils on some ridges; (Dy5.81) soils in areas transitional to unit Mb2; soils common to unit Mb2; and eroded lateritic remnants. Small areas of other soils are likely. Flat ferruginous shale or sandstone fragments are common on and/or in and/or below the soils of this unit.	0m

Acid Sulfate Soils

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

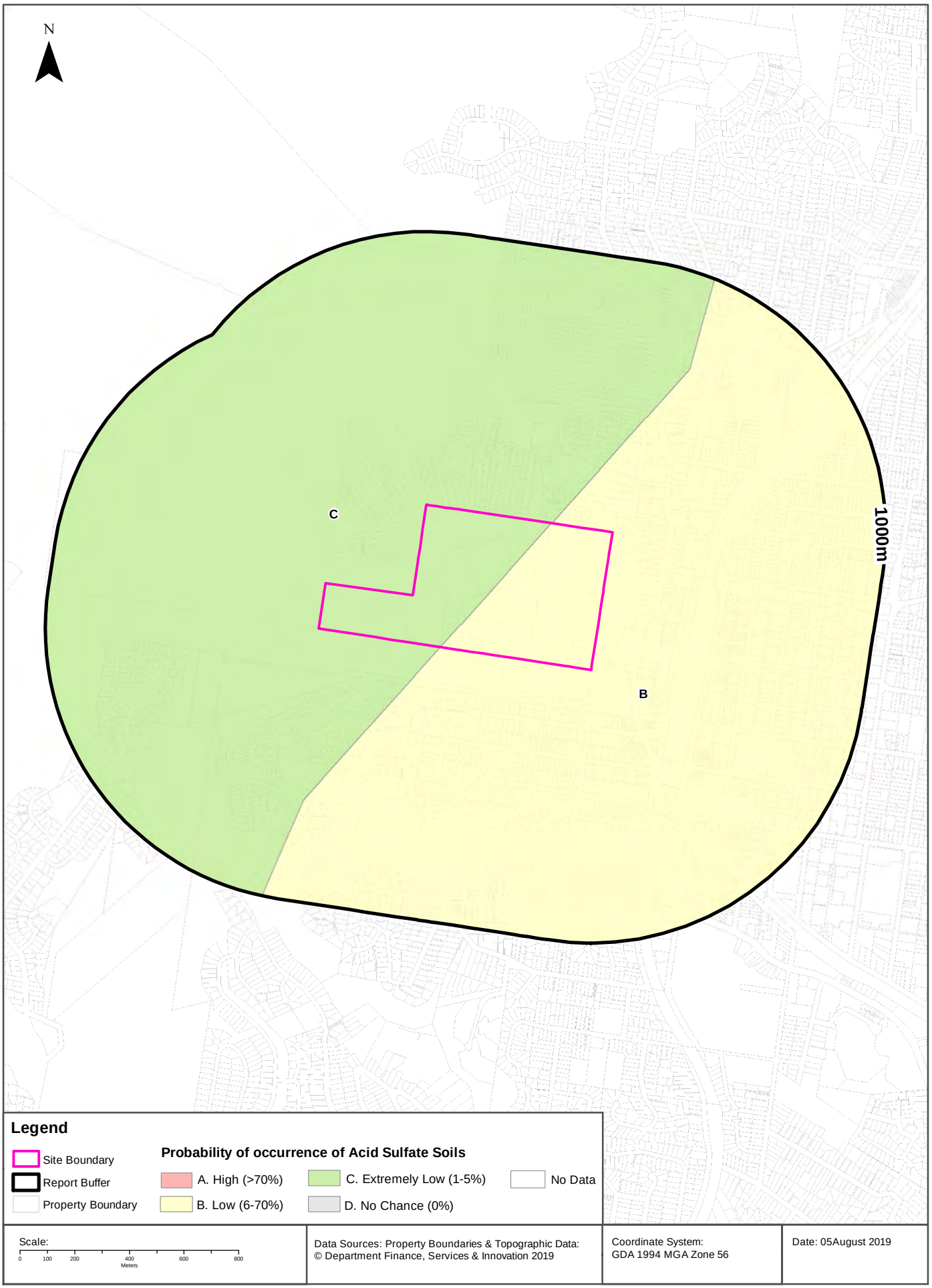
Soil Class	Description	EPI Name
N/A		

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Acid Sulfate Soils

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m

Dryland Salinity

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A	N/A	N/A

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
N/A	Outside Data Coverage			

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage

Mining Subsidence Districts

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

State Environmental Planning Policy

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

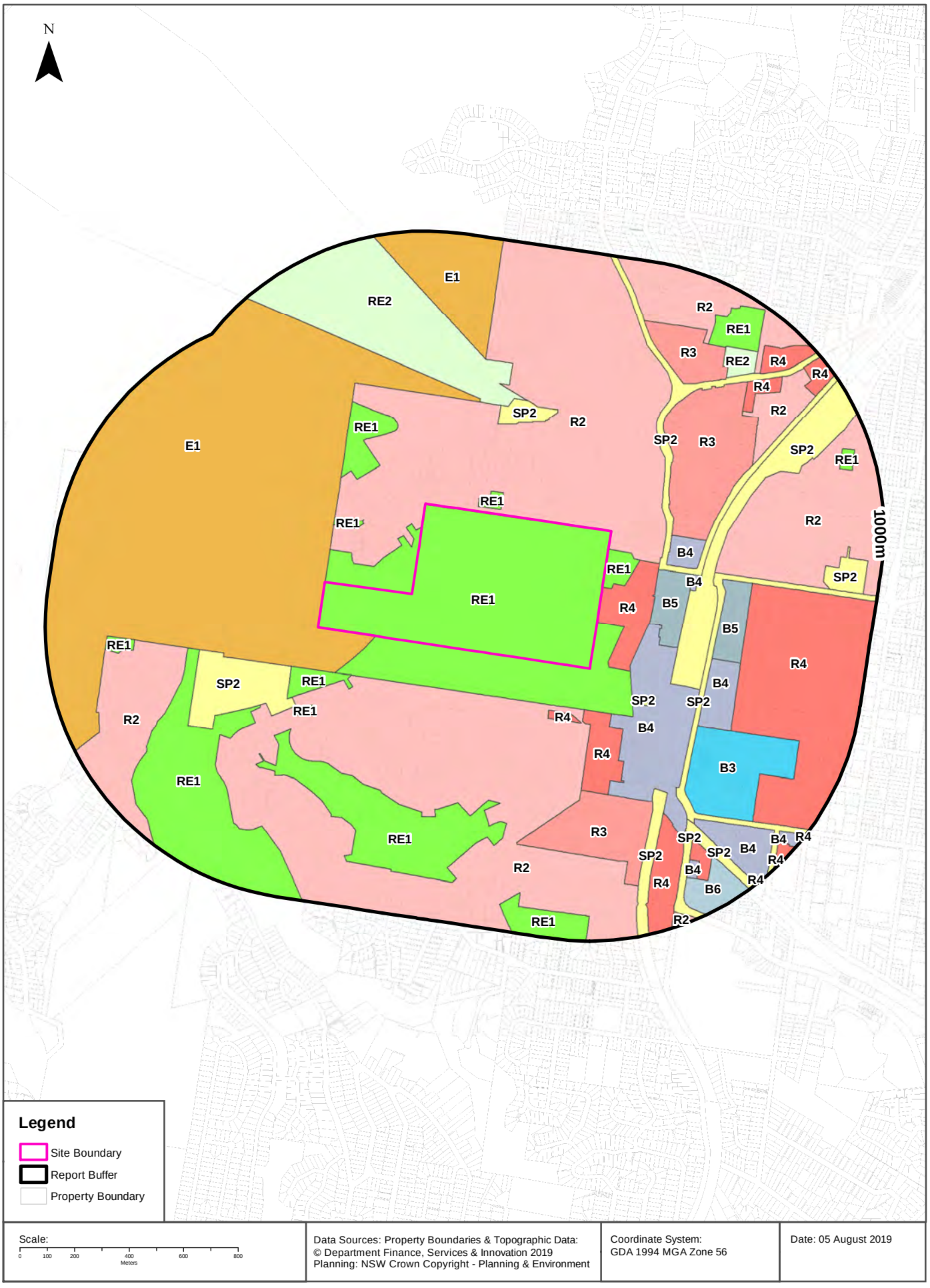
State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No Records in Buffer							

EPI Planning Zones

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Legend

- Site Boundary
- Report Buffer
- Property Boundary

Scale: 0 100 200 400 600 800 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019 Planning: NSW Crown Copyright - Planning & Environment	Coordinate System: GDA 1994 MGA Zone 56	Date: 05 August 2019

Environmental Planning Instrument

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Land Zoning

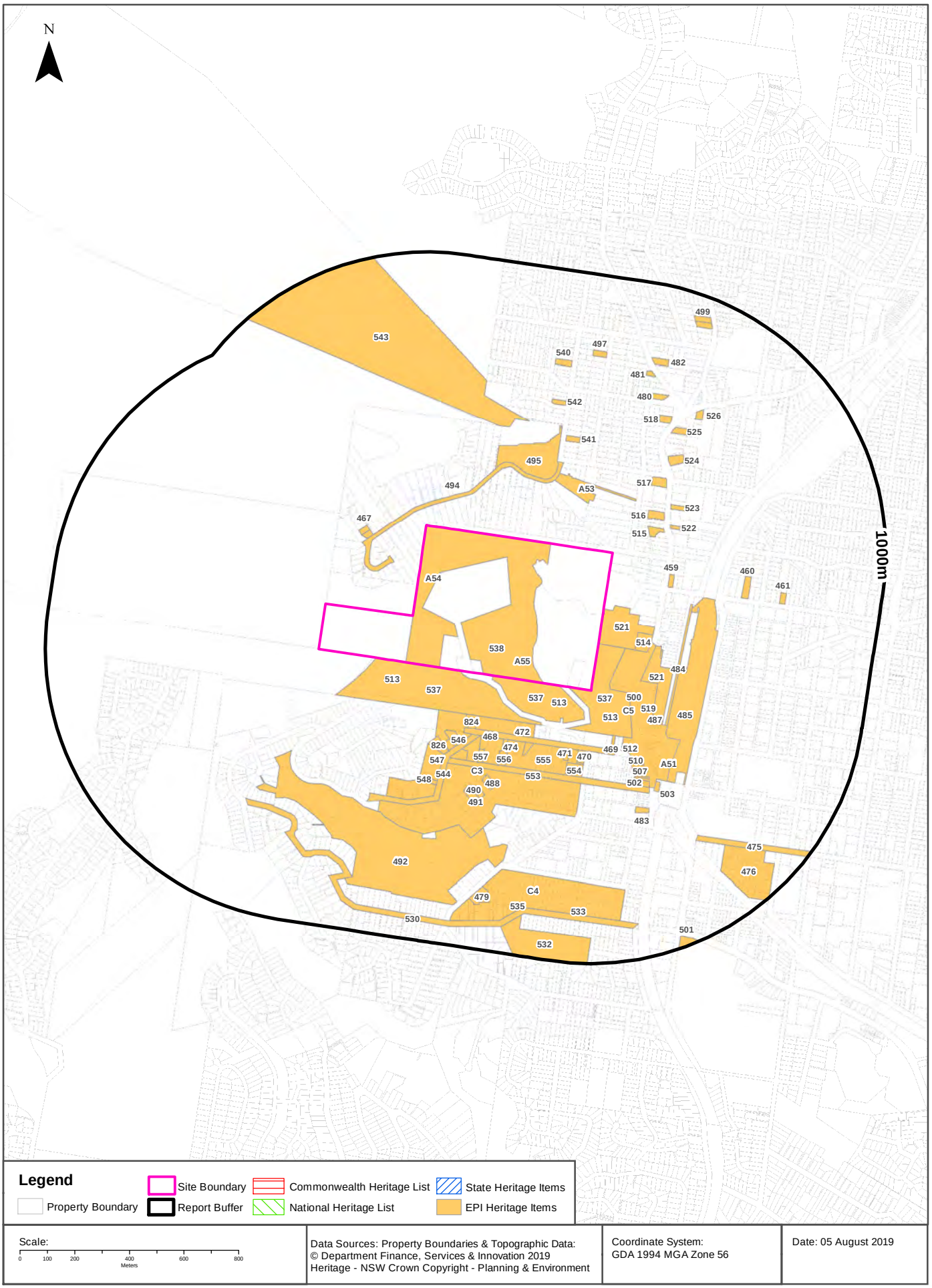
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		0m	Onsite
E1	National Parks and Nature Reserves		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		0m	West
R2	Low Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		0m	North
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		0m	East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		20m	North
B4	Mixed Use		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		143m	South East
R2	Low Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		153m	South
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		153m	South East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		155m	South West
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		173m	South East
SP2	Infrastructure	Sewage Treatment Plant	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		175m	West
B5	Business Development		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		187m	East
SP2	Infrastructure	Road	Hornsby Local Environmental Plan 2013	29/09/2017	29/09/2017	29/09/2017	Amendment No 8	192m	North
SP2	Infrastructure	Telecommunications	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		202m	South East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		211m	North West
B4	Mixed Use		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		218m	East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		218m	North West
R3	Medium Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		221m	North East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		287m	South West
SP2	Infrastructure	Railway	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		300m	North East
B4	Mixed Use		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		317m	East
SP2	Infrastructure	Health Services Facilities	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		327m	North
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	29/09/2017	29/09/2017	29/09/2017	Amendment No 8	355m	South West
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		385m	South West
SP2	Infrastructure	Road	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		397m	North East
RE2	Private Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		398m	North West
R2	Low Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		399m	East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B5	Business Development		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		429m	East
B4	Mixed Use		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		430m	South East
R3	Medium Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		447m	South East
B3	Commercial Core		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		448m	South East
R2	Low Density Residential		Hornsby Local Environmental Plan 2013	29/09/2017	29/09/2017	29/09/2017	Amendment No 8	485m	South West
SP2	Infrastructure	Railway	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		501m	South
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		540m	East
R2	Low Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		571m	North East
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		590m	South East
R3	Medium Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		603m	North East
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		653m	North East
SP2	Infrastructure	Railway	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		656m	South East
B4	Mixed Use		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		670m	South East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		675m	West
SP2	Infrastructure	Road	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		688m	South
RE2	Private Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		703m	North East
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		727m	South East
R2	Low Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		769m	North East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		772m	North East
B4	Mixed Use		Hornsby Local Environmental Plan 2013	29/09/2017	29/09/2017	29/09/2017	Amendment No 8	791m	South East
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		795m	North East
SP2	Infrastructure	Electricity Transmission & Distribution	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		795m	East
B6	Enterprise Corridor		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		820m	South East
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		850m	South
RE1	Public Recreation		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		867m	East
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		886m	North East
B4	Mixed Use		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		916m	South East
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		940m	South East
R2	Low Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		943m	South East
R4	High Density Residential		Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017		952m	South East

Heritage Items

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Legend

Property Boundary	Site Boundary	Commonwealth Heritage List	State Heritage Items
	Report Buffer	National Heritage List	EPI Heritage Items

Scale: 0 100 200 400 600 800 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019
Heritage - NSW Crown Copyright - Planning & Environment

Coordinate System: GDA 1994 MGA Zone 56

Date: 05 August 2019

Heritage

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
N/A	No records in buffer							

Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
538	Diatreme Hornsby Quarry and surrounding vegetation	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	Onsite
537	Sandstone steps	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	South East
513	Hornsby Park, Lone Pine and sandstone steps	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	South East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
513	Hornsby Park,Lone Pine and sandstone steps	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	South East
521	TAFE College'Buildings 'K' and 'M' and grounds (excluding other buildings)	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	East
A54	Diatreme Hornsby Quarry and surrounding vegetation	Item - Archaeological	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	North West
A55	Old Man's Valley Cemetery, including Higgins' Family Cemetery, sandstone receptacle, cool room and *	Item - Archaeological	State	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	South East
C5	Peats Ferry Road Precinct, Hornsby West Side Heritage Conservation Area	Conservation Area - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	0m	South East
494	Street trees	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	64m	North West
514	St. Peter's Anglican Church and hall	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	135m	East
515	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	148m	North East
500	Road median, lights and palms	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	148m	South East
C3	Mount Errington Precinct, Hornsby West Side Heritage Conservation Area	Conservation Area - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	154m	South
824	"Birklands"	Item - General	Local	Hornsby Local Environmental Plan 2013	19/09/2014	19/09/2014	29/09/2017	154m	South
A53	Suspension bridge	Item - Archaeological	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	166m	North East
520	Hornsby Shire Council Chambers	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	170m	South East
472	Garden, fence and paths	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	171m	South
519	Hornsby Court House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	172m	South East
521	TAFE College'Buildings 'K' and 'M' and grounds (excluding other buildings)	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	174m	South East
516	'Belmont'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	180m	North East
469	'Norwood'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	183m	South East
466	Sandstone fence	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	188m	North West
467	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	203m	North West
468	Street trees	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	203m	South

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
459	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	218m	East
470	Christian Science Church	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	223m	South East
471	'Wyuni' and gardens	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	223m	South East
473	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	224m	South
544	Street trees	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	224m	South
546	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	224m	South
545	'Mt. Errington' and gardens	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	225m	South
474	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	225m	South
556	'Brinawa' and garden	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	225m	South
522	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	229m	North East
495	'Mount Wilga' and grounds	Item - General	State	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	231m	North
512	Bank	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	235m	South East
487	'The Browsery Cottage'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	245m	South East
486	Shops	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	248m	South East
826	Kuranda	Item - General	Local	Hornsby Local Environmental Plan 2013	19/09/2014	19/09/2014	29/09/2017	251m	South
825	The Haven	Item - General	Local	Hornsby Local Environmental Plan 2013	19/09/2014	19/09/2014	29/09/2017	253m	South
511	Shop	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	255m	South East
523	House and garden	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	267m	North East
557	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	274m	South
554	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	275m	South East
555	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	275m	South
517	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	286m	North East
510	Bank	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	288m	South East
484	Street trees	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	291m	East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
509	Shop	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	298m	South East
485	SRA electricity plant and signal box	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	299m	East
A50	SRA electricity plant and signal box	Item - Archaeological	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	317m	South East
553	Street trees	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	320m	South
508	Shop	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	321m	South East
507	'The Junction Stores'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	326m	South East
547	Garden tree	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	329m	South
506	Shop	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	341m	South East
505	Shop	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	349m	South East
504	Shop	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	355m	South East
502	Hornsby Cinema	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	360m	South East
488	Garden	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	363m	South
A52	Railway cloak room buildings	Item - Archaeological	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	370m	South East
541	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	379m	North East
524	'Carnralla'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	381m	North East
489	Garden	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	385m	South
492	Lisgar Gardens	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	385m	South West
A51	Railway station	Item - Archaeological	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	386m	South East
543	Hornsby Rifle Range	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	399m	North West
548	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	404m	South
503	War Memorial and Palms	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	407m	South East
490	Garden	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	409m	South
491	House and garden	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	412m	South
483	Hornsby War Memorial Hall	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	454m	South East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
525	'Hovenden'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	487m	North East
460	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	490m	East
518	'Bingley Hall'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	508m	North East
542	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	509m	North
526	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	574m	North East
480	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	584m	North East
530	Street trees	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	595m	South
461	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	630m	East
540	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	651m	North
475	Street trees	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	659m	South East
481	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	662m	North East
C4	Pretoria Parade Precinct, Hornsby West Side Heritage Conservation Area	Conservation Area - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	697m	South
497	'Wyreema'	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	702m	North East
482	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	706m	North East
476	Hornsby Girls, High School,buildings (excluding other school structures and grounds)	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	748m	South East
535	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	756m	South
479	'Wirruna' and gardens	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	770m	South
533	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	792m	South
532	Reddy Park	Item - Landscape	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	850m	South
498	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	881m	North East
499	House	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	899m	North East
501	Barker College, group of buildings, grounds and gate	Item - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	958m	South East
C1	Barker College Heritage Conservation Area	Conservation Area - General	Local	Hornsby Local Environmental Plan 2013	27/09/2013	11/10/2013	29/09/2017	962m	South East

Natural Hazards - Bush Fire Prone Land

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Natural Hazards

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

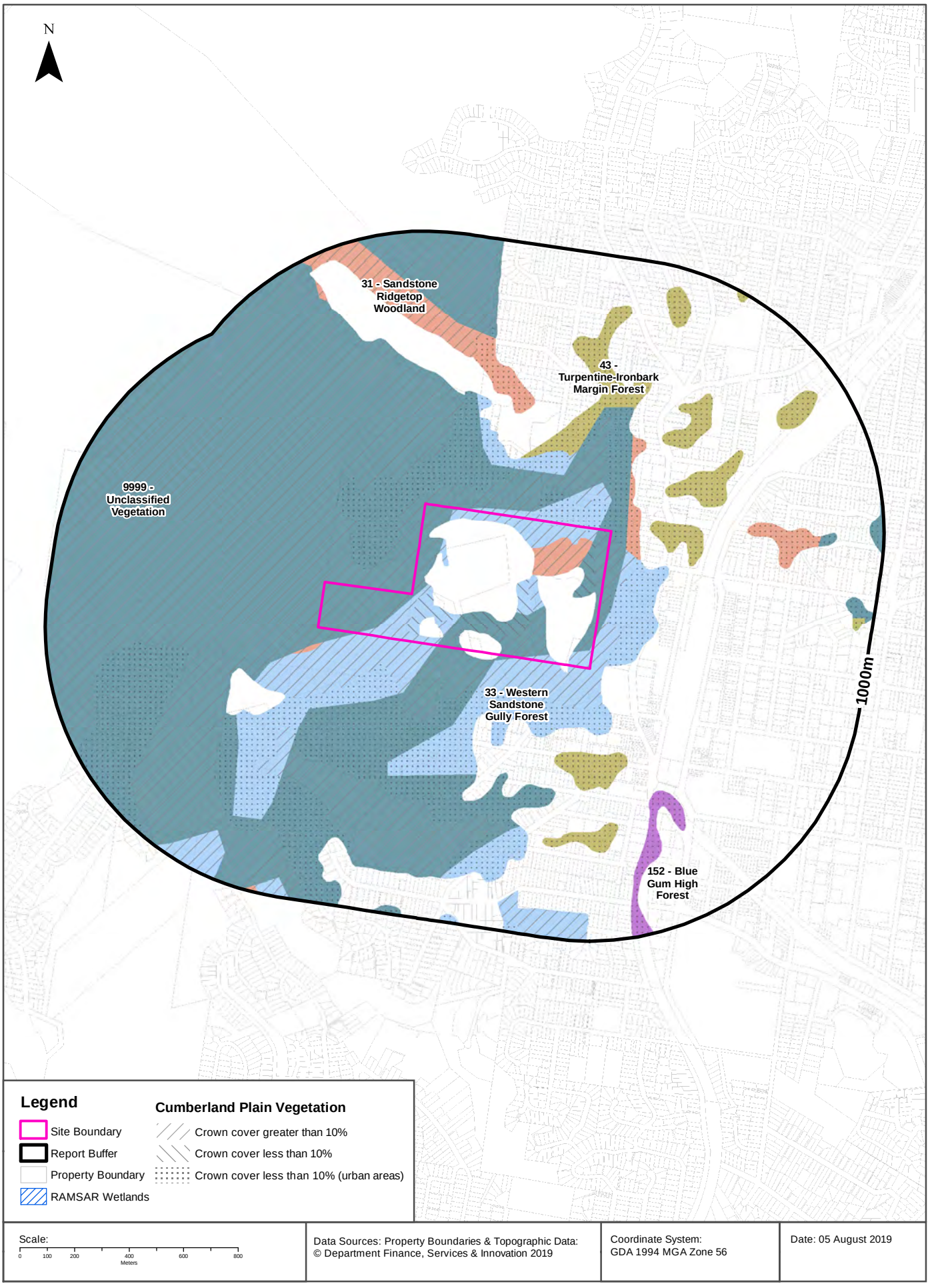
Bush Fire Prone Land

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	0m	Onsite
Vegetation Category 1	0m	Onsite
Vegetation Category 2	0m	Onsite

Ecological Constraints - Remnant Vegetation of the Cumberland Plain

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Ecological Constraints

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Remnant Vegetation of the Cumberland Plain

What remnant vegetation of the Cumberland Plain exists within the dataset buffer?

Description	Crown Cover	Distance	Direction
31 - Sandstone Ridgetop Woodland	Crown cover greater than 10%	0m	Onsite
33 - Western Sandstone Gully Forest	Crown cover greater than 10%	0m	Onsite
9999 - Unclassified Vegetation	Crown cover greater than 10%	0m	Onsite
33 - Western Sandstone Gully Forest	Crown cover less than 10%	0m	Onsite
9999 - Unclassified Vegetation	Crown cover less than 10%	0m	Onsite
33 - Western Sandstone Gully Forest	Crown cover less than 10% (urban areas)	0m	Onsite
9999 - Unclassified Vegetation	Crown cover less than 10% (urban areas)	0m	Onsite
31 - Sandstone Ridgetop Woodland	Crown cover less than 10% (urban areas)	57m	North East
43 - Turpentine-Ironbark Margin Forest	Crown cover less than 10% (urban areas)	141m	East
152 - Blue Gum High Forest	Crown cover less than 10% (urban areas)	510m	South

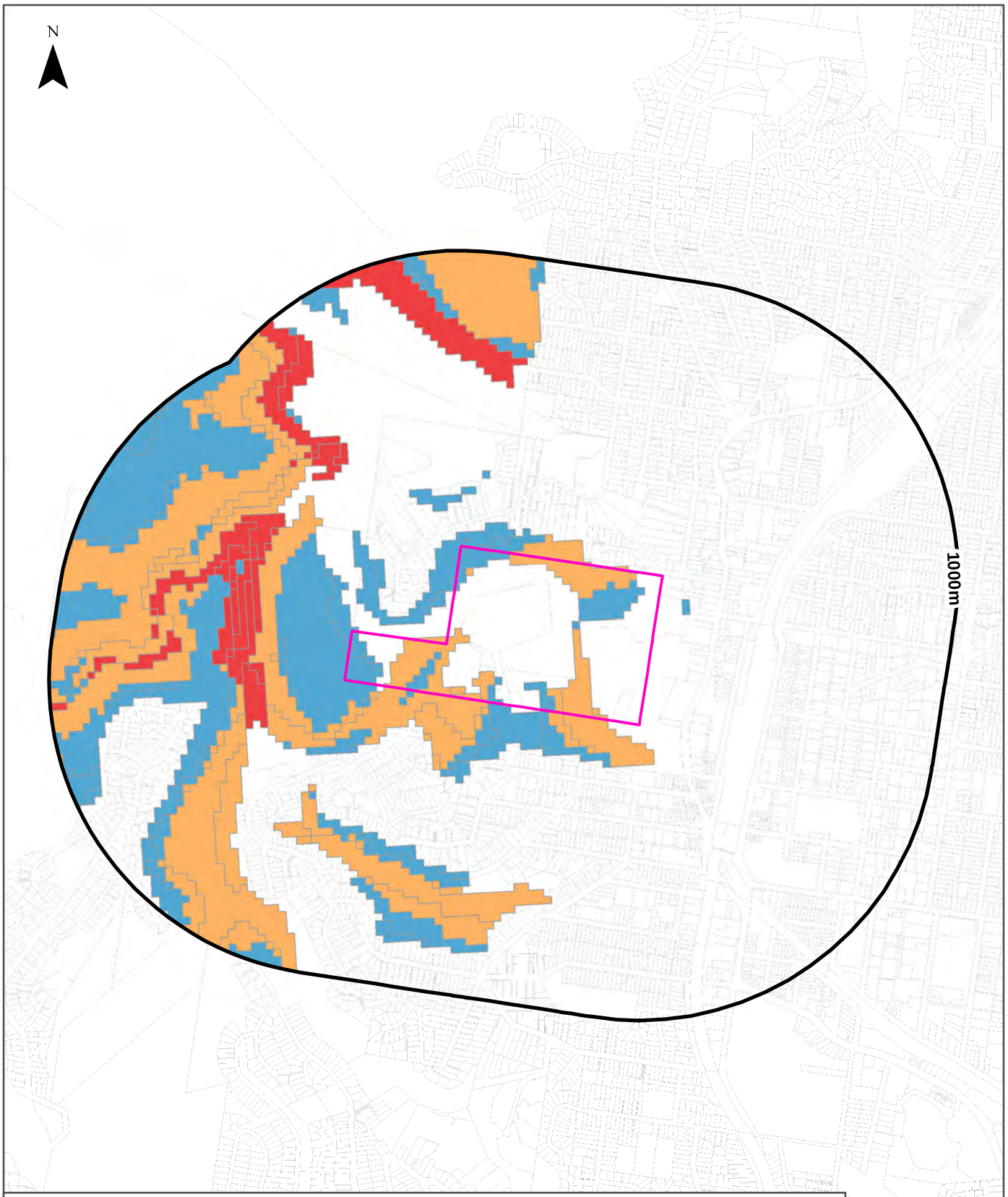
Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

Map Id	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Legend

- Site Boundary
- Report Buffer
- Property Boundaries
- High potential GDE - from national assessment
- High potential GDE - from regional studies
- Moderate potential GDE - from national assessment
- Moderate potential GDE - from regional studies
- Low potential GDE - from national assessment
- Low potential GDE - from regional studies
- Known GDE - from regional studies
- Unclassified potential GDE - from national assessment
- Unclassified potential GDE - from regional studies

Scale: 0 100 200 400 600 800 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019

Coordinate System: GDA 1994 MGA Zone 56

Date: 05 August 2019

Ecological Constraints

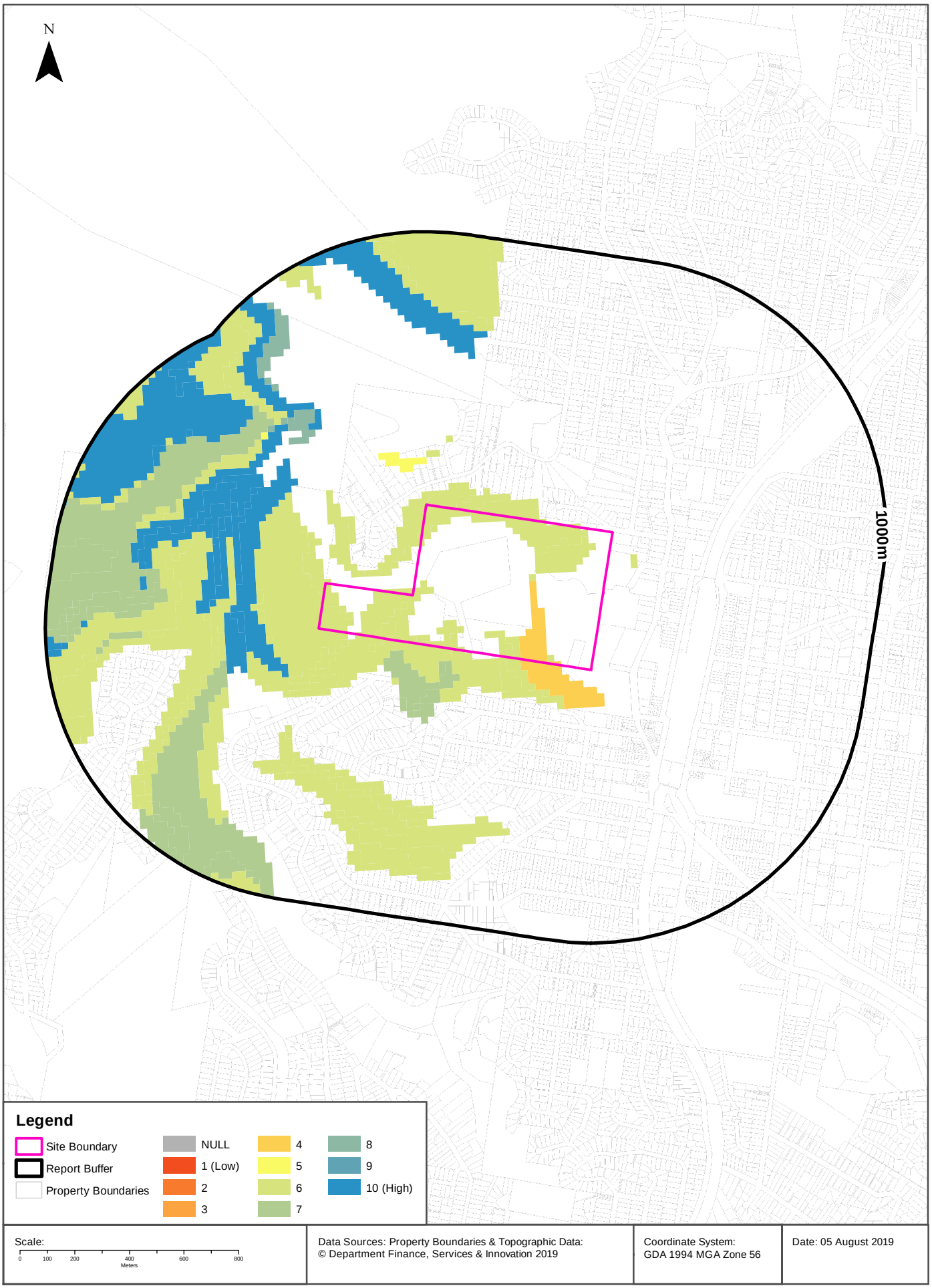
Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	Low potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	0m
Terrestrial	Moderate potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	0m
Terrestrial	High potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	269m

Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077



Ecological Constraints

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	4	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	0m
Terrestrial	6	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	0m
Terrestrial	7	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	30m
Terrestrial	5	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	129m
Terrestrial	10	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	169m
Terrestrial	8	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	474m

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

Ecological Constraints

Hornsby Quarry, Quarry Road, Hornsby, NSW 2077

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered Population, Vulnerable	Category 3	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Cecropis daurica	Red-rumped Swallow	Not Listed	Not Sensitive	Not Listed	ROKAMBA
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Falco hypoleucos	Grey Falcon	Endangered	Category 2	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Menura alberti	Albert's Lyrebird	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica rodinogaster	Pink Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Gastropoda	Meridolum corneovirens	Cumberland Plain Land Snail	Endangered	Not Sensitive	Not Listed	
Animalia	Gastropoda	Pommerhelix duralensis	Dural Land Snail	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Macropus parma	Parma Wallaby	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Macrotis lagotis	Bilby	Presumed Extinct	Not Sensitive	Vulnerable	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Perameles bougainville fasciata	Western Barred Bandicoot (mainland)	Presumed Extinct	Not Sensitive	Extinct	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pseudomys australis	Plains Rat	Presumed Extinct	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pseudomys gracilicaudatus	Eastern Chestnut Mouse	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Vespadelus troughtoni	Eastern Cave Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Suta flagellum	Little Whip Snake	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia cluniesrossiae	Kanangra Wattle	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Ancistrachne maidenii		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Argyrotegium nitidulum	Shining Cudweed	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Darwinia peduncularis		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Deyeuxia appressa		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Diuris bracteata		Endangered	Category 2	Extinct	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus sp. Cattai		Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	Galium australe	Tangled Bedstraw	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Genoplesium plumosum	Tallong Midge Orchid	Critically Endangered	Category 2	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea parviflora subsp. supplicans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Haloragodendron lucasii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Kunzea rupestris		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Lasiopetalum joyceae		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Leucopogon fletcheri subsp. fletcheri		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia marginata	Clandulla Geebung	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia mollis subsp. maxima		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Persoonia pauciflora	North Rothbury Persoonia	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Pomaderris brunnea	Brown Pomaderris	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Pterostylis nigricans	Dark Greenhood	Vulnerable	Category 2	Not Listed	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Senecio behrianus		Presumed Extinct	Not Sensitive	Endangered	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	

Data does not include NSW category 1 sensitive species.

Data obtained 05/08/2019

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Customer Experience 13 10 50
ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D19/175916

20 August 2019

Felicity Harrison
GHD Pty Ltd
Level 15
133 Castlereagh Street
SYDNEY NSW 2000

Dear Felicity

RE SITE: Hornsby Quarry, Quarry Road, Hornsby NSW 2077

I refer to your site search request received by SafeWork NSW on 1 August 2019 requesting information on Storage of Hazardous Chemicals for the above site.

Enclosed are copies of the documents that SafeWork NSW holds on record number 35/010344 relating to the storage of Hazardous Chemicals at the above-mentioned premises.

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

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

10 SEP 1999

WorkCover New South Wales, 400 Kent Street, Sydney 2000. Telephone 9370 5000 ALL MAIL TO G.P.O. BOX 5364 SYDNEY 2001

Licence No. 35/010344

APPLICATION FOR RENEWAL
OF LICENCE TO KEEP DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: Please renew licence number 35/010344 to 14/09/2000 . I confirm that all the licence details shown below are correct (amend if necessary).

(Signature)	JASON FERGUSON (Please print name)	8/9/99 (Date signed)

for: CSR LTD

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO:***

WorkCover New South Wales
Dangerous Goods Licensing Section
GPO BOX 5364
SYDNEY 2001

Enquiries: ph (02) 9370 5187
fax (02) 9370 6105

RECEIVED
10 SEP 1999
SCIENTIFIC SERVICES

Details of licence on 13 August 1999

Licence Number 35/010344 **Expiry Date** 14/09/1999

Licensee CSR LTD ACN 000 001 276
THE READYMIX GROUP

Postal Address: THE READYMIX GROUP BOX 400 P O PARRAMATTA NSW 2150

Licensee Contact ~~R MOONA~~ JASON FERGUSON 4730 5219 Ph. ~~9631 8080~~ Fax. ~~9688 4374~~ 4730 5201

Premises Licensed to Keep Dangerous Goods OLD MANS VALLEY
CSR LTD THE READYMIX GROUP
DURAL ST HORNSBY 2077

Nature of Site GRAVEL AND SAND QUARRYING

SEDD CHNGD 21-9-99 NL

Major Supplier of Dangerous Goods BP

Emergency Contact for this Site ~~R MOONA~~ JASON FERGUSON 0419 477 516 Ph. ~~838 0083~~

Site staffing 8 HRS 6 DAYS

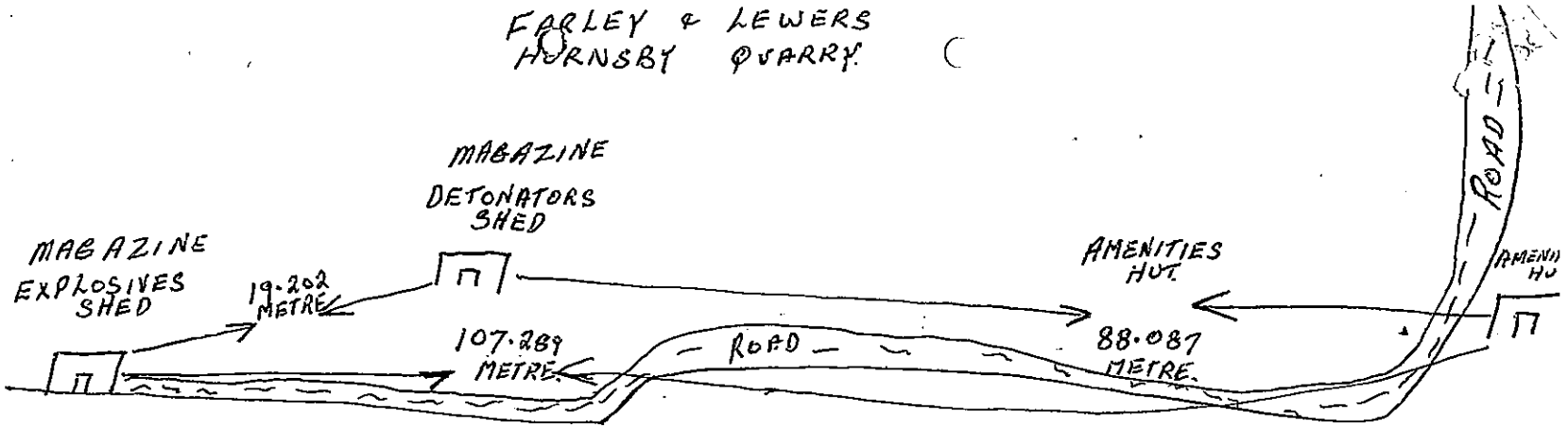
Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
1	MAGAZINE	Class 1.1B	2000 NO.
	UN 0029 DETONATORS, NON-ELECTRIC		500 NO.
	UN 0030 DETONATORS, ELECTRIC		500 NO.
2	MAGAZINE	Class 1.1D	5000 KG
	UN 0332 EXPLOSIVE, BLASTING, TYPE E		5000 KG
3	UNDERGROUND TANK	Class 3	5000 L
	UN 1203 PETROL		5000 L

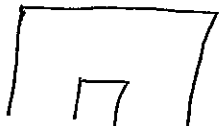
DATA
21 SEP 1999
ENTERED

Form DG10

FARLEY & LEWERS
HORNSBY QUARRY.

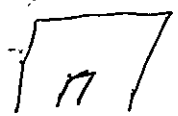


EXPLOSIVES
MAGAZINE.



WALLS 2.438 M OUTSIDE.
WALLS 2.316 X 1.981 INSIDE.
WALLS - STEEL
ROOF - FLATE.
SHADE ROOF —
DOORS - ONE 1.981 x 0.762 METRE.
LOCKS - TWO
LINING - TIMBER
LIGHTTNING CONDUCTOR - BACK OF MAGAZINE.

DETONATORS
MAGAZINE.



WALLS 1.767 x 1.158 M
WALLS - STEEL
ROOF - FLATE.
SHADE ROOF —
DOOR - ONE 1.371 x 0.9
LOCKS - TWO
LINING - TIMBER

A. 10344.

Farley & Lewers.
Dural St.
Hornsby.

1/1000 installed by Esso.
C.T. 29-6-66.

1/2030 Pump & Tank. removed by B.P.
H.C. 12/8/66.

FOR B.

Register No. 10344

INFLAMMABLE LIQUID ACT, 1915-1953.

Application for Registration of Premises or Store License under Division A or for the transfer, alteration or amendment of any such Registration or License, for the keeping of Inflammable Liquid and/or Dangerous Goods, in accordance with the provisions of the Inflammable Liquid Act, 1915-53, for the ensuing year.

EXPLANATORY

No 26/9/55

Inflammable Liquid—

Mineral Oil—Includes kerosene, mineral turpentine and white spirit (for cleaning), and compositions containing same.

Mineral Spirit—Includes petrol, benzene, benzolene, benzol and naphtha, and compositions containing same.

Dangerous Goods—

Class 1.—Acetone, amyl acetate, butyl acetate, carbon bisulphide; any combination of substances of an inflammable character suitable for use as an industrial solvent and having a true flashing point of less than 73 degrees Fahrenheit.

Class 2.—Nitro-cellulose (also known as "pyroxylin" and "collodion cotton") moistened with an alcohol, butyl alcohol (also known as "butanol"), methylated spirits, vegetable turpentine; and any liquid or solid containing methylated spirits, having a true flashing point of less than 150 degrees Fahrenheit.

Class 3.—Nitro-cellulose product.

Class 4.—Compressed or dissolved acetylene contained in a porous substance.

DIRECTIONS

1. Applications must be forwarded to the Chief Inspector of Inflammable Liquid, Explosives Department, No. 4 Albert Street, off Phillip Street, Circular Quay, Sydney (Box 48, G.P.O.), and must be accompanied by the prescribed fee, as set out hereunder:—

Registration of Premises (Fee, 15s. p.a.).—For quantities not exceeding 300 gallons of mineral oil and 100 gallons of mineral spirit, if kept together; or 800 gallons of mineral oil and 100 gallons of mineral spirit, if kept in separate depots; or 500 gallons of mineral spirit, if kept in an underground tank depot; or 800 gallons of mineral oil and 500 gallons of mineral spirit, if mineral spirit is kept in an underground tank depot.

In addition to, or in lieu of the above, similar quantities of Dangerous Goods of Classes 1 and 2 may be kept under the like conditions; reading Dangerous Goods of Class 1 for the words Mineral Spirit and Dangerous Goods of Class 2 for the words Mineral Oil.

Store License, Div. A (Fee, £1 10s. p.a.).—For quantities in excess of those stated above, but not exceeding 4,000 gallons mineral oil and/or mineral spirit, and/or Dangerous Goods of Classes 1 and 2.

Store License, Div. B (Fee, £3 p.a.).—For quantities exceeding 4,000 gallons of mineral oil and/or mineral spirit, and/or dangerous goods of Classes 1 and 2, and/or dangerous goods of Class 3.
For the keeping of Dangerous Goods of Classes 3 and/or 4.

2. The certificate of inspection at foot hereof must be signed by an Inspector under the Inflammable Liquid Act, 1915–1953, or Police Officer, or other officer duly authorised in that behalf, and where the premises are situated outside the Metropolitan Area of Sydney, it is requested that such certificate be obtained prior to forwarding application.

1. Name in full of occupier	James Albert Snell
2. Occupation	Contractor
3. Locality of the premises in which the depot or depots are situated	No. or Name Blue metal Quarry Street Dural Rd., Town Kenthurst
4. Nature of premises (Dwelling, Garage, Store, etc.)...	Quarry
5. Will mineral spirit be kept in a prescribed underground tank depot ?	Yes

6. Particulars of construction of depots and maximum quantities of Inflammable liquid and/or Dangerous Goods to be kept at any one time.

Depot No.	Construction of Depots.			Inflammable Liquid.		Dangerous Goods.			
	Walls.	Roof.	Floor.	Mineral Spirit. Gallons.	Mineral Oil. Gallons.	Class 1. Gallons.	Class 2. Gallons.	Class 3. lb.	Class 4. cub. ft.
1	Quarry round	Tank		2120			Gas		3.5.0
2									
3									
4									
5									
6									
7									
8									
9									
10									

Fee Received 27.9.55

Receipt No. 3993

Date of Application 26/9/1955

Signature of Applicant J A Snell

Postal Address Bay Rd, Glenorie

CERTIFICATE OF INSPECTION.

I, Norman Lennon being an Inspector under the Inflammable Liquid Act, 1915–53, do hereby certify that the premises or store herein referred to and described is suitable with regard to its situation and construction for the safe keeping of inflammable liquid and/or dangerous goods in quantity and nature specified.

Place Sydney

Date 26/9/55

Signature of Inspector Norman Lennon

(PLEASE TURN OVER

St 8130

Hornsby Metal Quarry

AS:DB

29th August, 55.

55/675.

The Manager,
Caltex Oil (Australia) Pty.
Limited,
210-214 George Street,
SYDNEY.

Dear Sir,

Inflammable Liquid Act, 1915-53.
Hornsby Metal Quarry.

Proposal to install 1 x 2,000 gallon underground inflammable liquid storage tank at these premises is approved and one endorsed copy of relative drawing is returned herewith.

AS

Yours faithfully,

Superintendent.

N. Shaw

Tank 253 installed. The one was intended for Harmon Peakhurst. but latter proposal is indefinite

Encl.

Inspection of 253 made by Mr McKinnon 27/6/55

AS 30/8/55.

CALTEX OIL (AUSTRALIA) PTY. LIMITED

INC. IN N.S.W.
CALTEX PETROLEUM PRODUCTS

TELEPHONE: BW 8471
TELEGRAPHIC ADDRESS: THUBAN
IN REPLY PLEASE QUOTE:

WN:RL

210-214 GEORGE STREET
BOX 1593, G.P.O.
SYDNEY, N.S.W.

August 23rd, 1955.

The Superintendent,
Department of Mines and Explosives,
Box 48, G. P. O.,
SYDNEY.

Dear Sir,

Attached herewith plan of works of Hornsby Metal Quarry at which site we intend to install 1 x 2,000 gallon underground tank and 1 single electric pump for dispensing gasoline.

Trusting that we will receive your co-operation and awaiting your early approval.

Yours very truly,

CALTEX OIL (AUSTRALIA) PTY. LIMITED

TERRY LEE,
Manager.

Encls.

INSPECTION RECORD

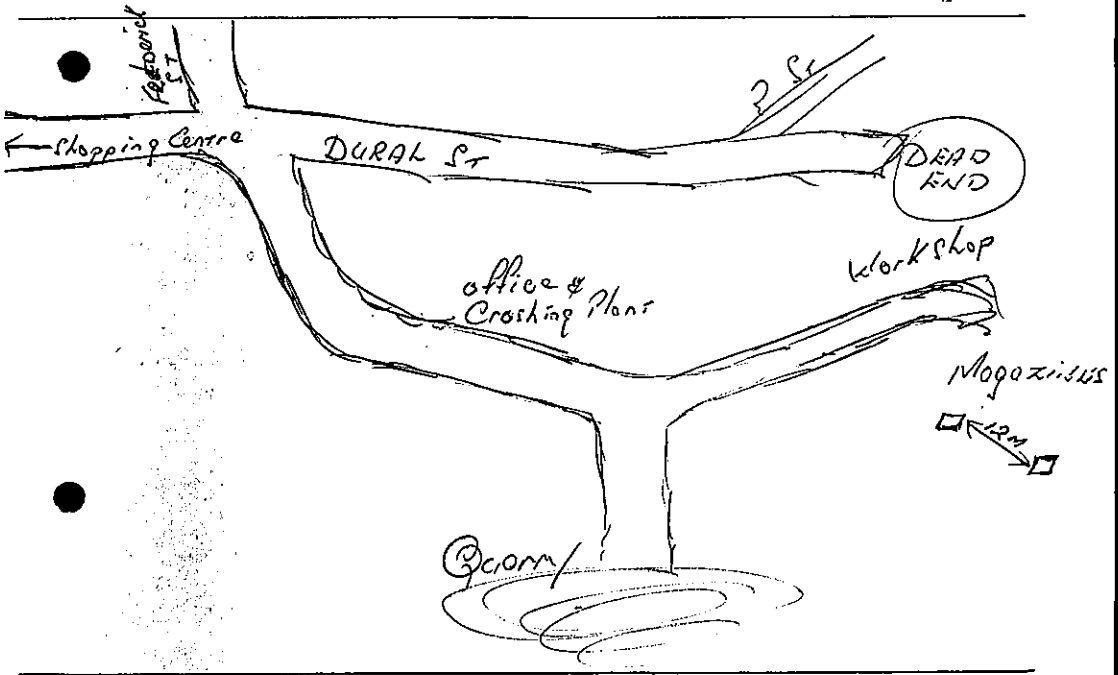
Licence No. Ax 136

Licensee: FARLEY & Lowers Pty Ltd

Address: Dural St Hornsby

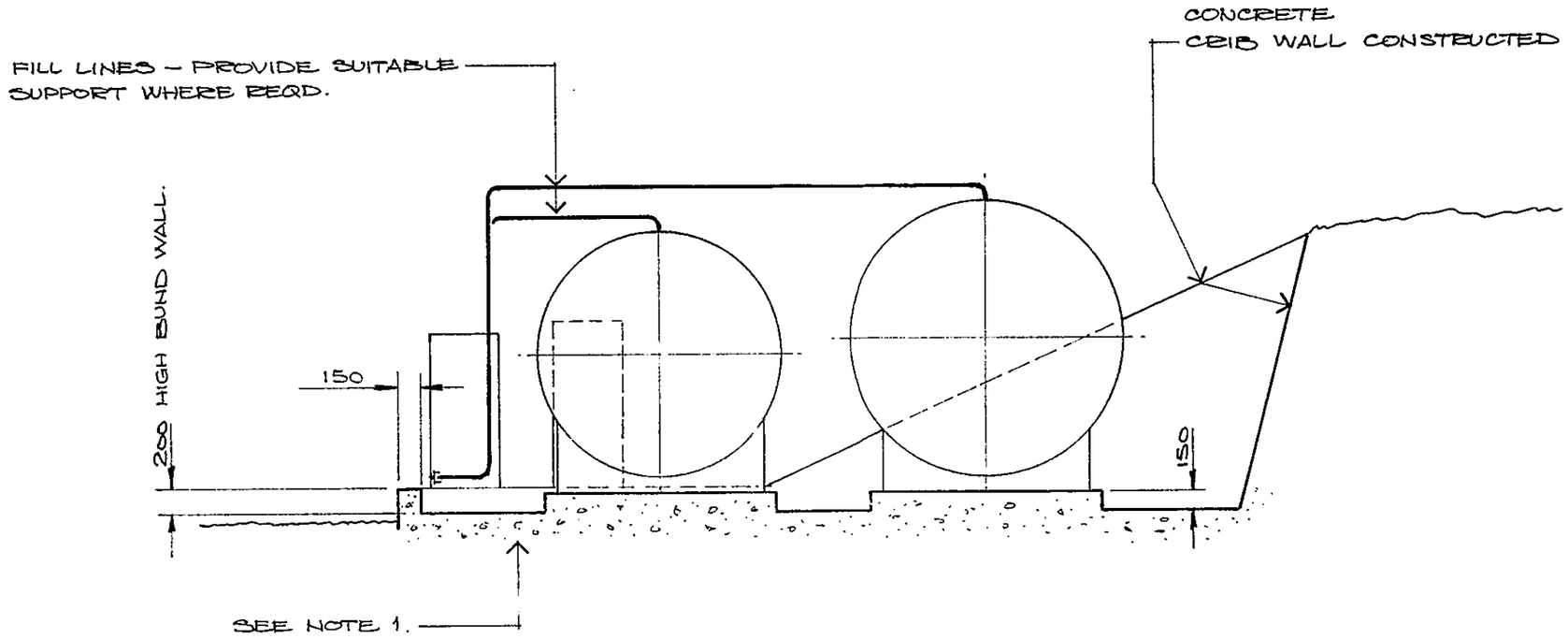
Storage licensed: 2000 kg N.C. 5000 Doors

Sketch of Premises (Dimensions of depot and distance of same from adjoining "protected works" to be shown).

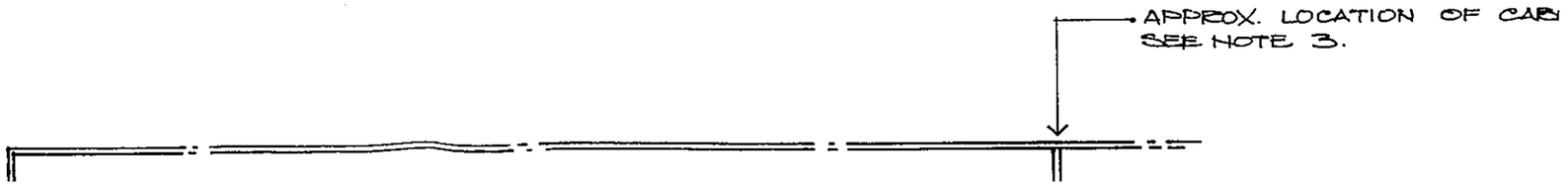


Inspected	Initials	Requisitions made or state of depot
28-1-76	[illegible]	Sat.

ML 5388 V.C.N. Blight, Government Printer



SECTION A-A 1:50



APPROX. LOCATION OF CABLE JUNCTION SEE NOTE 3.

RUN NEW CONDUITS FROM JUNCTION TO BOWSERS.

EXISTING CONCRETE SLAB

ORKSHOPS

NEW VENT RISER FOR SUPER.

18,5

ASSUMED POSITION OF SWITCHBOARD

2,5

BUND WALL ALIGNED WITH FRONT OF WORKSHOP.

SEE NOTE 4

EXISTING 4.500L (1000 GAL) UG. TANK CONVERT TO DIRECT FILL. INSTALL NEW FILL & DIP BOXES. REMOVE OLD VENT LINE & RISER & OLD INDIRECT FILL LINE. INSTALL NEW SUCTION & VENT LINES.

SUPER 4,500L

S F D V

EXISTING SHED TO BE REMOVED.

A

DETERMINE ON SITE

1,0

1,0

DIESEL 30,000L

DIESEL 25,000L

SUPER

DIESEL

1,0

600

1,0

DETERMINE ON SITE

FILL POINTS.

1,0

A

VACANT LAND

Switch Room.

50'

LOADING HOPPERS

Non Protected Works.

office.

Shed.

Non Protected Works.

Loading Stage.

4'4" Vent.

4'

10'

Direct Dip Fill.

Earth up

Single Electric

2000 Gal Gasoline Tank.

To Quarry

No Protected Works.

CALTEX OIL (AUSTRAL

DISTRICT..... LOCATIO

HORNSBY METAL Q

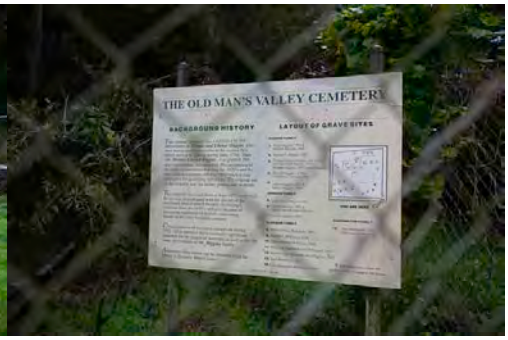
the Valley

HORNSBY.

Appendix C – Photo logs

Hornsby-4029

Hornsby-4030



Hornsby-4031

Hornsby-4032

Hornsby-4033

Hornsby-4034

Hornsby-4035

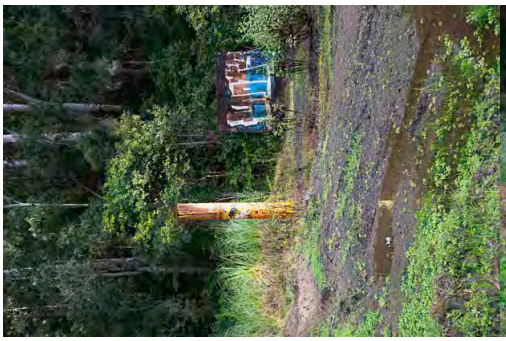
Hornsby-4036

Hornsby-4037

Hornsby-4038

Hornsby-4039

Hornsby-4040



Hornsby-4041

Hornsby-4042

Hornsby-4043

Hornsby-4044

_54A4045

Hornsby-4046

Hornsby-4047

Hornsby-4048

Hornsby-4049

Hornsby-4050

Hornsby-4051

Hornsby-4052

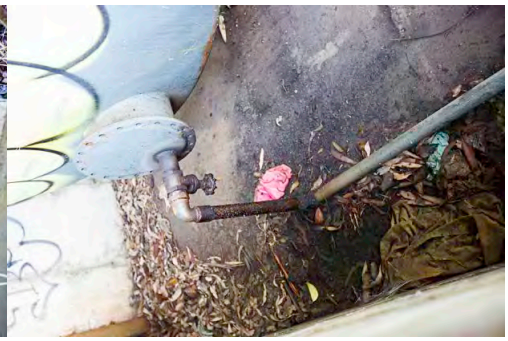
Hornsby-4053

Hornsby-4054

Hornsby-4055

Hornsby-4056

Hornsby-4057



Hornsby-4058

Hornsby-4059

Hornsby-4060

Hornsby-4061

_54A4062

Hornsby-4063

Hornsby-4064

Hornsby-4065

Hornsby-4066

Hornsby-4067

Hornsby-4068-2

Hornsby-4068

Hornsby-4069

Hornsby-4070

Hornsby-4071

Hornsby-4072

_54A4073

_54A4074

Hornsby-4075

Hornsby-4076

_54A4077

_54A4078

Hornsby-4079

Hornsby-4080

_54A4081

Hornsby-4082

Hornsby-4083

Hornsby-4084

Hornsby-4085

Hornsby-4086

Hornsby-4087

Hornsby-4088

Hornsby-4089

_54A4090

_54A4091

Hornsby-4092

Hornsby-4093

_54A4094

Hornsby-4095

_54A4096

Hornsby-4097

Hornsby-4098

_54A4099

_54A4100

_54A4101

Hornsby-4102

Hornsby-4103

Hornsby-4104

Hornsby-4105

_54A4106

Hornsby-4107

_54A4108

Hornsby-4109

_54A4110

Hornsby-4111

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_54A4113


Hornsby-1

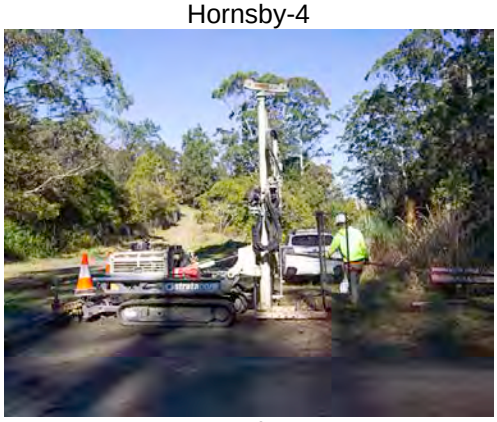

Hornsby-2


Hornsby-3


Hornsby-4


Hornsby-5


Hornsby-6

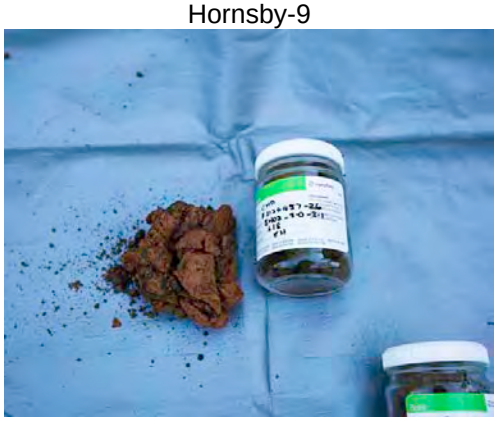

Hornsby-7


Hornsby-8


Hornsby-9


Hornsby-10


Hornsby-11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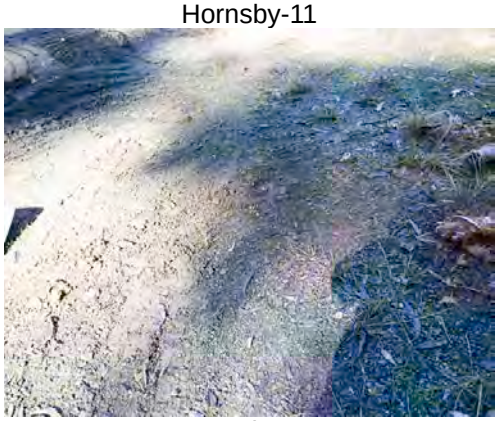
Hornsby-13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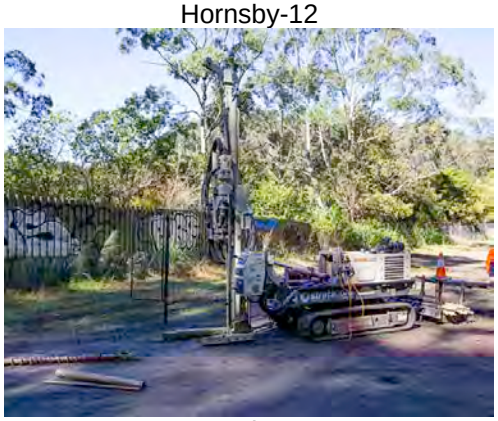
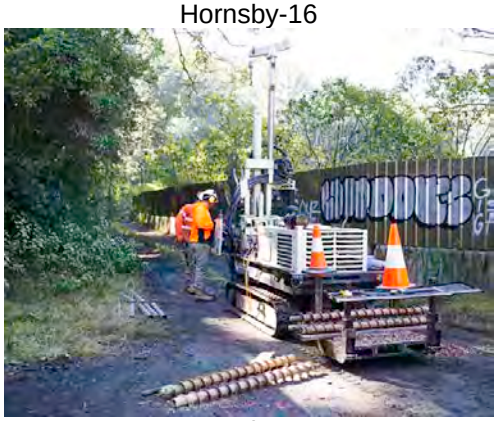

Hornsby-15

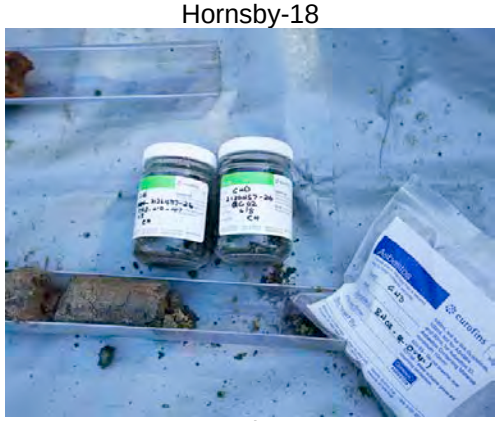

Hornsby-16


Hornsby-17


Hornsby-18


Hornsby-19


Hornsby-20

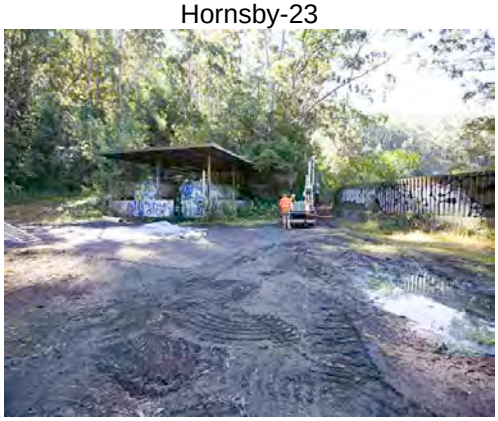

Hornsby-21


Hornsby-22


Hornsby-23


Hornsby-24


Hornsby-25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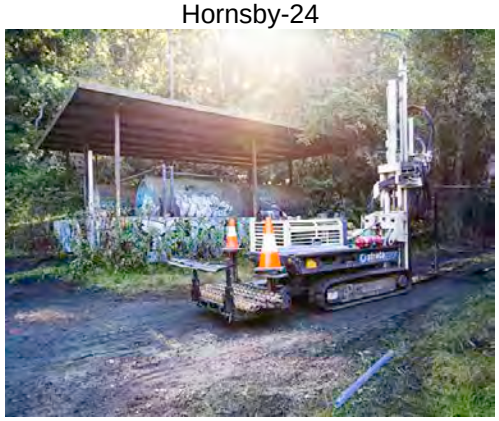

Hornsby-27


Hornsby-28


Hornsby-29


Hornsby-30

Hornsby-31

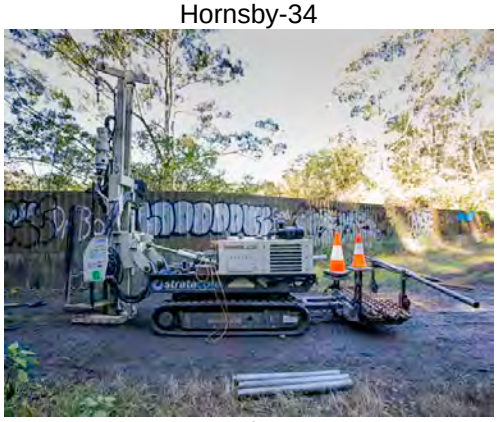
Hornsby-32

Hornsby-33

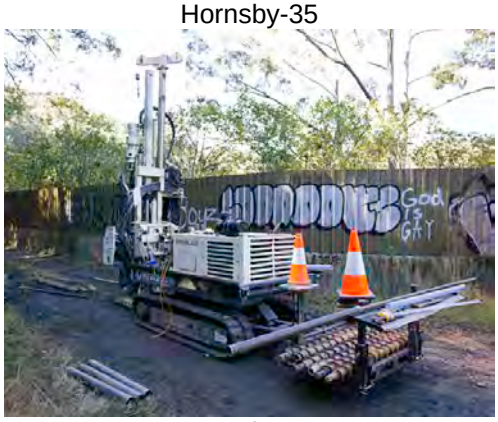
Hornsby-34

Hornsby-35

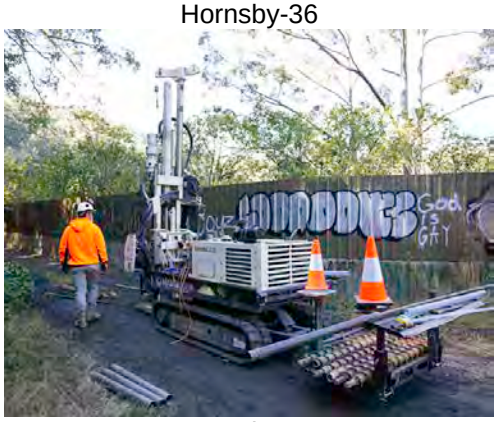
Hornsby-36



Hornsby-37



Hornsby-38



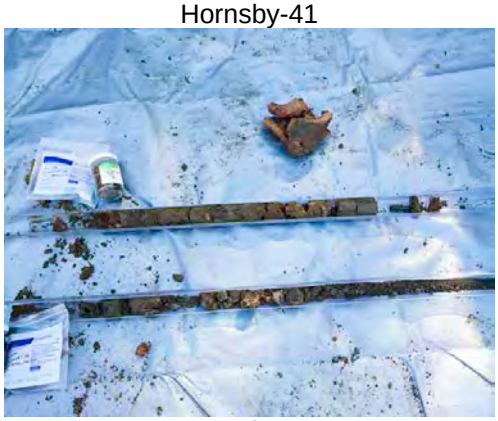
Hornsby-39

Hornsby-40

Hornsby-41

Hornsby-42

Hornsby-43



Hornsby-44

Hornsby-45


Hornsby-46

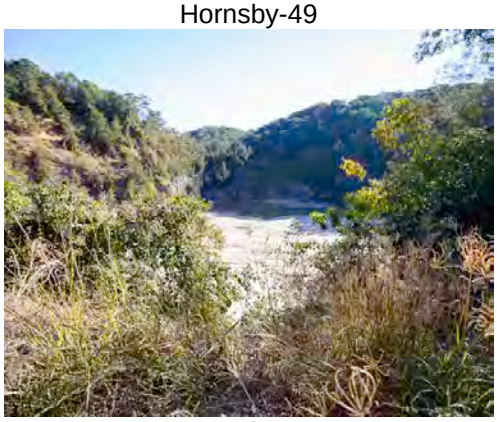

Hornsby-47


Hornsby-48


Hornsby-49


Hornsby-50


Hornsby-51


Hornsby-52


Hornsby-58


Hornsby-59


Hornsby-60


Hornsby-61


Hornsby-62


Hornsby-63


Hornsby-64

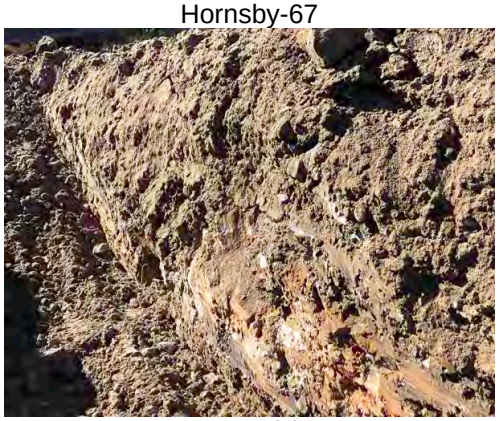

Hornsby-65


Hornsby-66


Hornsby-67


TPE1 (1)


TPE1 (2)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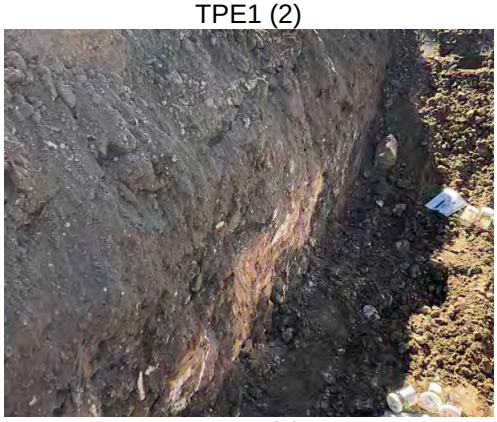
TPE1 (4)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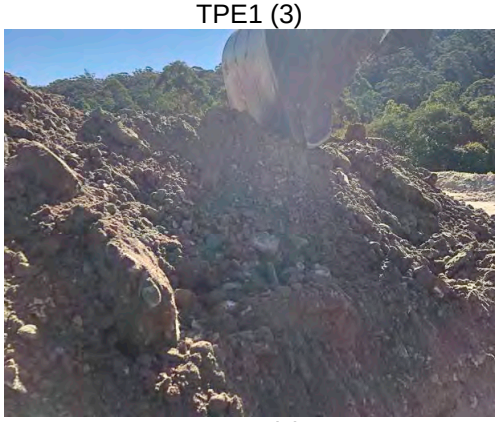
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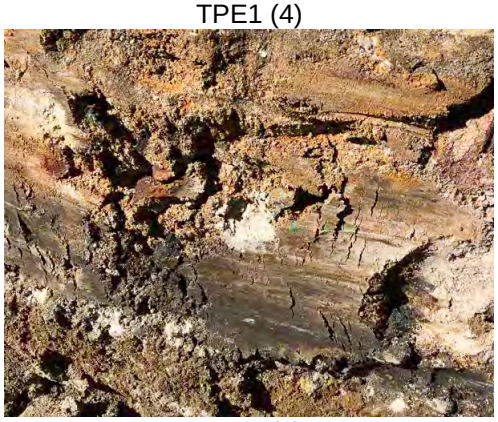
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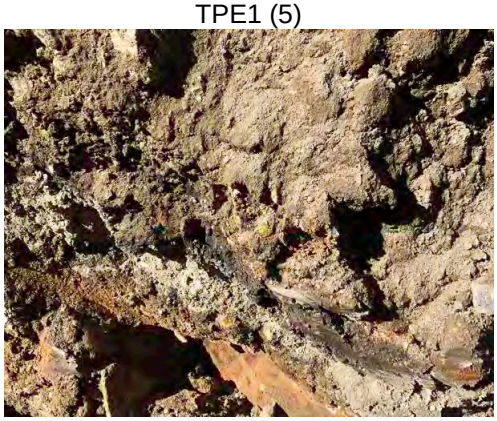
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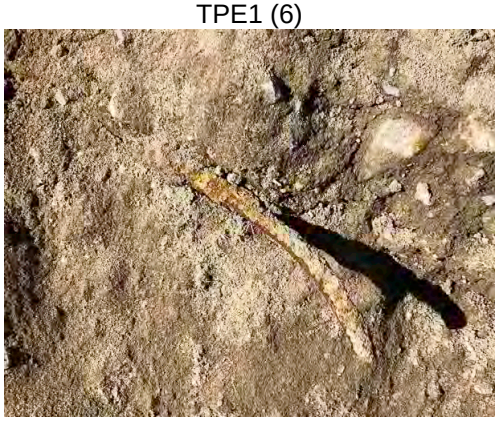
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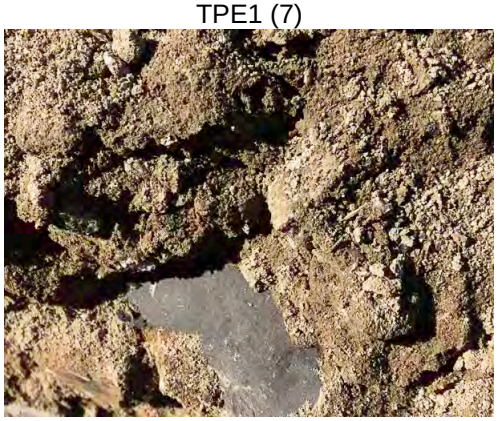
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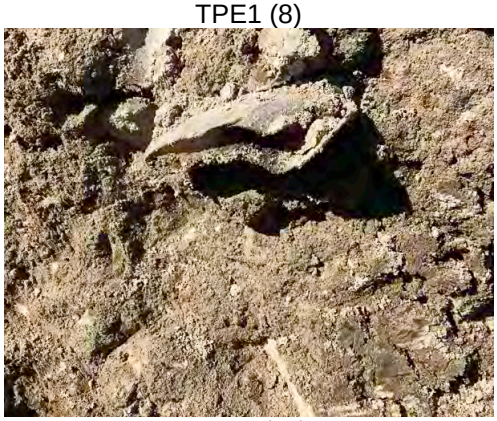
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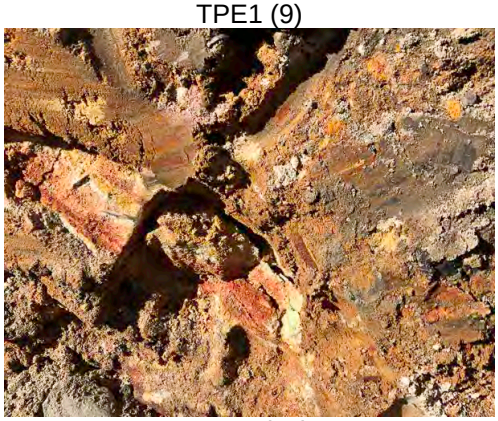
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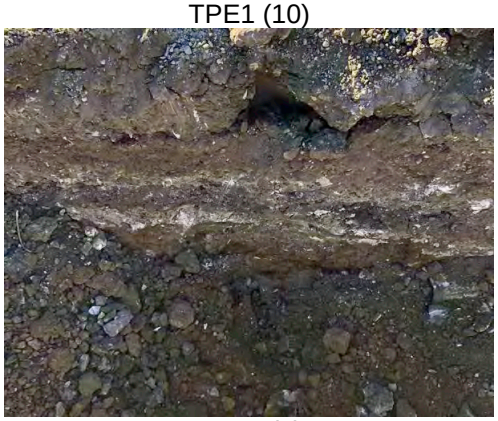
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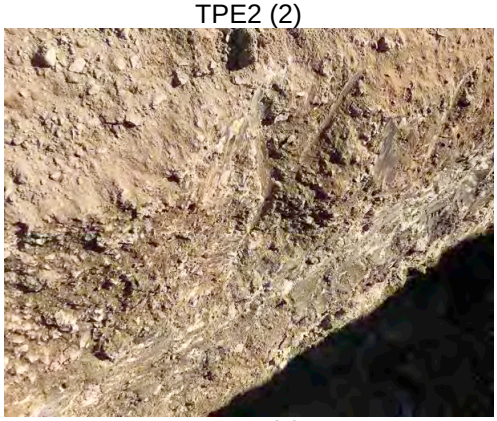
TPE2 (2)

TPE2 (3)

TPE2 (4)



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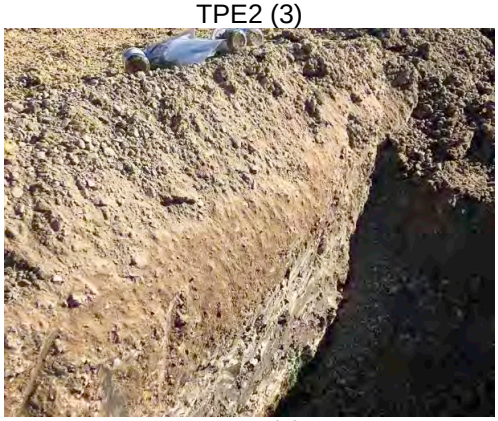

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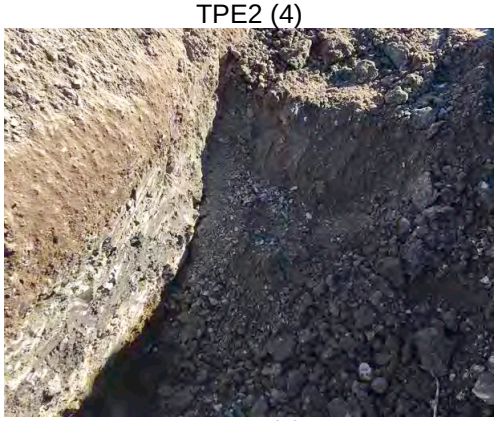

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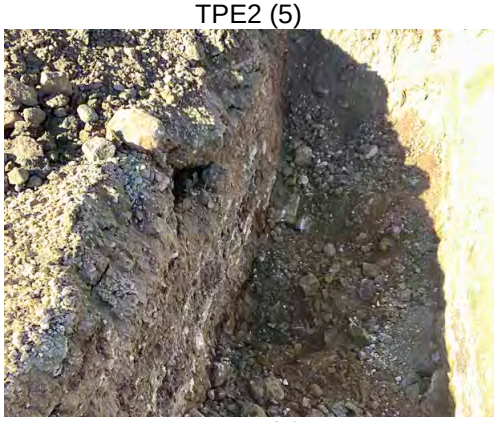

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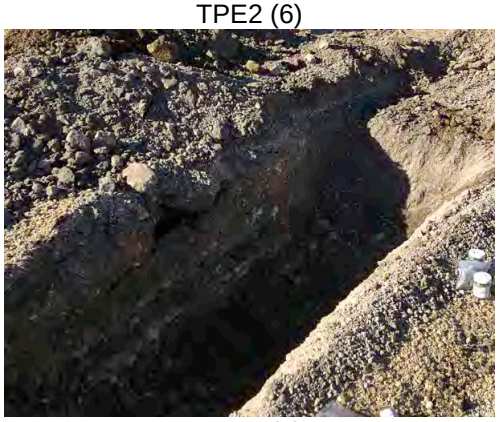

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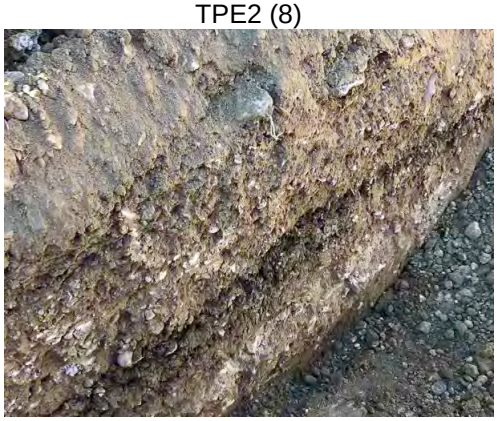
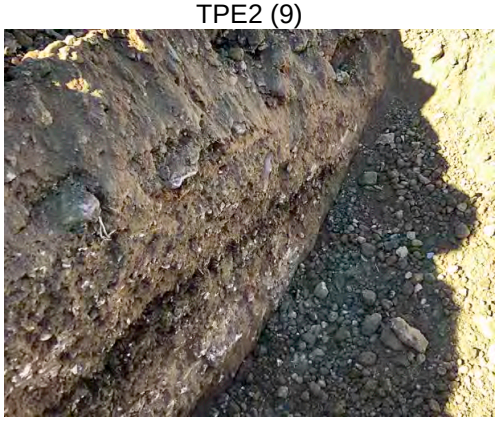
TPE2 (10)



TPE3 (1)



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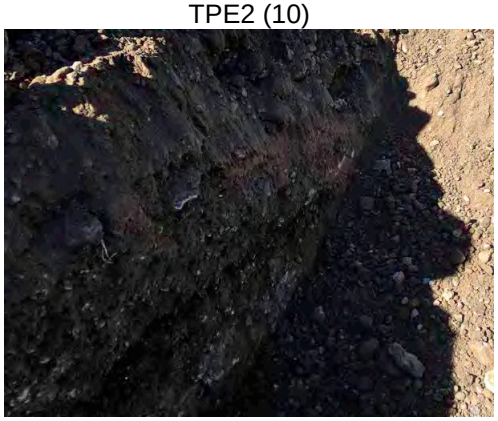

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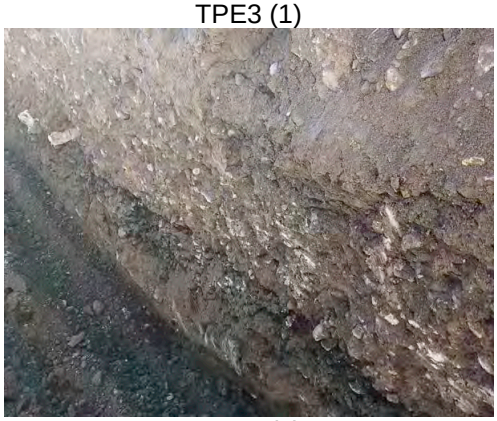
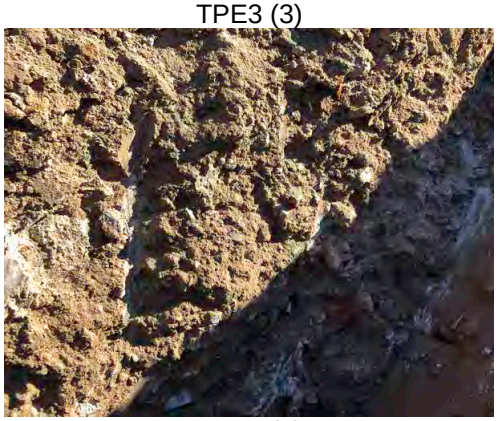


TPE3 (4)

TPE3 (5)

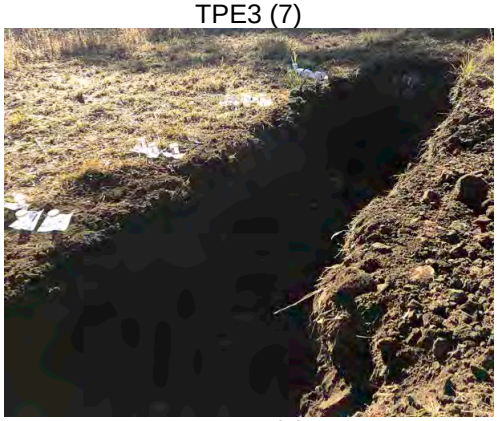


TPE3 (6)

TPE3 (7)

TPE3 (8)

TPE3 (9)



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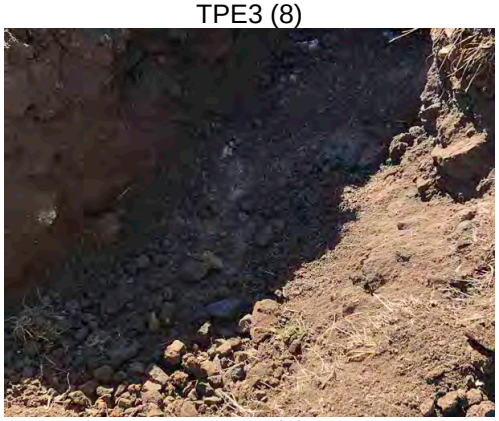

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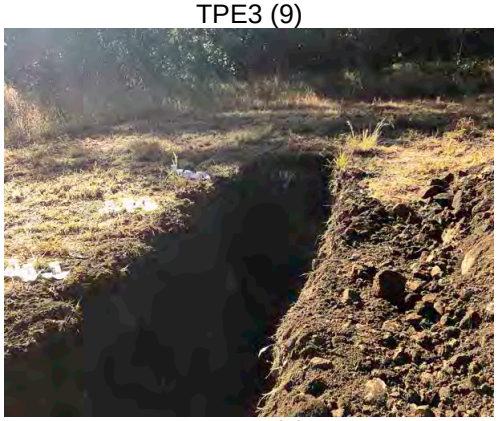
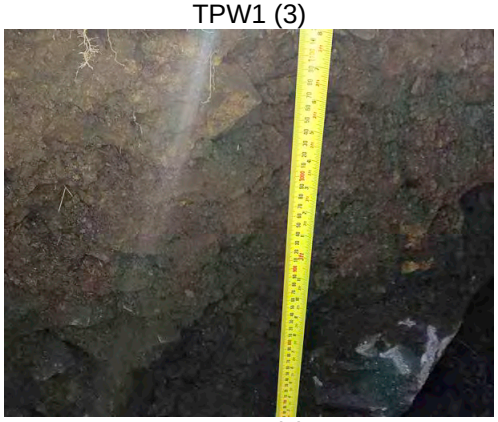


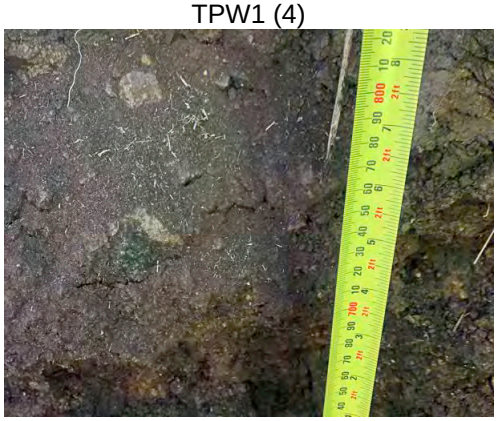
TPW1 (3)

TPW1 (4)

TPW1 (5)



TPW1 (6)



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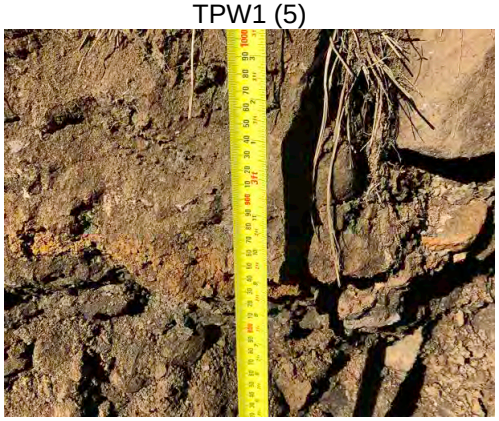

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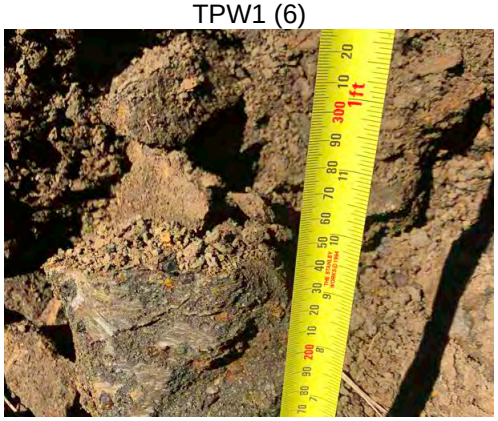
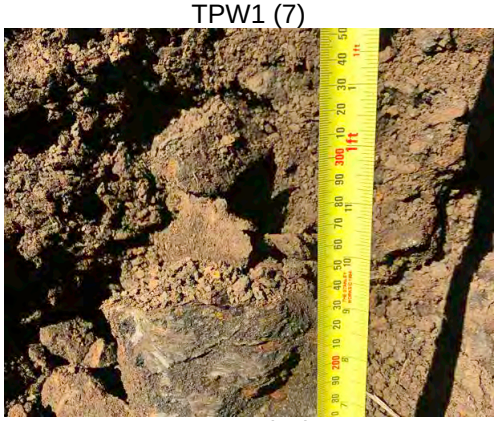


TPW1 (9)



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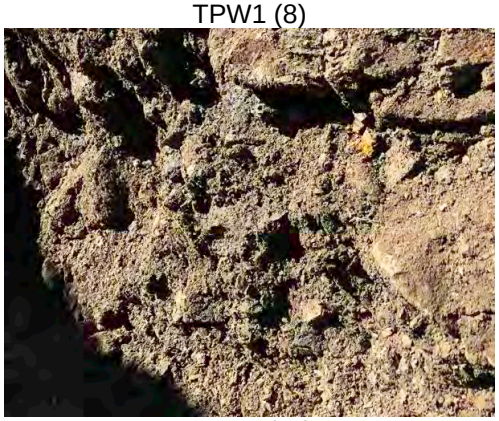


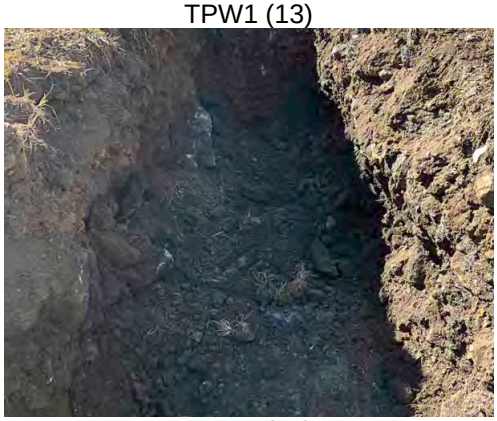
TPW1 (11)

TPW1 (12)

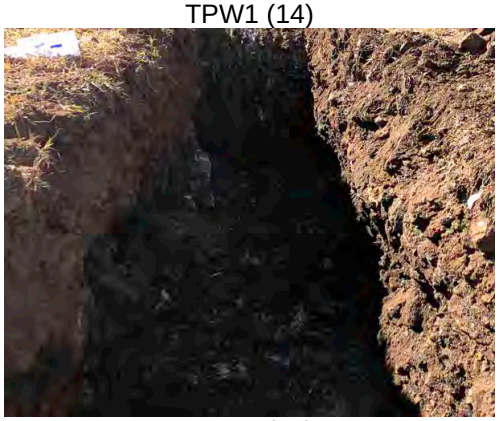
TPW1 (13)

TPW1 (14)

TPW1 (15)

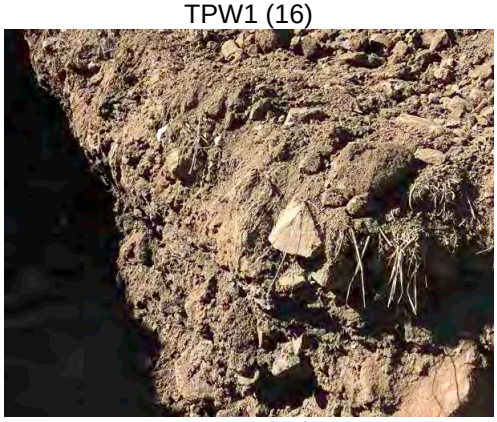


TPW1 (16)



TPW1 (17)

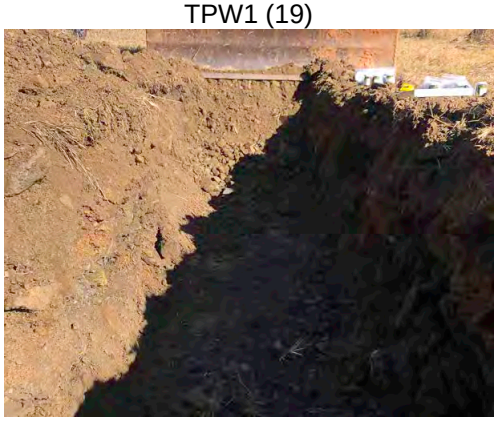
TPW1 (18)



TPW1 (19)

TPW1 (20)

TPW1 (21)



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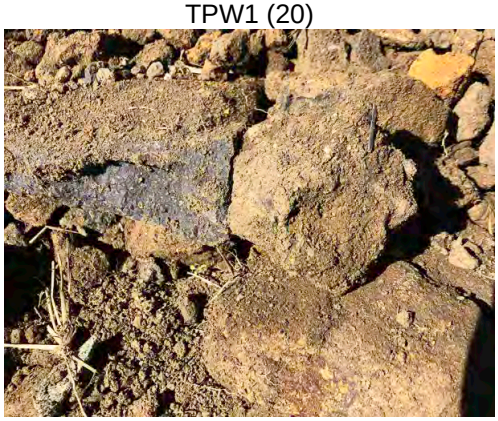

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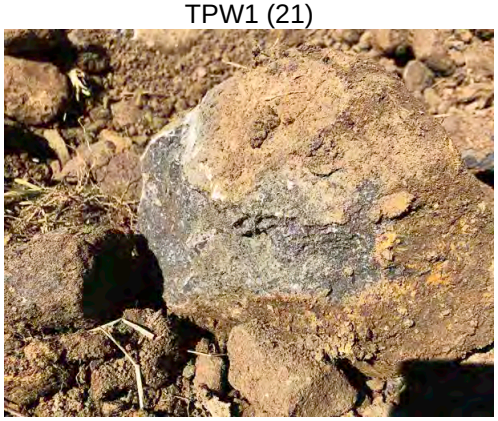

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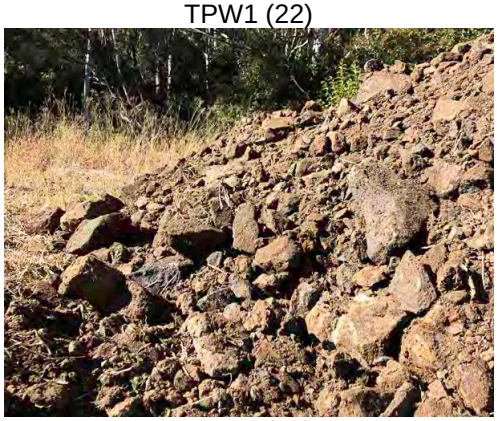

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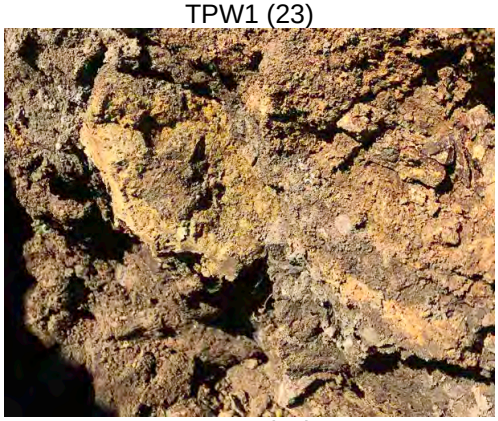


TPW1 (26)

TPW1 (27)


TPW1 (28)


TPW2 (1)


TPW2 (2)

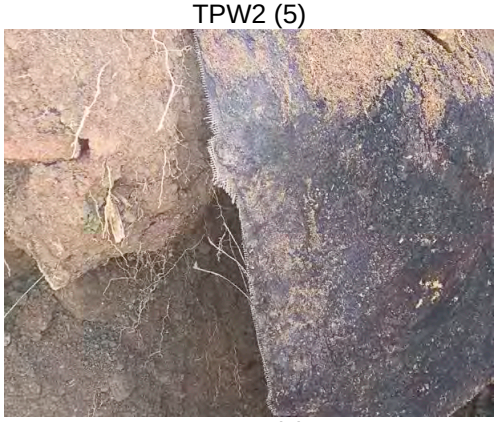

TPW2 (3)


TPW2 (4)


TPW2 (5)


TPW2 (6)


TPW2 (7)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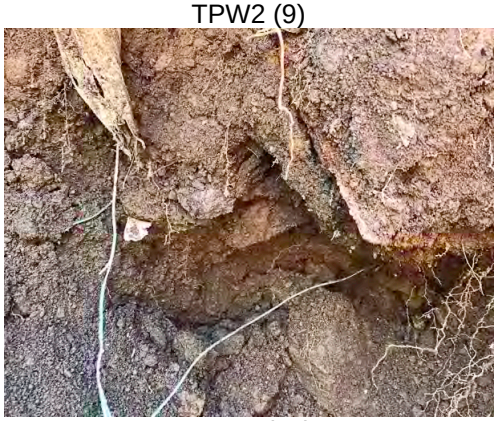
TPW2 (9)


TPW2 (10)


TPW2 (11)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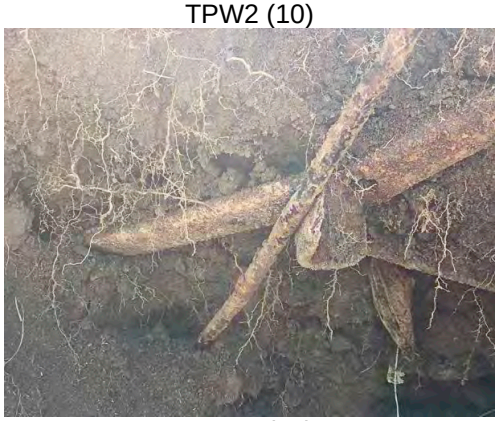
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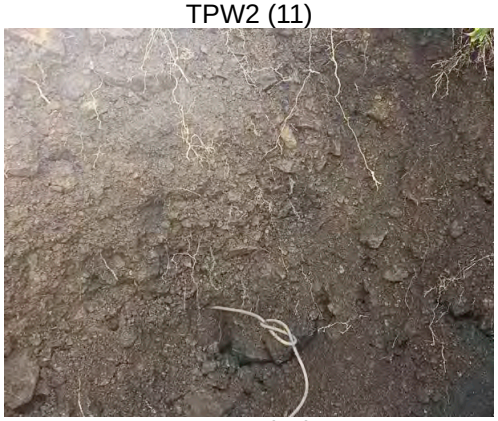
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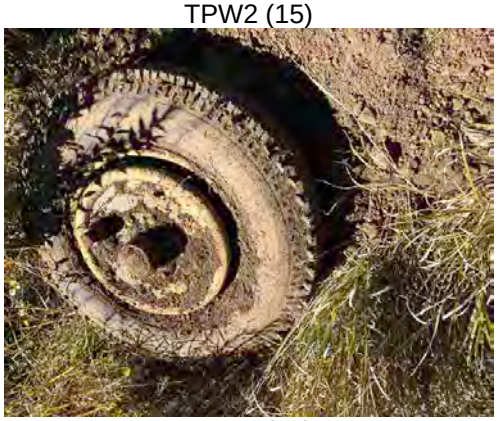
TPW2 (15)

TPW2 (16)

TPW2 (17)



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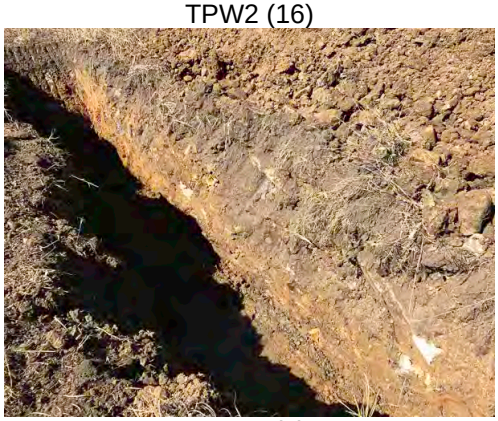
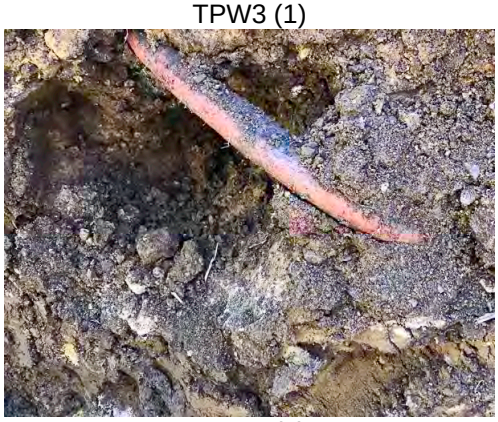


TPW3 (1)

TPW3 (2)

TPW3 (3)



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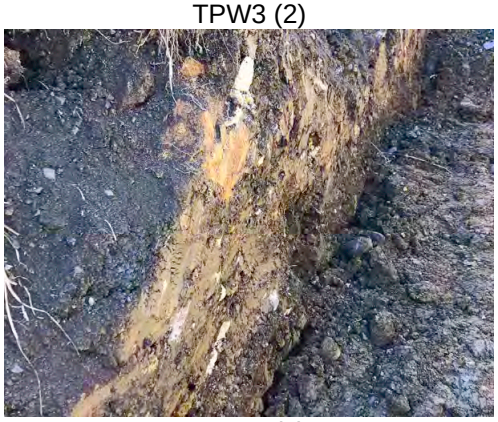

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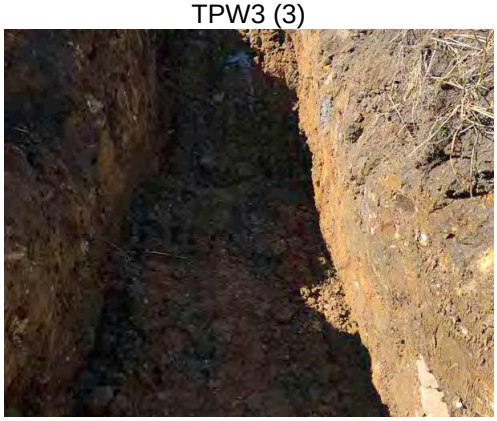

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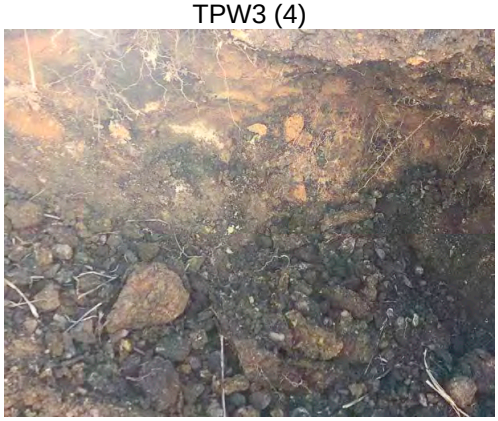
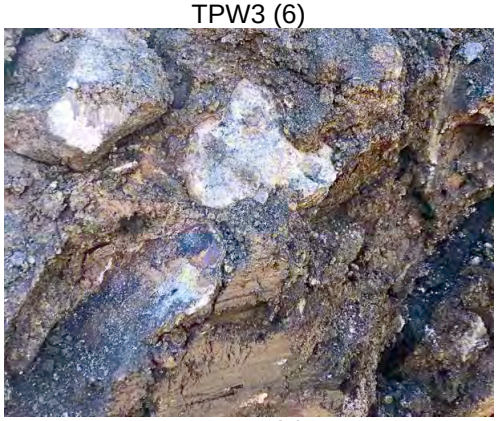


TPW3 (7)

TPW3 (8)



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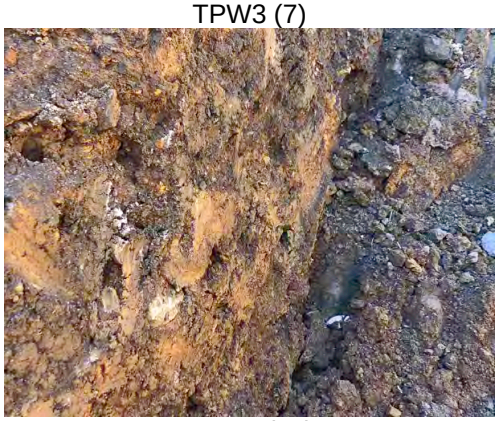

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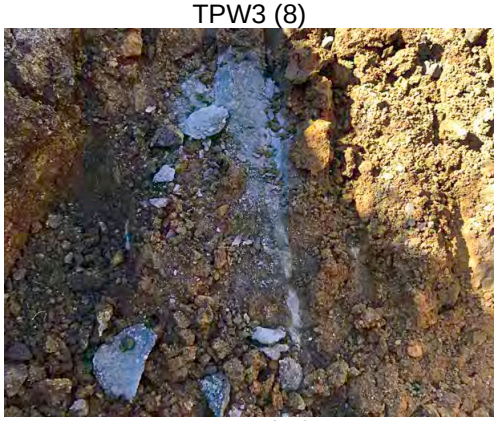

TPW3 (11)

TPW3 (12)

TPW3 (13)

Appendix D – Borehole logs

ENVIRONMENTAL BOREHOLE / TESTPIT BH01

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** -33.69679, 151.08924
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY** Stratcore	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** EH
	TOTAL DEPTH 4.000	**CHECKED BY**

COMMENTS Weathered interlaminated clays/sst. of Hawkesbury SST by 0.5m crushed doleritic gravell fill material

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	1.1	BH01_0-0.1	Y			GRAVELLY SAND Dolerite sandstone, fine to coarse grained, poorly graded, angular, medium grey, trace rootlets, doleritic gravels, moist, loose FILL	no staining, no odour
0.5	1					SANDY CLAY , high plasticity, orange, moist, firm, NATURAL	dark brown at 1.0m staining, earthy (minor roots) odour
1	1.5					SANDY CLAY , low to medium plasticity, mottled creamy orange, slightly moist, soft, NATURAL	no staining, no odour, Brown organic smelling lense at 1.6m
1.5							
2	1.4	BH01_2.0-2.1	Y			CLAYEY SAND , low plasticity, creamy orange, dry, NATURAL	weathered interlaminated clays and sands in Hawkesbury SST
2.5							
3	1					CLAY , medium plasticity, creamy brown, moist, firm, NATURAL	no staining, no odour
3.5							
4						Termination Depth at:4.000 m. Refusal	
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT BH02

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** -33.69682, 151.08921
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY** Stratcore	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** EH
	TOTAL DEPTH 4.500	**CHECKED BY**

COMMENTS Pushtubes refused at 3.0m. Solid auger to 4.5m. Possible crosscontamination of augered samples

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	1.2					GRAVELLY SAND , fine to coarse grained, poorly graded, angular, dark brown, rootlets, gravel, dolerite, moist, loose	no staining, topsoil odour
0.5	9.4	BH02_0.5-0.6	Y			GRAVELLY SAND , fine to coarse grained, poorly graded, angular, dark grey, moist, loose	0.4-0.6 dark brown stain staining, strong hydrocarbon odour, 0.4-0.6 m-lense of hydrocarbon impacted fill material
1	2					GRAVELLY SAND , fine to coarse grained, poorly graded, angular, dark brown, moist, loose	
1.5						GRAVELLY SAND , fine to coarse grained, poorly graded, angular, brown, moist, loose	no staining, no odour, Concrete fragment at 1.0m no staining, no odour
2	1.8						
2.5						GRAVELLY SAND , fine to coarse grained, poorly graded, yellow brown, moist, loose, NATURAL	natural soil with ironstone cemented layers in SSC staining, no odour
3	1	BH02_3.0-3.1	Y			SANDY CLAY , high plasticity, fine grained, orange (terracotta), moist, loose, NATURAL	no stain, bright orange clays staining, no odour
3.5							
4	1.3						
4.5						Termination Depth at:4.500 m. Proposed depth	
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT BH03

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** -33.69676, 151.08937
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY** Stratcore	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** EH
	TOTAL DEPTH 6.000	**CHECKED BY**

COMMENTS Pushtubes from 1-6m. Hole extended 1m to reach possible natural soils and clear hydrocarbon contamination

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	3.8					SANDY GRAVEL , medium to coarse grained, poorly graded, angular, dark grey, crushed dolerite gravels, moist	no staining, no odour, Hit concrete fragments at 0.5m (edge of tank foundations?)
0.5	0.8						
1	1.1					SANDY GRAVEL , medium to coarse grained, poorly graded, brown	no staining, no odour
1.5						SANDY CLAY , fine to medium grained, poorly graded, mottled orange brown, FILL?	
2	1.8					GRAVELLY SAND , medium to coarse grained, poorly graded, grey brown	
2.5							
3	1.5						
3.5							
4	5.4	BH03_4.0-4.1	Y			SAND , medium grained, well graded, cream, l CLAYEY SAND , low plasticity, medium grained, dark grey, s	dark grey staining, strong hydrocarbon odour odour
4.5	2.4	BH03_4.4-4.5	Y			SAND , medium grained, brown grey, f	grey at 4.4m staining, strong hydrocarbon odour odour
5	2.5					SANDY CLAY , medium to high plasticity, fine grained, mottled creamy brown, f, NATURAL?	
5.5							
6	1.7	BH03_5.9-6.0	Y				
6						Termination Depth at:6.000 m. Proposed depth	
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT BH04

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** -33.69675, 151.08922
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY** Stratcore	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** EH
	TOTAL DEPTH 5.000	**CHECKED BY**

COMMENTS Pushtube at 0-1m; SF auger 1m. Hole ended at proposed depth in possible natural clays

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	0.7					SANDY GRAVEL , medium to coarse grained, poorly graded, grey brown, dolerite gravels, moist	no staining, no odour
0.5	0.8						
1		BH04_1.0-1.1	Y				
1.5							
2							
2.5							
3	0.7					GRAVELLY SAND , brown	
3.5							
4	0.7					CLAY , high plasticity, fine grained, orange, moist, NATURAL	no staining, no odour
4.5							
5	1.9	BH04_4.9-5.0	Y			Termination Depth at:5.000 m. Proposed depth	
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT BH05

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** -33.69689, 151.08915
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY** Stratcore	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** EH
	TOTAL DEPTH 0.300	**CHECKED BY**

COMMENTS Hole refused at 0.3m due to dolerite gravels

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
	2.8	BH05_0-0.1	Y			SANDY GRAVEL , poorly graded, angular, grey, dolerite / basalt road base gravels, moist,	no staining, no odour
0.5						Termination Depth at:0.300 m. Refusal	
1							
1.5							
2							
2.5							
3							
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT BH06

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** -33.69687, 151.08917
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY** Stratcore	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** EH
	TOTAL DEPTH 0.400	**CHECKED BY**

COMMENTS 0.6m end of hole on refusal due to possible concrete slab / piece

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
	1.7	BH06_0-0.1	Y			SANDY GRAVEL , medium to coarse grained, poorly graded, angular, dark brown, doleritic gravels, moist,	hole ended on refusal due to possible concrete slab
0.5						Termination Depth at:0.400 m. Refusal	
1							
1.5							
2							
2.5							
3							
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT BH07

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** -33.69689, 151.08899
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY** Stratcore	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** EH
	TOTAL DEPTH 0.400	**CHECKED BY**

COMMENTS End of hole at 0.3m refused on basaltic / doleritic gravels. No penetration with hand auger

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
	1.6	BH07_0-0.1	Y			GRAVELLY SAND , medium to coarse grained, angular, dark brown, basalt gravels, rootlets, very moist	
0.5						Termination Depth at:0.400 m, Refusal	
1							
1.5							
2							
2.5							
3							
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT TPE1

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** ,
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY**	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** FH
	TOTAL DEPTH 1.000	**CHECKED BY**

COMMENTS

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	1.7					SURFACE: GRADED AND SEEDED	no odour
	2.2					SANDY GRAVEL , brown grey	Metal pipe
0.5	2.5						
	5.2					CLAY , compacted, white, red, orange, black & brown, with rocks and pockets of sand	plastic pipe
	1.9						
1	2.5					Termination Depth at:1.000 m. Target depth achieved.	
	3						
1.5	3.6						
	4.4						
	2						
2	2.8						
	2.9						
	3.1						
2.5	3.5						
3							
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT TPE2

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** ,
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY**	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** FH
	TOTAL DEPTH 3.000	**CHECKED BY**

COMMENTS

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	2.4					SURFACE: GRADED AND SEEDED	
	3					GRAVELLY SAND , fine to medium grained, white, tan, d, loose	Metal pipe formwork
0.5	3.6					SANDY GRAVEL , brown, grey, pockets of black rock	tightly packed
	2.8						
1	3						
	3.1						
1.5	2.2						
	3						
2	3.3						
2.5							
3						Termination Depth at:3.000 m. Target depth achieved. 3.4m in length due to refusal	
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT TPE3

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** ,
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY**	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** FH
	TOTAL DEPTH 0.800	**CHECKED BY**

COMMENTS

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	0.8					GRAVELLY SAND , fine to medium grained, gap graded, subangular, white-tan, damp	
	0.9						Plastic pipe
0.5	2.6					GRAVELLY SAND , brown, white, red and orange, with trace clay, tightly packed black, flat rocks troughout	tighly packed, plastic and road base
	2.3						
	2.5					Termination Depth at:0.800 m. refusal. Length 3.4m due to refusal	
1							
1.5							
2							
2.5							
3							
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT TPW1

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** ,
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY**	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** FH
	TOTAL DEPTH 1.000	**CHECKED BY**

COMMENTS

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	2.3					SURFACE: GRASS	no odour
0.5	2.5 3 3.2 1.8					GRAVELLY SAND , fine to medium grained, poorly graded, brown, with clay, large rocks and boulders; iron rich	Piece of quartz
1	2.5 3.2 3.3 4.1 2.4 2.6 2.7 3.2 3.9					Termination Depth at:1.000 m. Target depth achieved	
1.5							
2							
2.5							
3							
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT TPW2

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** ,
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY**	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** FH
	TOTAL DEPTH 1.000	**CHECKED BY**

COMMENTS

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	1.6					SURFACE: TALL GRASS AND TREES	fabric, rubber matting, metal rods, wire, plastic sheet, string, plastic piping, electrical wire, tyre all on northern wall, minor hydrocarbon odour on pipe
0.5	1.9					GRAVELLY SAND , fine to coarse grained, subrounded, subrounded to angular, brown, mottled red & tan, with clay, trace quartz, roots and rootlets, moist	
	4						
	1.8						
1	2.2						
	2.3					Termination Depth at:1.000 m. Target depth achieved	
	3.4						
1.5	1.9						
	2.5						
2	2.6						
	3.1						
2.5							
3							
3.5							
4							
4.5							
5							
5.5							
6							
6.5							
7							
7.5							
8							
8.5							
9							
9.5							

ENVIRONMENTAL BOREHOLE / TESTPIT TPW3

PROJECT NUMBER 212645726	**DRILLING DATE** 6/08/2019 12:00:00 AM - 6/08/2(	**COORDINATES** ,
PROJECT NAME Hornsby Quarry Rehabilitation E	**DRILLING COMPANY**	**COORD SYS** GDA94_MGA_zone_56
CLIENT Hornsby Shire Council	**DRILLER**	**SURFACE ELEVATION**
ADDRESS Hornsby Quarry	**DRILLING METHOD**	**LOGGED BY** FH
	TOTAL DEPTH 1.000	**CHECKED BY**

COMMENTS

Depth (m)	PID	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations
0	1.6					GRAVELLY SAND , rounded-angular, brown, trace clay	rootlets
0.5	2.3 2.4 3.5 5.1					GRAVELLY CLAY , brown, mottled red & grey	large rocks, sandstone rocks yellow, pipe, cement
1	3.7 4.6 5.2 3.1 3.5 3.7 5.3 5.6					Termination Depth at:1.000 m. Target depth achieved	

Appendix E – Tables

			ES_EPA8100			Inorganics		Metals								BTEXN								TRH - NEPM 2013				
			Benzo(a)pyrene (half LOR)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (zero)	Moisture (%)	Moisture Content (%)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)
			TEQ (mg/kg	TEQ (mg/kg	TEQ (mg/kg	%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	1	1	2	0.4	2	5	5	0.1	2	5	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.2	10	10	50	50	100
CRC CARE 2011 Soil Direct Contact HSL-C Recreational / Open Space																120	18,000	5,300			15,000	1,900		5,100		3,800		5,300
NEPM 2013 EIL-Urban Residential- Public Open Space																												
0-2m								100		190	60	1,100		30	70							170						
NEPM 2013 Table 1A(1) HIL C Rec								300	90	300	17,000	600	80	1,200	30,000													
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapour Intrusion, Sand																												
0-1m																999,999	999,999	999,999			999,999	999,999		999,999		999,999		
Location Code	**Field ID**	**Depth**																										
Northern Fill	GS01_0-0.1	0 - 0.1					21	3.2	<0.4	160	40	7.9	<0.1	160	96	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Northern Fill	GS02_0-0.1	0 - 0.1					24	2.1	<0.4	140	36	<5	<0.1	180	88	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Northern Fill	GS03_0-0.1	0 - 0.1					18	2.4	<0.4	66	22	13	<0.1	100	170	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Eastern Fill	TPE1-2_1.0	1					11	2.3	<0.4	8.0	12	17	<0.1	<5	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Eastern Fill	TPE1-3_0.5	0.5					9.0	2.2	<0.4	9.0	9.7	16	<0.1	6.8	37	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Eastern Fill	TPE1-5_0.0	0					8.5	3.0	<0.4	11	13	15	<0.1	8.8	43	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Eastern Fill	TPE2-1_0.5	0.5					8.7	2.3	<0.4	15	7.6	14	<0.1	11	36	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Eastern Fill	TPE2-2_1.0	1					10	3.2	<0.4	50	14	11	<0.1	50	62	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Eastern Fill	TPE2-3_0.0	0					10	6.0	<0.4	17	24	45	<0.1	13	67	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	120
Eastern Fill	TPE3-1_0.5	0.5					9.0	3.7	<0.4	20	21	43	<0.1	11	57	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	220
Eastern Fill	TPE3-3_0.0	0					9.8	3.2	<0.4	14	15	22	<0.1	9.7	49	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	180
Eastern Fill	QA03	0					8.3	2.9	<0.4	12	9.4	15	<0.1	7.1	41	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Eastern Fill	QA04	0				8.2		<5	<1	13	9	15	<0.1	10	38	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5		<0.2	<10	<10	<50	<50	<100
Eastern Fill	TPE3-3_0.8	0.8					9.2	2.4	<0.4	15	11	29	<0.1	12	50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW1-2_1.0	1					13	3.1	<0.4	120	34	8.1	<0.1	120	70	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW1-3_0.0	0					11	2.8	<0.4	120	32	7.4	<0.1	120	76	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW1-5_0.5	0.5					13	2.9	<0.4	88	28	7.5	<0.1	91	59	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW2-1_0.0	0					15	2.4	<0.4	120	30	7.9	<0.1	120	72	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW2-2_0.5	0.5					12	<2	<0.4	71	22	13	<0.1	72	64	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW2-3_0.5	0.5					12	3.1	<0.4	160	35	11	<0.1	150	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	QA01	0.5					12	3.3	<0.4	170	38	15	<0.1	160	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	QA02	0.5				11.2		<5	<1	117	30	14	<0.1	125	157	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5		<0.2	<10	<10	<50	<50	<100
Western Fill	TPW3-1_0.0	0					13	2.7	<0.4	75	25	7.6	<0.1	80	62	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW3-1_0.5	0.5					14	3.0	<0.4	58	19	12	<0.1	56	65	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
Western Fill	TPW3-5_1.0	1					17	2.2	<0.4	120	29	5.9	<0.1	130	78	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
BH01	BH01_0-0.1	0 - 0.1	0.6	1.2	<0.5		9.2	2.2	<0.4	100	35	6.9	<0.1	110	63	<0.1	<0.1	<0.1	<0.1	0.3	<0.3	<0.5		<20	<20	<50	<50	<100
	BH01_2.0-2.1	2 - 2.1	0.6	1.2	<0.5		20	3.4	<0.4	53	45	11	<0.1	96	60	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
BH02	BH02_0.5-0.6	0.5 - 0.6					15	2.6	<0.4	68	27	8.2	<0.1	81	58	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	440	440	260
	QC_01	0.5 - 0.6					14	2.3	<0.4	58	20	8.4	<0.1	62	45	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
	BH02_3.0-3.1	3 - 3.1					12	<2	<0.4	150	37	<5	<0.1	150	86	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
BH03	BH03_4.0-4.1	4 - 4.1					17	3.4	<0.4	130	34	8.2	<0.1	140	86	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	500	500	480
	QC_02	4 - 4.1					15	3.3	<0.4	130	33	8.3	<0.1	130	85	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	57	57	<100
	BH03_4.4-4.5	4.4 - 4.5					12	3.3	<0.4	49	12	12	<0.1	46	50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
	BH03_5.9-6.0	5.9 - 6					18	3.4	<0.4	37	31	11	0.1	160	140	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
BH04	BH04_1.0-1.1	1 - 1.1					8.1	2.2	<0.4	110	30	7.7	<0.1	120	71	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
	BH04_4.9-5.0	4.9 - 5					22	3.6	<0.4	55	28	13	0.1	69	62	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
BH05	BH05_0-0.1	0 - 0.1					8.5	2.6	<0.4	170	44	76	<0.1	130	120	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	390
BH06	BH06_0-0.1	0 - 0.1					15	2.2	<0.4	110	31	7.6	<0.1	120	87	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	<100
BH07	BH07_0-0.1	0 - 0.1					10	2.4	<0.4	100	34	21	<0.1	110	130	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50	<50	180

					TRH - NEPM 1999					PAHs																	
			F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Sum of polycyclic aromatic hydrocarbons	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Naphthalene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			100	50	10	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recre			7,400																			1,900			1,900			
NEPM 2013 EIL-Urban Residential- Public Open S																												
0-2m																						170			170			
NEPM 2013 Table 1A(1) HIL C Rec																												300
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																												
0-1m																						999,999			999,999			
Location Code	**Field ID**	**Depth**																										
Northern Fill	GS01_0-0.1	0 - 0.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Northern Fill	GS02_0-0.1	0 - 0.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Northern Fill	GS03_0-0.1	0 - 0.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	TPE1-2_1.0	1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	TPE1-3_0.5	0.5	<100	<100	<20	<20	<50	55	55		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	TPE1-5_0.0	0	<100	<100	<20	<20	62	62	124		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	TPE2-1_0.5	0.5	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	TPE2-2_1.0	1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	TPE2-3_0.0	0	<100	120	<20	<20	68	98	166		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8		<0.5	<0.5	<0.5	<0.5	0.9	1.7
Eastern Fill	TPE3-1_0.5	0.5	170	390	<20	<20	110	200	310		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.0		<0.5	<0.5	<0.5	<0.5	1.0	2
Eastern Fill	TPE3-3_0.0	0	110	290	<20	<20	110	130	240		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	QA03	0	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Eastern Fill	QA04	0	<100	<50	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	
Eastern Fill	TPE3-3_0.8	0.8	<100	<100	<20	<20	<50	58	58		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW1-2_1.0	1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW1-3_0.0	0	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW1-5_0.5	0.5	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW2-1_0.0	0	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW2-2_0.5	0.5	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW2-3_0.5	0.5	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	QA01	0.5	<100	<100	<20	<20	59	54	113		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	QA02	0.5	<100	<50	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	
Western Fill	TPW3-1_0.0	0	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW3-1_0.5	0.5	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Western Fill	TPW3-5_1.0	1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH01	BH01_0-0.1	0 - 0.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH01_2.0-2.1	2 - 2.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH02	BH02_0.5-0.6	0.5 - 0.6	<100	700	<20	210	500	<50	710		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	0.7	<0.5	0.7
	QC_01	0.5 - 0.6	<100	<100	<20	<20	64	<50	64		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH02_3.0-3.1	3 - 3.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH03	BH03_4.0-4.1	4 - 4.1	<100	980	<20	200	750	<50	950		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	4 - 4.1	<100	<100	<20	24	100	<50	124		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_4.4-4.5	4.4 - 4.5	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_5.9-6.0	5.9 - 6	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH04	BH04_1.0-1.1	1 - 1.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH04_4.9-5.0	4.9 - 5	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH05	BH05_0-0.1	0 - 0.1	170	560	<20	<20	200	290	490		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH06	BH06_0-0.1	0 - 0.1	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH07	BH07_0-0.1	0 - 0.1	<100	180	<20	<20	76	160	236		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

																		Phenols										
			Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	3,4-Methylphenol (m,p-cresol)	2,3,4,6-Tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,4-dinitrophenol	2,6-dichlorophenol	2-chlorophenol	2-methylnaphthalene	2-methylphenol	2-nitrophenol	3-methylcholanthrene	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	4-nitrophenol	Acetophenone	Pentachlorophenol	Phenol	tetrachlorophenols	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.4	5	1	1	0.5	0.5	5	0.5	0.5	0.5	0.2	1	0.5	5	20	1	5	0.5	1	0.5	10	1	20
CRC CARE 2011 Soil Direct Contact HSL-C Recre																												
NEPM 2013 EIL-Urban Residential- Public Open S																												
0-2m																												
NEPM 2013 Table 1A(1) HIL C Rec			3	3	3																			120	40,000			
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																												
0-1m																												
Location Code	**Field ID**	**Depth**																										
Northern Fill	GS01_0-0.1	0 - 0.1	<0.5	0.6	1.2																							
Northern Fill	GS02_0-0.1	0 - 0.1	<0.5	0.6	1.2																							
Northern Fill	GS03_0-0.1	0 - 0.1	<0.5	0.6	1.2																							
Eastern Fill	TPE1-2_1.0	1	<0.5	0.6	1.2																							
Eastern Fill	TPE1-3_0.5	0.5	<0.5	0.6	1.2																							
Eastern Fill	TPE1-5_0.0	0	<0.5	0.6	1.2																							
Eastern Fill	TPE2-1_0.5	0.5	<0.5	0.6	1.2																							
Eastern Fill	TPE2-2_1.0	1	<0.5	0.6	1.2																							
Eastern Fill	TPE2-3_0.0	0	<0.5	0.6	1.2																							
Eastern Fill	TPE3-1_0.5	0.5	<0.5	0.6	1.2																							
Eastern Fill	TPE3-3_0.0	0	<0.5	0.6	1.2																							
Eastern Fill	QA03	0	<0.5	0.6	1.2																							
Eastern Fill	QA04	0	<0.5	0.6	1.2																							
Eastern Fill	TPE3-3_0.8	0.8	<0.5	0.6	1.2																							
Western Fill	TPW1-2_1.0	1	<0.5	0.6	1.2																							
Western Fill	TPW1-3_0.0	0	<0.5	0.6	1.2																							
Western Fill	TPW1-5_0.5	0.5	<0.5	0.6	1.2																							
Western Fill	TPW2-1_0.0	0	<0.5	0.6	1.2																							
Western Fill	TPW2-2_0.5	0.5	<0.5	0.6	1.2																							
Western Fill	TPW2-3_0.5	0.5	<0.5	0.6	1.2																							
Western Fill	QA01	0.5	<0.5	0.6	1.2																							
Western Fill	QA02	0.5	<0.5	0.6	1.2																							
Western Fill	TPW3-1_0.0	0	<0.5	0.6	1.2																							
Western Fill	TPW3-1_0.5	0.5	<0.5	0.6	1.2																							
Western Fill	TPW3-5_1.0	1	<0.5	0.6	1.2																							
BH01	BH01_0-0.1	0 - 0.1					<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
	BH01_2.0-2.1	2 - 2.1					<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
	QC_01	0.5 - 0.6	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
	BH02_3.0-3.1	3 - 3.1	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
BH03	BH03_4.0-4.1	4 - 4.1	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
	QC_02	4 - 4.1	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
	BH03_4.4-4.5	4.4 - 4.5	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
	BH03_5.9-6.0	5.9 - 6	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
BH04	BH04_1.0-1.1	1 - 1.1	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
	BH04_4.9-5.0	4.9 - 5	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
BH05	BH05_0-0.1	0 - 0.1	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
BH06	BH06_0-0.1	0 - 0.1	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20
BH07	BH07_0-0.1	0 - 0.1	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20

			VOCs																								
			1,1-dichloroethane	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2-dibromoethane	1,3-dichlorobenzene	2-butanone (MEK)	4-methyl-2-pentanone (MIBK)	Acetone	Allyl chloride	Bromodichloromethane	Bromoform	Carbon disulfide	Chlorodibromomethane	Chloroethane	cis-1,3-dichloropropene	Dibromomethane	Iodomethane	Trichloroethene	Tetrachloroethene	trans-1,3-dichloropropene	trans-1,2-dichloroethene	Trichlorofluoromethane	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,4,5-tetrachlorobenzene	1,3,5-Trichlorobenzene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recre																												
NEPM 2013 EIL-Urban Residential- Public Open S																												
0-2m																												
NEPM 2013 Table 1A(1) HIL C Rec																												
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																												
0-1m																												
Location Code	**Field ID**	**Depth**																										
Northern Fill	GS01_0-0.1	0 - 0.1																										
Northern Fill	GS02_0-0.1	0 - 0.1																										
Northern Fill	GS03_0-0.1	0 - 0.1																										
Eastern Fill	TPE1-2_1.0	1																										
Eastern Fill	TPE1-3_0.5	0.5																										
Eastern Fill	TPE1-5_0.0	0																										
Eastern Fill	TPE2-1_0.5	0.5																										
Eastern Fill	TPE2-2_1.0	1																										
Eastern Fill	TPE2-3_0.0	0																										
Eastern Fill	TPE3-1_0.5	0.5																										
Eastern Fill	TPE3-3_0.0	0																										
Eastern Fill	QA03	0																										
Eastern Fill	QA04	0																										
Eastern Fill	TPE3-3_0.8	0.8																										
Western Fill	TPW1-2_1.0	1																										
Western Fill	TPW1-3_0.0	0																										
Western Fill	TPW1-5_0.5	0.5																										
Western Fill	TPW2-1_0.0	0																										
Western Fill	TPW2-2_0.5	0.5																										
Western Fill	TPW2-3_0.5	0.5																										
Western Fill	QA01	0.5																										
Western Fill	QA02	0.5																										
Western Fill	TPW3-1_0.0	0																										
Western Fill	TPW3-1_0.5	0.5																										
Western Fill	TPW3-5_1.0	1																										
BH01	BH01_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH01_2.0-2.1	2 - 2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	0.5 - 0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH02_3.0-3.1	3 - 3.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH03	BH03_4.0-4.1	4 - 4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	4 - 4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_4.4-4.5	4.4 - 4.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_5.9-6.0	5.9 - 6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH04	BH04_1.0-1.1	1 - 1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH04_4.9-5.0	4.9 - 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH05	BH05_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH06	BH06_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH07	BH07_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

			SVOCs																								
			1-Chloronaphthalene	1-naphthylamine	2-naphthylamine	2-nitroaniline	3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	4-bromophenyl phenyl ether	4-chlorophenyl phenyl ether	7,12-dimethylbenz(a)anthracene	Aniline	Benzyl chloride	Bis(2-chloroethoxy) methane	Bis(2-chloroisopropyl) ether	Dibenz(a,j)acridine	Diphenylamine	Hexachlorocyclopentadiene	Hexachloroethane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	N-nitrosopiperidine	Pentachlorobenzene	Trifluralin	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.05	0.05
CRC CARE 2011 Soil Direct Contact HSL-C Recre																												
NEPM 2013 EIL-Urban Residential- Public Open S																												
0-2m																												
NEPM 2013 Table 1A(1) HIL C Rec																												
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																												
0-1m																												
Location Code	**Field ID**	**Depth**																										
Northern Fill	GS01_0-0.1	0 - 0.1																							<0.1	<0.1	<0.05	<0.05
Northern Fill	GS02_0-0.1	0 - 0.1																							<0.1	<0.1	<0.05	<0.05
Northern Fill	GS03_0-0.1	0 - 0.1																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE1-2_1.0	1																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE1-3_0.5	0.5																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE1-5_0.0	0																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE2-1_0.5	0.5																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE2-2_1.0	1																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE2-3_0.0	0																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE3-1_0.5	0.5																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	TPE3-3_0.0	0																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	QA03	0																							<0.1	<0.1	<0.05	<0.05
Eastern Fill	QA04	0																									<0.05	<0.05
Eastern Fill	TPE3-3_0.8	0.8																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW1-2_1.0	1																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW1-3_0.0	0																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW1-5_0.5	0.5																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW2-1_0.0	0																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW2-2_0.5	0.5																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW2-3_0.5	0.5																							<0.1	<0.1	<0.05	<0.05
Western Fill	QA01	0.5																							<0.1	<0.1	<0.05	<0.05
Western Fill	QA02	0.5																									<0.05	<0.05
Western Fill	TPW3-1_0.0	0																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW3-1_0.5	0.5																							<0.1	<0.1	<0.05	<0.05
Western Fill	TPW3-5_1.0	1																							<0.1	<0.1	<0.05	<0.05
BH01	BH01_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
	BH01_2.0-2.1	2 - 2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
	QC_01	0.5 - 0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
	BH02_3.0-3.1	3 - 3.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
BH03	BH03_4.0-4.1	4 - 4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
	QC_02	4 - 4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
	BH03_4.4-4.5	4.4 - 4.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
	BH03_5.9-6.0	5.9 - 6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
BH04	BH04_1.0-1.1	1 - 1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
	BH04_4.9-5.0	4.9 - 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
BH05	BH05_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
BH06	BH06_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05
BH07	BH07_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05	<0.05

			OC Pesticides																										
			Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	1	0.2	0.05
CRC CARE 2011 Soil Direct Contact HSL-C Recre																													
NEPM 2013 EIL-Urban Residential- Public Open S																													
0-2m											180	180																	
NEPM 2013 Table 1A(1) HIL C Rec				10		70						400		340				20				10		10	400	30			
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																													
0-1m																													
Location Code	**Field ID**	**Depth**																											
Northern Fill	GS01_0-0.1	0 - 0.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Northern Fill	GS02_0-0.1	0 - 0.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Northern Fill	GS03_0-0.1	0 - 0.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE1-2_1.0	1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE1-3_0.5	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE1-5_0.0	0	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE2-1_0.5	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE2-2_1.0	1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE2-3_0.0	0	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE3-1_0.5	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	TPE3-3_0.0	0	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	QA03	0	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Eastern Fill	QA04	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2			<0.05
Eastern Fill	TPE3-3_0.8	0.8	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW1-2_1.0	1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW1-3_0.0	0	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW1-5_0.5	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW2-1_0.0	0	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW2-2_0.5	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW2-3_0.5	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	QA01	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	QA02	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2			<0.05
Western Fill	TPW3-1_0.0	0	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW3-1_0.5	0.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
Western Fill	TPW3-5_1.0	1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
BH01	BH01_0-0.1	0 - 0.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
	BH01_2.0-2.1	2 - 2.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
	QC_01	0.5 - 0.6	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
	BH02_3.0-3.1	3 - 3.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
BH03	BH03_4.0-4.1	4 - 4.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
	QC_02	4 - 4.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
	BH03_4.4-4.5	4.4 - 4.5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
	BH03_5.9-6.0	5.9 - 6	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
BH04	BH04_1.0-1.1	1 - 1.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
	BH04_4.9-5.0	4.9 - 5	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
BH05	BH05_0-0.1	0 - 0.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
BH06	BH06_0-0.1	0 - 0.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2
BH07	BH07_0-0.1	0 - 0.1	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.2	<0.2

			OP Pesticides																									
			Bolstar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.2	0.05	0.05	0.05	0.05	0.05	2	0.2	0.2	0.05	0.05	0.05	0.05	0.2	0.2	0.05	0.2	0.05	0.2	0.2	0.05	0.05	0.2	0.2	0.2	0.2
CRC CARE 2011 Soil Direct Contact HSL-C Recre																												
NEPM 2013 EIL-Urban Residential- Public Open S																												
0-2m																												
NEPM 2013 Table 1A(1) HIL C Rec							250																					
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																												
0-1m																												
Location Code	**Field ID**	**Depth**																										
Northern Fill	GS01_0-0.1	0 - 0.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Northern Fill	GS02_0-0.1	0 - 0.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Northern Fill	GS03_0-0.1	0 - 0.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE1-2_1.0	1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE1-3_0.5	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE1-5_0.0	0	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE2-1_0.5	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE2-2_1.0	1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE2-3_0.0	0	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE3-1_0.5	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	TPE3-3_0.0	0	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	QA03	0	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Eastern Fill	QA04	0		<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05			<0.05		<0.05			<0.05	<0.05		<0.2		<0.2
Eastern Fill	TPE3-3_0.8	0.8	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW1-2_1.0	1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW1-3_0.0	0	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW1-5_0.5	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW2-1_0.0	0	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW2-2_0.5	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW2-3_0.5	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	QA01	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	QA02	0.5		<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05			<0.05		<0.05			<0.05	<0.05		<0.2		<0.2
Western Fill	TPW3-1_0.0	0	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW3-1_0.5	0.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
Western Fill	TPW3-5_1.0	1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH01	BH01_0-0.1	0 - 0.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
	BH01_2.0-2.1	2 - 2.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
	QC_01	0.5 - 0.6	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
	BH02_3.0-3.1	3 - 3.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH03	BH03_4.0-4.1	4 - 4.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
	QC_02	4 - 4.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
	BH03_4.4-4.5	4.4 - 4.5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
	BH03_5.9-6.0	5.9 - 6	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH04	BH04_1.0-1.1	1 - 1.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
	BH04_4.9-5.0	4.9 - 5	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH05	BH05_0-0.1	0 - 0.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH06	BH06_0-0.1	0 - 0.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2
BH07	BH07_0-0.1	0 - 0.1	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2

														MAH					Halogenated Hydrocarbons		PCBs							
			Naled (Dibrom)	Omethoate	Parathion	Phorate	Pirimphos-ethyl	Pirimiphos-methyl	Prothiofos	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	Styrene	Total MAH	Bromomethane	Dichlorodifluoromethane	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.2	2	0.2	0.2	0.05	0.2	0.05	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CRC CARE 2011 Soil Direct Contact HSL-C Recre																													
NEPM 2013 EIL-Urban Residential- Public Open S																													
0-2m																													
NEPM 2013 Table 1A(1) HIL C Rec																													
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																													
0-1m																													
Location Code	**Field ID**	**Depth**																											
Northern Fill	GS01_0-0.1	0 - 0.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Northern Fill	GS02_0-0.1	0 - 0.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Northern Fill	GS03_0-0.1	0 - 0.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE1-2_1.0	1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE1-3_0.5	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE1-5_0.0	0	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE2-1_0.5	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE2-2_1.0	1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE2-3_0.0	0	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE3-1_0.5	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	TPE3-3_0.0	0	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	QA03	0	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Eastern Fill	QA04	0			<0.2		<0.05		<0.05																				
Eastern Fill	TPE3-3_0.8	0.8	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW1-2_1.0	1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW1-3_0.0	0	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW1-5_0.5	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW2-1_0.0	0	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW2-2_0.5	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW2-3_0.5	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	QA01	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	QA02	0.5			<0.2		<0.05		<0.05																				
Western Fill	TPW3-1_0.0	0	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW3-1_0.5	0.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
Western Fill	TPW3-5_1.0	1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2															
BH01	BH01_0-0.1	0 - 0.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH01_2.0-2.1	2 - 2.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	QC_01	0.5 - 0.6	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH02_3.0-3.1	3 - 3.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH03	BH03_4.0-4.1	4 - 4.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	QC_02	4 - 4.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH03_4.4-4.5	4.4 - 4.5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH03_5.9-6.0	5.9 - 6	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH04	BH04_1.0-1.1	1 - 1.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH04_4.9-5.0	4.9 - 5	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH05	BH05_0-0.1	0 - 0.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH06	BH06_0-0.1	0 - 0.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH07	BH07_0-0.1	0 - 0.1	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

				Herbicides		Chlorinated Hydrocarbons																					
			PCBs (Total)	Dinoseb	Pronamide	Chlorinated hydrocarbons EPAVic	Other chlorinated hydrocarbons (Total)	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	1,4-dichlorobenzene	2-chloronaphthalene	4-chlorotoluene	Bromobenzene	Bromochloromethane	Carbon tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-dichloroethene	Methylene chloride
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	20	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recre																											
NEPM 2013 EIL-Urban Residential- Public Open S																											
0-2m																											
NEPM 2013 Table 1A(1) HIL C Rec			1																								
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																											
0-1m																											
Location Code	**Field ID**	**Depth**																									
Northern Fill	GS01_0-0.1	0 - 0.1																									
Northern Fill	GS02_0-0.1	0 - 0.1																									
Northern Fill	GS03_0-0.1	0 - 0.1																									
Eastern Fill	TPE1-2_1.0	1																									
Eastern Fill	TPE1-3_0.5	0.5																									
Eastern Fill	TPE1-5_0.0	0																									
Eastern Fill	TPE2-1_0.5	0.5																									
Eastern Fill	TPE2-2_1.0	1																									
Eastern Fill	TPE2-3_0.0	0																									
Eastern Fill	TPE3-1_0.5	0.5																									
Eastern Fill	TPE3-3_0.0	0																									
Eastern Fill	QA03	0																									
Eastern Fill	QA04	0																									
Eastern Fill	TPE3-3_0.8	0.8																									
Western Fill	TPW1-2_1.0	1																									
Western Fill	TPW1-3_0.0	0																									
Western Fill	TPW1-5_0.5	0.5																									
Western Fill	TPW2-1_0.0	0																									
Western Fill	TPW2-2_0.5	0.5																									
Western Fill	TPW2-3_0.5	0.5																									
Western Fill	QA01	0.5																									
Western Fill	QA02	0.5																									
Western Fill	TPW3-1_0.0	0																									
Western Fill	TPW3-1_0.5	0.5																									
Western Fill	TPW3-5_1.0	1																									
BH01	BH01_0-0.1	0 - 0.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH01_2.0-2.1	2 - 2.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	0.5 - 0.6	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH02_3.0-3.1	3 - 3.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH03	BH03_4.0-4.1	4 - 4.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	4 - 4.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_4.4-4.5	4.4 - 4.5	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_5.9-6.0	5.9 - 6	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH04	BH04_1.0-1.1	1 - 1.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH04_4.9-5.0	4.9 - 5	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH05	BH05_0-0.1	0 - 0.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH06	BH06_0-0.1	0 - 0.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH07	BH07_0-0.1	0 - 0.1	<0.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

					Dioxins & Furans	Explosives			Nitroaromatics			Phthalates					
			Hexachlorobutadiene	Vinyl chloride	Dibenzofuran	2,4-Dinitrotoluene	2,6-dinitrotoluene	Nitrobenzene	2-Picoline	4-aminobiphenyl	Pentachloronitrobenzene	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil Direct Contact HSL-C Recre																	
NEPM 2013 EIL-Urban Residential- Public Open S																	
0-2m																	
NEPM 2013 Table 1A(1) HIL C Rec																	
NEPM 2013 Table 1A(3) HSL C Rec Soil for Vapou																	
0-1m																	
Location Code	**Field ID**	**Depth**															
Northern Fill	GS01_0-0.1	0 - 0.1															
Northern Fill	GS02_0-0.1	0 - 0.1															
Northern Fill	GS03_0-0.1	0 - 0.1															
Eastern Fill	TPE1-2_1.0	1															
Eastern Fill	TPE1-3_0.5	0.5															
Eastern Fill	TPE1-5_0.0	0															
Eastern Fill	TPE2-1_0.5	0.5															
Eastern Fill	TPE2-2_1.0	1															
Eastern Fill	TPE2-3_0.0	0															
Eastern Fill	TPE3-1_0.5	0.5															
Eastern Fill	TPE3-3_0.0	0															
Eastern Fill	QA03	0															
Eastern Fill	QA04	0															
Eastern Fill	TPE3-3_0.8	0.8															
Western Fill	TPW1-2_1.0	1															
Western Fill	TPW1-3_0.0	0															
Western Fill	TPW1-5_0.5	0.5															
Western Fill	TPW2-1_0.0	0															
Western Fill	TPW2-2_0.5	0.5															
Western Fill	TPW2-3_0.5	0.5															
Western Fill	QA01	0.5															
Western Fill	QA02	0.5															
Western Fill	TPW3-1_0.0	0															
Western Fill	TPW3-1_0.5	0.5															
Western Fill	TPW3-5_1.0	1															
BH01	BH01_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH01_2.0-2.1	2 - 2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH02	BH02_0.5-0.6	0.5 - 0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	0.5 - 0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH02_3.0-3.1	3 - 3.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH03	BH03_4.0-4.1	4 - 4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	4 - 4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_4.4-4.5	4.4 - 4.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH03_5.9-6.0	5.9 - 6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH04	BH04_1.0-1.1	1 - 1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	BH04_4.9-5.0	4.9 - 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH05	BH05_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH06	BH06_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH07	BH07_0-0.1	0 - 0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

			Metals								TRH - NEPM 2013				TRH - NEPM 1999										
			Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.005	50	100	100	100	50	100	100	100	1	1	1	1	1	1	1
ANZG (2018) - Freshwater - 95% level of species protection			0.013	0.0002	0.0004	0.0014	0.0034	0.0006	0.011	0.008															
ANZECC 2000 FW 95%			0.013	0.0002	0.001	0.0014	0.0034	0.0006	0.011	0.008															
Location Code	**Field ID**	**Depth**																							
Diversion Drain	SW_01	1	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<50	<100	<100	<100	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1

Environmental Standards
National Health and Medical Research Council, August 2018, ADWG 2011 Health (v3.5 updated 2018)
Department of Agriculture and Water Resources, August 2018, ANZG (2018) - Freshwater - 95% level of species protection

			PAHs												OC Pesticides										
			Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			1	1	1	1	1	1	1	1	1	1	1	1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1
ANZG (2018) - Freshwater - 95% level of species protection									16											0.08			0.01		
ANZECC 2000 FW 95%									16											0.08			0.01		
Location Code	**Field ID**	**Depth**																							
Diversion Drain	SW_01	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1

Environmental Standards
National Health and Medical Research Council, August 2018, ADWG 20
Department of Agriculture and Water Resources, August 2018, ANZG (2

			Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Bolstar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	2	2	2	2	20	2	20	2	20	2	2
ANZG (2018) - Freshwater - 95% level of species protection						0.02			0.2	0.09				0.2		0.02			0.01					0.01	
ANZECC 2000 FW 95%						0.02			0.2	0.09				0.2		0.02			0.01					0.01	
Location Code	**Field ID**	**Depth**																							
Diversion Drain	SW_01	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<2	<2	<2	<2	<20	<2	<20	<2	<20	<2	<2

Environmental Standards
National Health and Medical Research Council, August 2018, ADWG 20
Department of Agriculture and Water Resources, August 2018, ANZG (2

			OP Pesticides																					
			Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Parathion	Phorate	Pirimiphos-methyl	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	20	2	2	2	2	2
ANZG (2018) - Freshwater - 95% level of species protection			0.15					0.2			0.05							0.004							
ANZECC 2000 FW 95%			0.15					0.2			0.05							0.004							
Location Code	**Field ID**	**Depth**																							
Diversion Drain	SW_01	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2	<2	<2

Environmental Standards
National Health and Medical Research Council, August 2018, ADWG 20
Department of Agriculture and Water Resources, August 2018, ANZG (2

Field or Interlab Duplicates

				Inorganics		Metals								BTEXN								TR		
				Moisture (%)	Moisture Content (%)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)
				%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				1	1	2	0.4	2	5	5	0.1	2	5	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.2	10	10	50
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019		15	2.6	<0.4	68	27	8.2	<0.1	81	58	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	440
	QC_01	soil	6/08/2019		14	2.3	<0.4	58	20	8.4	<0.1	62	45	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50
RPD					7	12	0	16	30	2	0	27	25	0	0	0	0	0	0	0		0	0	159
670027	BH03_4.0-4.1	soil	6/08/2019		17	3.4	<0.4	130	34	8.2	<0.1	140	86	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	500
	QC_02	soil	6/08/2019		15	3.3	<0.4	130	33	8.3	<0.1	130	85	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	57
RPD					12	3	0	0	3	1	0	7	1	0	0	0	0	0	0	0		0	0	159
670027	TPE3-3_0.0	soil	6/08/2019		9.8	3.2	<0.4	14	15	22	<0.1	9.7	49	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50
	QA03	soil	6/08/2019		8.3	2.9	<0.4	12	9.4	15	<0.1	7.1	41	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50
RPD					17	10	0	15	46	38	0	31	18	0	0	0	0	0	0	0		0	0	0
670027	TPE3-3_0.0	soil	6/08/2019		9.8	3.2	<0.4	14	15	22	<0.1	9.7	49	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50
ES1925091	QA04	soil	6/08/2019	8.2		<5	<1	13	9	15	<0.1	10	38	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5		<0.2	<10	<10	<50
RPD						0	0	7	50	38	0	3	25	0	0	0	0	0	0			0	0	0
670027	TPW2-3_0.5	soil	6/08/2019		12	3.1	<0.4	160	35	11	<0.1	150	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50
	QA01	soil	6/08/2019		12	3.3	<0.4	170	38	15	<0.1	160	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50
RPD					0	6	0	6	8	31	0	6	0	0	0	0	0	0	0	0		0	0	0
670027	TPW2-3_0.5	soil	6/08/2019		12	3.1	<0.4	160	35	11	<0.1	150	110	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5		<20	<20	<50
ES1925091	QA02	soil	6/08/2019	11.2		<5	<1	117	30	14	<0.1	125	157	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5		<0.2	<10	<10	<50
RPD						0	0	31	15	24	0	18	35	0	0	0	0	0	0			0	0	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Field or Interlab Duplicates

				H - NEPM 2013				TRH - NEPM 1999					PAHs											
				>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Sum of polycyclic aromatic hydrocarbons	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				50	100	100	50	10	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	440	260	<100	700	<20	210	500	<50	710		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	soil	6/08/2019	<50	<100	<100	<100	<20	<20	64	<50	64		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				159	89	0	150	0	165	155	0	167		0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	500	480	<100	980	<20	200	750	<50	950		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	soil	6/08/2019	57	<100	<100	<100	<20	24	100	<50	124		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				159	131	0	163	0	157	153	0	154		0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<50	180	110	290	<20	<20	110	130	240		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QA03	soil	6/08/2019	<50	<100	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	57	10	97	0	0	75	89	131		0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<50	180	110	290	<20	<20	110	130	240		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ES1925091	QA04	soil	6/08/2019	<50	<100	<100	<50	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	57	10	141	0	0	10	26	131		0	0	0	0	0	0	0	0	0	0	0
670027	TPW2-3_0.5	soil	6/08/2019	<50	<100	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QA01	soil	6/08/2019	<50	<100	<100	<100	<20	<20	59	54	113		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	17	8	77		0	0	0	0	0	0	0	0	0	0	0
670027	TPW2-3_0.5	soil	6/08/2019	<50	<100	<100	<100	<20	<20	<50	<50	<50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ES1925091	QA02	soil	6/08/2019	<50	<100	<100	<50	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laborat**

Field or Interlab Duplicates

				Naphthalene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	3,4-Methylphenol (m,p-cresol)	2,3,4,6-Tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,4-dinitrophenol	2,6-dichlorophenol	2-chlorophenol	2-methylnaphthalene	2-methylphenol
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	5	1	1	0.5	0.5	5	0.5	0.5	0.5	0.2
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019		<0.5	<0.5	<0.5	0.7	<0.5	0.7	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2
	QC_01	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2
RPD					0	0	0	33	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2
	QC_02	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.4	<5	<1	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.2
RPD					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2											
	QA03	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2											
RPD					0	0	0	0	0	0	0	0	0											
670027	TPE3-3_0.0	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2											
ES1925091	QA04	soil	6/08/2019	<0.5	<0.5	<0.5		<0.5	<0.5		<0.5	0.6	1.2											
RPD					0	0		0	0		0	0	0											
670027	TPW2-3_0.5	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2											
	QA01	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2											
RPD					0	0	0	0	0	0	0	0	0											
670027	TPW2-3_0.5	soil	6/08/2019		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2											
ES1925091	QA02	soil	6/08/2019	<0.5	<0.5	<0.5		<0.5	<0.5		<0.5	0.6	1.2											
RPD					0	0		0	0		0	0	0											

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL**
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Field or Interlab Duplicates

				Phenols																				
				2-nitrophenol	3-methylcholanthrene	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	4-nitrophenol	Acetophenone	Pentachlorophenol	Phenol	tetrachlorophenols	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)	1,1-dichloroethane	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2-dibromoethane	1,3-dichlorobenzene	2-butanone (MEK)	4-methyl-2-pentanone (MIBK)	Acetone	Allyl chloride
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				1	0.5	5	20	1	5	0.5	1	0.5	10	1	20	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	soil	6/08/2019	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	soil	6/08/2019	<1	<0.5	<5	<20	<1	<5	<0.5	<1	<0.5	<10	<1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019																					
	QA03	soil	6/08/2019																					
RPD																								
670027	TPE3-3_0.0	soil	6/08/2019																					
ES1925091	QA04	soil	6/08/2019																					
RPD																								
670027	TPW2-3_0.5	soil	6/08/2019																					
	QA01	soil	6/08/2019																					
RPD																								
670027	TPW2-3_0.5	soil	6/08/2019																					
ES1925091	QA02	soil	6/08/2019																					
RPD																								

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Field or Interlab Duplicates

				VOCs													PAHs							
				Bromodichloromethane	Bromoform	Carbon disulfide	Chlorodibromomethane	Chloroethane	cis-1,3-dichloropropene	Dibromomethane	Iodomethane	Trichloroethene	Tetrachloroethene	trans-1,3-dichloropropene	trans-1,2-dichloroethene	Trichlorofluoromethane	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,4,5-tetrachlorobenzene	1,3,5-Trichlorobenzene	1-Chloronaphthalene	1-naphthylamine	2-naphthylamine	2-nitroaniline
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019																					
	QA03	soil	6/08/2019																					
RPD																								
670027	TPE3-3_0.0	soil	6/08/2019																					
ES1925091	QA04	soil	6/08/2019																					
RPD																								
670027	TPW2-3_0.5	soil	6/08/2019																					
	QA01	soil	6/08/2019																					
RPD																								
670027	TPW2-3_0.5	soil	6/08/2019																					
ES1925091	QA02	soil	6/08/2019																					
RPD																								

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Field or Interlab Duplicates

				SVOCs																			
				3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	4-bromophenyl phenyl ether	4-chlorophenyl phenyl ether	7,12-dimethylbenz(a)anthracene	Aniline	Benzyl chloride	Bis(2-chloroethoxy) methane	Bis(2-chloroisopropyl) ether	Dibenz(a,j)acridine	Diphenylamine	Hexachlorocyclopentadiene	Hexachloroethane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	N-nitrosopiperidine	Pentachlorobenzene	Trifluralin	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.05
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05
	QC_01	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05
	QC_02	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.05
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019																			<0.1	<0.1	<0.05
	QA03	soil	6/08/2019																			<0.1	<0.1	<0.05
RPD																						0	0	0
670027	TPE3-3_0.0	soil	6/08/2019																			<0.1	<0.1	<0.05
ES1925091	QA04	soil	6/08/2019																					<0.05
RPD																								0
670027	TPW2-3_0.5	soil	6/08/2019																			<0.1	<0.1	<0.05
	QA01	soil	6/08/2019																			<0.1	<0.1	<0.05
RPD																						0	0	0
670027	TPW2-3_0.5	soil	6/08/2019																			<0.1	<0.1	<0.05
ES1925091	QA02	soil	6/08/2019																					<0.05
RPD																								0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
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Field or Interlab Duplicates

				OC Pesticides																		
				a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	QC_01	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
RPD				0	0	0	0	0			0	0	0	0	0		0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	QC_02	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
RPD				0	0	0	0	0			0	0	0	0	0		0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	QA03	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
RPD				0	0	0	0	0			0	0	0	0	0		0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
ES1925091	QA04	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
RPD				0	0	0	0	0			0	0	0	0	0		0	0	0	0	0	0	0	0
670027	TPW2-3_0.5	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	QA01	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
RPD				0	0	0	0	0			0	0	0	0	0		0	0	0	0	0	0	0	0
670027	TPW2-3_0.5	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.1			<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
ES1925091	QA02	soil	6/08/2019	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
RPD				0	0	0	0	0			0	0	0	0	0		0	0	0	0	0	0	0	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laborat**

Field or Interlab Duplicates

				Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.05	0.05	0.05	1	0.2	0.05	0.2	0.05	0.05	0.05	0.05	0.05	2	0.2	0.2	0.05	0.05	0.05	0.05	0.2	0.2
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
	QC_01	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
RPD				0	0	0	0	0	0	0			0	0	0	0	0	0		0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
	QC_02	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
RPD				0	0	0	0	0	0	0			0	0	0	0	0	0		0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
	QA03	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
RPD				0	0	0	0	0	0	0			0	0	0	0	0	0		0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
ES1925091	QA04	soil	6/08/2019	<0.05	<0.05	<0.2			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05		
RPD				0	0	0			0				0	0	0					0	0	0		
670027	TPW2-3_0.5	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
	QA01	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
RPD				0	0	0	0	0	0	0			0	0	0	0	0	0		0	0	0	0	0
670027	TPW2-3_0.5	soil	6/08/2019	<0.05	<0.05	<0.05	<1	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2
ES1925091	QA02	soil	6/08/2019	<0.05	<0.05	<0.2			<0.05		<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05		
RPD				0	0	0			0				0	0	0					0	0	0		

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laborat**

Field or Interlab Duplicates

				OP Pesticides																			
				Ethion	Ethoprop	Fenamiphos	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Parathion	Phorate	Pirimphos-ethyl	Pirimiphos-methyl	Prothiofos	Pyrazophos	Ronnel	Terbufos
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.05	0.2	0.05	0.2	0.2	0.05	0.05	0.2	0.2	0.2	0.2	0.2	2	0.2	0.2	0.05	0.2	0.05	0.2	0.2	0.2
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
	QC_01	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
RPD				0	0		0	0	0	0	0	0	0	0	0	0	0	0		0		0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
	QC_02	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
RPD				0	0		0	0	0	0	0	0	0	0	0	0	0	0		0		0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
	QA03	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
RPD				0	0		0	0	0	0	0	0	0	0	0	0	0	0		0		0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
ES1925091	QA04	soil	6/08/2019	<0.05		<0.05			<0.05	<0.05		<0.2		<0.2			<0.2		<0.05		<0.05			
RPD				0					0	0		0		0			0							
670027	TPW2-3_0.5	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
	QA01	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
RPD				0	0		0	0	0	0	0	0	0	0	0	0	0	0		0		0	0	0
670027	TPW2-3_0.5	soil	6/08/2019	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2		<0.2		<0.2	<0.2	<0.2
ES1925091	QA02	soil	6/08/2019	<0.05		<0.05			<0.05	<0.05		<0.2		<0.2			<0.2		<0.05		<0.05			
RPD				0					0	0		0		0			0							

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
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*****Interlab Duplicates are matched on a per compound basis as methods vary between laborat**

Field or Interlab Duplicates

						MAH					Halogenated Hydrocarbons		PCBs								Herbicides			
				Trichloronate	Tetrachlorvinphos	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	Styrene	Total MAH	Bromomethane	Dichlorodifluoromethane	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)	Dinoseb	Pronamide	Chlorinated hydrocarbons EPAVic	Other chlorinated hydrocarbons (Total)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	20	0.5	0.5	0.5
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<0.5	<0.5	<0.5
	QC_01	soil	6/08/2019	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<0.5	<0.5	<0.5
	QC_02	soil	6/08/2019	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019	<0.2	<0.2																			
	QA03	soil	6/08/2019	<0.2	<0.2																			
RPD				0	0																			
670027	TPE3-3_0.0	soil	6/08/2019	<0.2	<0.2																			
ES1925091	QA04	soil	6/08/2019																					
RPD																								
670027	TPW2-3_0.5	soil	6/08/2019	<0.2	<0.2																			
	QA01	soil	6/08/2019	<0.2	<0.2																			
RPD				0	0																			
670027	TPW2-3_0.5	soil	6/08/2019	<0.2	<0.2																			
ES1925091	QA02	soil	6/08/2019																					
RPD																								

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*****Interlab Duplicates are matched on a per compound basis as methods vary between laborat**

Field or Interlab Duplicates

				Chlorinated Hydrocarbons																			
				1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3-dichlorpropane	1,4-dichlorobenzene	2-chloronaphthalene	4-chlorotoluene	Bromobenzene	Bromochloromethane	Carbon tetrachloride	Chlorobenzene	Chloroform	Chloromethane	cis-1,2-dichloroethene	Methylene chloride
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lab Report Number	**Field ID**	**Matrix Type**	**Date**																					
670027	BH02_0.5-0.6	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019																					
	QA03	soil	6/08/2019																					
RPD																								
670027	TPE3-3_0.0	soil	6/08/2019																					
ES1925091	QA04	soil	6/08/2019																					
RPD																								
670027	TPW2-3_0.5	soil	6/08/2019																					
	QA01	soil	6/08/2019																					
RPD																								
670027	TPW2-3_0.5	soil	6/08/2019																					
ES1925091	QA02	soil	6/08/2019																					
RPD																								

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
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*****Interlab Duplicates are matched on a per compound basis as methods vary between laborat**

Field or Interlab Duplicates

						Dioxins & Furans	Explosives			Nitroaromatics			Phthalates					
				Hexachlorobutadiene	Vinyl chloride	Dibenzofuran	2,4-Dinitrotoluene	2,6-dinitrotoluene	Nitrobenzene	2-Picoline	4-aminobiphenyl	Pentachloronitrobenzene	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lab Report Number	**Field ID**	**Matrix Type**	**Date**															
670027	BH02_0.5-0.6	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_01	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	BH03_4.0-4.1	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	QC_02	soil	6/08/2019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
670027	TPE3-3_0.0	soil	6/08/2019															
	QA03	soil	6/08/2019															
RPD																		
670027	TPE3-3_0.0	soil	6/08/2019															
ES1925091	QA04	soil	6/08/2019															
RPD																		
670027	TPW2-3_0.5	soil	6/08/2019															
	QA01	soil	6/08/2019															
RPD																		
670027	TPW2-3_0.5	soil	6/08/2019															
ES1925091	QA02	soil	6/08/2019															
RPD																		

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laborat**

Appendix F – Laboratory Documentation

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory
Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1, 21 Smallwood Pl, Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-26
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	F. Harrison 6:__ 6/8/19
Purchase Order		Email for Results	see special directions
Quote ID №	181121GHDN		

Analysis (Note: Where metals are requested please specify Total or Filtered)

Containers: 1L Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mL vial; 125mL Amber Glass Jar; Other ( )

Turn Around Requirements: ☐ Overnight (9am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) *Surcharges apply

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	Suite B15: OCP, OPP, PCB	Suite SW: SVOC, VOC	Asbestos ID in soil	Sample Comments / DG Hazard Warning
1	GS01 - 0-0.1	6/8	Soil	X					
2	GS02 - 0-0.1		S	X					
3	GS03 - 0-0.1		S	X					
4	SW - 01		water	X					
5	BH01 - 0-0.1		S		X	X	X		
6	BH01 - 0.5-0.6								
7	BH01 - 1.0-1.1								
8	BH01 - 2.0-2.1				X	X	X		
9	BH01 - 3.0-3.1								
10	BH01 - 4.0-4.1								
	Total Counts								

Method of Shipment	☐ Courier (#)	☑ Hand Delivered	☐ Postal	Name	Felicity Harrison	Signature		Date	6/8/19	Time	17:20
Laboratory Use Only	Received By	Grace Tunkwell	SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	7/8/19	Time	1:59	Temperature	8.17
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	__/__/__	Time	__:__	Report №	670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory — Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066 — 02 9900 8400 — EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory — Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172 — 07 3902 4600 — EnviroSampleQLD@eurofins.com

☐ Perth Laboratory — Unit 2, 91 Leach Highway, Kewdale WA 6105 — 08 9251 9600 — EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

2 of 14

Company	GHD Pty Ltd	Project №	2126457-26	Project Manager	Emma Harrison
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation	Report Format	ESDat
Contact Name	Emma Harrison				
Phone №	0408 401 511				
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com				
Purchase Order					
Quote ID №	181121GHDN				

Relinquished by: F. Harrison — : — 6/8/19

Email for Results: see special directions

Analysis (Note: Where metals are requested please specify "Total" or "Filtered")

Containers

Turn Around Requirements: ☐ Overnight (9am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) *Surcharges apply

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SVV: SVOC, VOC	Asbestos ID in soil	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL vial	125mL Amber Glass	Jar	Other ( )	Sample Comments / DG Hazard Warning
1	BH02-0-0.1	6/8	soil														
2	BH02-0.5-0.6				X	X	X										
3	BH02-1.0-1.1																
4	BH02-2.0-2.1																
5	BH02-3.0-3.1				X	X	X										
6	BH02-4.0-4.1																
7	BH03-0-0.1																
8	BH03-0.5-0.6																
9	BH03-1.0-1.1																
10	BH03-2.0-2.1																
	Total Counts																

Method of Shipment: ☐ Courier (#) ☒ Hand Delivered ☐ Postal — Name: — Signature: — Date: 6/8/19 — Time: —:—

Laboratory Use Only

Received By	Grace Turknett	(SYD) / BNE / MEL / PER / ADL / NEW / DAR	Signature	Grace Turknett	Date	7/8/19	Time	1:59	Temperature	8.17
Received By		SYD / BNE / MEL / PER / ADL / NEW / DAR	Signature		Date	__/__/__	Time	:—	Report №	670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory
Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-26	Project Manager	Emma Harrison
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation	Report Format	ESDat
Contact Name	Emma Harrison				
Phone №	0408 401 511				
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com				
Purchase Order					
Quote ID №	181121GHDN				

Relinquished by: F. Harrison — 6/8/19

Email for Results: see special directions

Analysis (Note: Where metals are required please specify Total or Filtered)

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	Suite B15: OCP, OPP, PCB	Suite SW: SVOC, VOC	Asbestos ID in soil	Containers: 1L Plastic	250mL Plastic	125mL Amber Glass	250mL Amber Glass	40mL vial	125mL Amber Glass Jar	Other ( )	Sample Comments / DG Hazard Warning
1	BH03 - 3.0-3.1	6/8	soil													
2	BH03 - 4.0-4.1				X	X	X									
3	BH03 - 4.4-4.5				X	X	X									
4	BH03 - 5.0-5.1															
5	BH03 - 5.9-6.0				X	X	X									
6	BH04 - 0-0.1															
7	BH04 - 0.5-0.6															
8	BH04 - 1.0-1.1				X	X	X									
9	BH04 - 2.0-2.1															
10	BH04 - 3.0-3.1															
	Total Counts															

Turn Around Requirements

- ☐ Overnight (9am)*
- ☐ 1 Day* ☐ 2 Day*
- ☐ 3 Day* ☑ 5 Day
- ☐ Other ( ) *Surcharges apply

Method of Shipment	☐ Courier (#)	☑ Hand Delivered	☐ Postal	Name		Signature		Date	6/8/19	Time	
Laboratory Use Only	Received By	Grace Twidwell	SYD / BNE / MEL / PER / ADL / NEW / DAR	Signature		Date	7/8/19	Time	1:59	Temperature	8.17
	Received By		SYD / BNE / MEL / PER / ADL / NEW / DAR	Signature		Date	/ /	Time		Report №	670027

CHAIN OF CUSTODY RECORD

☑ Sydney Laboratory — Unit F3 Bld F, 16 Mars Rd, Lane Cove West NSW 2066 — 02 9900 8400 — EnviroSampleSY@eurofins.com

☐ Brisbane Laboratory — 1/21 Smallwood Pl, Murarrie QLD 4172 — +61 7 3902 4600 — EnviroSampleBN@eurofins.com

☐ Perth Laboratory — 46-48 Banksia Rd, Welshpool WA 6106 — +61 8 9251 9600 — EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory — 6 Monterey Rd, Dandenong South VIC 3175 — 03 8564 5000 — EnviroSampleVic@eurofins.com

4 of 14

Company	GHD Pty Ltd	Project №	2126457-26
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	F. Harrison __:__ 6/8/19
Purchase Order		Email for Results	see special direction s
Quote ID №	181121GHDN		

Analysis (Note: Where metals are requested please specify "Total" or "Filtered")

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SVV: SVOC, VOC	Asbestos ID in soil
1	BH04-4.0-4.1	6/8	Soil					
2	BH04-4.9-5.0			x	x	x		
3	BH05_0-0.1			x	x	x		
4	BH06_0-0.1			x	x	x		
5	BH07_0-0.1			x	x	x		
6	QC_01			x	x	x		
7	QC_02			x	x	x		
8	QR_01	6/8	Water	x				
9								
10								
	Total Counts							

Containers: 1L Plastic | 250mL Plastic | 125mL Plastic | 200mL Amber Glass | 40mL vial | 125mL Amber Glass | Jar | Other ( )

Turn Around Requirements: ☐ Overnight (9am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) *Surcharges apply

Sample Comments / DG Hazard Warning

Method of Shipment: ☐ Courier (#) ☒ Hand Delivered ☐ Postal — Name — Signature — Date __/__/__ Time __:__

Laboratory Use Only

Received By: Grace Turnbull — (SYD) | BNE | MEL | PER | ADL | NEW | DAR — Signature: gturnbull — Date: 7/8/19 — Time: 1:59 — Temperature: 8.17

Received By: SYD | BNE | MEL | PER | ADL | NEW | DAR — Signature — Date __/__/__ — Time __:__ — Report № 670027

GS3009_R6 Modified by: S. Kojima Approved by: Dr. R Symons Approved on: 2 November 2016

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory
Unit F3 Bld.F, 16 Mars Rd, Lane Cove West. NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

5 of 14

Company	GHD Pty Ltd	Project No	2126457-26
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone No	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	
Purchase Order		Email for Results	
Quote ID No	181121GHDN		

Analysis (Note: Where metals are requested please specify Total or Filtered)

Containers: 1L Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mLVial; 125mL Amber Glass; Jar; Other ( )

Turn Around Requirements: ☐ Overnight (9am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) *Surcharges apply

No	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SVV: SVOC, VOC	Asbestos ID in soil	Jar	Sample Comments / DG Hazard Warning
1	TPW1-1_0.0	6.8.19	Soil						✓	
2	-2									
3	-3			X						
4	-4									
5	-5									
6	-1_0.5									
7	-2_									
8	-3_									
9	-4_									
10	-5_			X						
	Total Counts									

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal Name Signature Date Time

Laboratory Use Only

Received By	Grace Tunwell	SYD / BNE / MEL / PER / ADL / NEW / DAR	Signature		Date	7/8/19	Time	1:59	Temperature 8.17
Received By		SYD / BNE / MEL / PER / ADL / NEW / DAR	Signature		Date		Time		Report No 670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory — Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066 — 02 9900 8400 — EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory — Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172 — 07 3902 4600 — EnviroSampleQLD@eurofins.com

☐ Perth Laboratory — Unit 2, 91 Leach Highway, Kewdale WA 6105 — 09 9251 9600 — EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-26
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	
Purchase Order		Email for Results	
Quote ID №	181121GHDN		

Analysis (Note: All sediments to be reported as dry weight unless specified otherwise)

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SVV: SVOC, VOC	Asbestos ID in soil	Containers: 1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL vial	125mL Amber Glass	Jar	Other ( )	Sample Comments / DG Hazard Warning
1	TPW1-1_1.0	6.8.19	Soil												1	1	
2	-2_			X													
3	-3_																
4	-4_																
5	-5_																
6	TPW2-1_0.0			X													
7	-2_																
8	-3_																
9	-4_																
10	-5_																
	Total Counts																

Turn Around Requirements

- ☐ Overnight (9am)*
- ☐ 1 Day* ☐ 2 Day*
- ☐ 3 Day* ☑ 5 Day
- ☐ Other ( ) *Surcharges apply

Method of Shipment							
☐ Courier (#)	☐ Hand Delivered	☐ Postal	Name	Signature	Date __/__/__	Time __:__	

Laboratory Use Only											
Received By	Grace Tunkwell	(SYD) BNE | MEL | PER | ADL | NEW | DAR	Signature	Grace Tunkwell	Date	7.8.19	Time	1:59	Temperature	8.17
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	__/__/__	Time	__:__	Report №	670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory
Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-26
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0403 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	
Purchase Order		Email for Results	
Quote ID №	181121GHDN		

Analysis (Note: where metals are required please specify Total or Filtered)

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SVV: SVOC, VOC	Asbestos ID in soil	Containers: 1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL vial	125mL Amber Glass Jar	Other ( )	Sample Comments / DG Hazard Warning
1	TPW2-i_0.5	6.8.19	Soil											1	1	
2	2_			X												
3	3			X												
4	4															
5	5															
6	i_1.0															
7	2															
8	3															
9	4															
10	5.															
	Total Counts															

Turn Around Requirements

- ☐ Overnight (9am)*
- ☐ 1 Day* ☐ 2 Day*
- ☐ 3 Day* ☑ 5 Day
- ☐ Other ( ) *Surcharges apply

Method of Shipment	☐ Courier (#)	☐ Hand Delivered	☐ Postal	Name		Signature		Date	__/__/__	Time	__:__
Laboratory Use Only	Received By	Grace Turnwell	(SYD) BNE | MEL | PER | ADL | NEW | DAR	Signature	Turnwell	Date	7.8.19	Time	1:59	Temperature	8.17
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	__/__/__	Time	__:__	Report №	670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory — Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066 — 02 9900 8400 — EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory — Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172 — 07 3902 4600 — EnviroSampleQLD@eurofins.com

☐ Perth Laboratory — Unit 2, 91 Leach Highway, Kewdale WA 6105 — 08 9251 9600 — EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory — 2 Kingston Town Close, Oakleigh, VIC 3166 — 03 8564 5000 — EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2128457-26
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	
Purchase Order		Email for Results	
Quote ID №	181121GHDN		

Analysis (Only Waters metals are required please specify Total or Filtered?)

Containers

Turn Around Requirements: ☐ Overnight (9am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) *Surcharges apply

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SW: SVOC, VOC	Asbestos ID in soil	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL Vial	125mL Amber Glass Jar	Other ( )	Sample Comments / DG Hazard Warning
1	TPW3-1-0.0	6.8.19	Soil	X										1	1	
2	2															
3	3															
4	4															
5	5															
6	1_0.5			X												
7	2															
8	3															
9	4															
10	5															
	Total Counts															

Method of Shipment	☐ Courier [#]	☐ Hand Delivered	☐ Postal	Name		Signature		Date	/ /	Time	:
Laboratory Use Only	Received By	Grace Tunnell	(SYD) | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	7/8/19	Time	1:59	Temperature	8.17
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	/ /	Time	:	Report №	670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory
Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

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07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-28
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	
Purchase Order		Email for Results	
Quote ID №	181121GHDN		

Analysis (Note: Where metals are requested please specify Total or "Filtered")

Containers: 1L Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mL vial; 125mL Amber Glass Jar; Other (

Turn Around Requirements: ☐ Overnight (9am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) *Surcharges apply

№	Client Sample ID	Date	Matrix	Suite B1B: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SVW: SVOC, VOC	Asbestos ID in soil	Sample Comments / DG Hazard Warning
1	TPW3-1_1.0	6.8.19	Soil						
2	2								
3	3								
4	4								
5	5			X					
6	TPE1-1_0.0								
7	2								
8	3								
9	4								
10	5			X					
	Total Counts								

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal

Name | Signature | Date | Time

Laboratory Use Only								
Received By	Grace Trickett	SYD / BNE / MEL / PER / ADL / NEW / DAR	Signature		Date 7.8.19	Time 1.59	Temperature	8.17
Received By		SYD / BNE / MEL / PER / ADL / NEW / DAR	Signature		Date	Time	Report №	670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory
Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-28
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	
Purchase Order		Email for Results	
Quote ID №	181121GHDN		

Analysis (note: Where metals are required please specify 'Total' or 'Filtered')

Containers

Turn Around Requirements

☐ Overnight (9am)*
☐ 1 Day* ☐ 2 Day*
☐ 3 Day* ☑ 5 Day
☐ Other ( )
*Surcharges apply

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	Suite B15: OCP, OPP, PCB	Suite SW: SVOC, VOC	Asbestos ID in soil	1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL vial	125mL Amber Glass Jar	Other ( )	Sample Comments / DG Hazard Warning
1	TPE1 – 1 – 0.5	6.8.19	Soil											1	1	
2	2															
3	3			X												
4	4															
5	5															
6	1 – 01.0															
7	2			X												
8	3															
9	4															
10	5															
	Total Counts															

Method of Shipment	☐ Courier (#)	☐ Hand Delivered	☐ Postal	Name		Signature		Date	/ /	Time	:
Laboratory Use Only	Received By	Grace Tuckwell	SYD BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	7.8.19	Time	1:59	Temperature	8.17
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	/ /	Time	:	Report №	670027

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

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08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-26	Project Manager	Emma Harrison
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Homsby Quarry Contamination Investigation	Report Format	ESDat
Contact Name	Emma Harrison				
Phone №	0408 401 511				
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com				
Purchase Order					
Quote ID №	181121GHDN				

Relinquished by: ___:___ ___/___/___

Email for Results:

1 of 14

№	Client Sample ID	Date	Matrix	Analysis (Note: Where metals are requested please specify 'Total' or 'Filtered') Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SW: SVOC, VOC	Asbestos ID in soil	Containers: 1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40ml vial	125mL Amber Glass Jar	Other ( )	Sample Comments / DG Hazard Warning
1	TPE2_1-0.0	6.8.19	S													
2	2															
3	3			X												
4	1_0.5			X												
5	2															
6	3															
7	1_1.0															
8	2			X												
9	3															
10	TPE3-1_0.0															
	Total Counts															

Turn Around Requirements:
☐ Overnight (9am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day ☐ Other ( ) *Surcharges apply

Method of Shipment	☐ Courier (#)	☐ Hand Delivered	☐ Postal	Name		Signature		Date	___/___/___	Time ___:___
Laboratory Use Only	Received By	Grace Tuckwell	SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature	Gtuckwell	Date	7/8/19	Time	1.59	Temperature 8.17
	Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	___/___/___	Time	___:___	Report № 670027

CHAIN OF CUSTODY RECORD

☑ Sydney Laboratory — Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066 — 02 9900 8400 — EnviroSampleNSW@eurofins.com

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☐ Melbourne Laboratory — 6 Monterey Road, Dandenong South, VIC 3175 — 03 8564 5000 — EnviroSampleVic@eurofins.com

12 of 14

Company	GHD Pty Ltd	Project №	2126457-26
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation
Contact Name	Emma Harrison	Project Manager	Emma Harrison
Phone №	0408 401 511	Report Format	ESDat
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com	Relinquished by	
Purchase Order		Email for Results	
Quote ID №	181121GHDN		

Analysis (Note: Where metals are requested, please specify 'Total' or 'Filtered')

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SW: SVOC, VOC	Asbestos ID in soil	Containers: 1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL vial	125mL Amber Glass	Jar	Other ( )	Sample Comments / DG Hazard Warning
1	TPEJ-2-0.0	6.8.19	S													1	
2	3			X													
3	1-0.5			X													
4	2																
5	3																
6	1-0.8																
7	2																
8	3			X													
9	QA01			X													
10	QA03			X													
	Total Counts																

Containers — Turn Around Requirements

- ☐ Overnight (9am)*
- ☐ 1 Day* ☐ 2 Day*
- ☐ 3 Day* ☑ 5 Day
- ☐ Other ( ) * Surcharges apply

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal — Name — Signature — Date __/__/__ — Time __:__

Laboratory Use Only

Received By: Grace Tunnell (SYD | BNE | MEL | PER | ADL | NEW | DAR) — Signature: Tunnell — Date: 7/8/19 — Time: 1:59 — Temperature: 8.17

Received By: (SYD | BNE | MEL | PER | ADL | NEW | DAR) — Signature — Date __/__/__ — Time __:__ — Report №: 670027

QS3009_R6 Modified by S. Kojima Approved by Dr R Symons Approved on 2 November 2016

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory — Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066 — 02 9900 8400 — EnviroSampleNSW@eurofins.com

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13 of 14

Company	GHD Pty Ltd	Project №	2126457-26	Project Manager	Emma Harrison
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation	Report Format	ESDat
Contact Name	Emma Harrison				
Phone №	0408 401 511				
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com				
Purchase Order					
Quote ID №	181121GHDN				

Relinquished by: ___:___ ___/___/___

Email for Results:

Analysis (Note: Where metals are required, please specify Total or Dissolved)

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suite B7A: TRH, BTEXN, PAH, Phenols, Metals	SuiteB15: OCP, OPP, PCB	Suite SVV: SVOC, VOC	Asbestos ID in soil	Containers: 1L Plastic	250mL Plastic	125mL Amber Glass	200mL Amber Glass	40mL vial	125mL Amber Glass	Jar	Other ( )	Sample Comments / DG Hazard Warning
1	RB01	6-8-19	W												1	1	
2	Trip blank													2			
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
	Total Counts																

Turn Around Requirements

- ☐ Overnight (9am)*
- ☐ 1 Day* ☐ 2 Day*
- ☐ 3 Day* ☑ 5 Day
- ☐ Other ( ) * Surcharges apply

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal — Name: — Signature: — Date: ___/___/___ — Time: ___:___

Laboratory Use Only

Received By	Grace Turkell	SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	7/8/19	Time	1:59	Temperature 8.17
Received By		SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature		Date	___/___/___	Time	___:___	Report № 670027

Enviro Sample NSW

Subject: FW: Project 2126457 - incorrect sample IDs

From: Emma.Harrison@ghd.com [mailto:Emma.Harrison@ghd.com]
Sent: Wednesday, 7 August 2019 9:27 AM
To: Nibha Vaidya; Rhonda Chouman
Cc: Felicity Harrison
Subject: Project 2126457 - incorrect sample IDs

EXTERNAL EMAIL*

Hi Nibha and Rhonda,

Felicity Harrison dropped off some samples for us yesterday for project # 2126456-26 (Hornsby Quarry).

Three of the jars you received are incorrectly named. Would you please rename them as follows:

BH08_0-0.1 should be : GS01_0-0.1
BH09_0-0.1 should be : GS02_0-0.1
BH010_0-0.1 should be : GS03_0-0.1

The COC lists the GS sample IDs correctly.

Sorry for the inconvenience.

Cheers,
Emma

Emma Harrison
Senior Environmental Geologist

GHD
Proudly employee owned
T: +61 2 9239 7910 | V: 217910 | M: +61 408 401 511 | E: emma.harrison@ghd.com
Level 15 133 Castlereagh Street Sydney NSW 2000 Australia | www.ghd.com

Connect

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NATA # 1261 Site # 23736

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

Sample Receipt Advice

Company name:	**GHD Pty Ltd NSW**
Contact name:	Emma Harrison
Project name:	HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID:	2126457-26
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 7, 2019 1:59 PM
Eurofins reference:	**670027**

Sample information

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

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 8.2 degrees Celsius.

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

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

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

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☑ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

QA02 and QA04 (1 jar each) sent to ALS. Sample QR02 received instead of QR_01. Trip spikes received extra and placed on hold. No vials received for QR02 and SW01, volatile TPH and BTEXN analysis cancelled.

Contact notes

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

Alena Bounkeua on Phone : or by e.mail: AlenaBounkeua@eurofins.com

Results will be delivered electronically via e.mail to Emma Harrison - emma.harrison@ghd.com.

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web : www.eurofins.com.au

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NATA # 1261 Site # 20794

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NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
External Laboratory																		
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**													
1	GS01_0-0.1	Aug 06, 2019		Soil	S19-Au09356										X	X		
2	GS02_0-0.1	Aug 06, 2019		Soil	S19-Au09357										X	X		
3	GS03_0-0.1	Aug 06, 2019		Soil	S19-Au09358										X	X		
4	SW_01	Aug 06, 2019		Water	S19-Au09359			X	X	X	X	X		X				
5	BH01_0-0.1	Aug 06, 2019		Soil	S19-Au09360								X		X		X	X
6	BH01_2.0-2.1	Aug 06, 2019		Soil	S19-Au09361								X		X		X	X
7	BH02_0.5-0.6	Aug 06, 2019		Soil	S19-Au09362								X		X		X	X
8	BH02_3.0-3.1	Aug 06, 2019		Soil	S19-Au09363								X		X		X	X
9	BH03_4.0-4.1	Aug 06, 2019		Soil	S19-Au09364								X		X		X	X

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

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
10	BH03_4.4-4.5	Aug 06, 2019		Soil	S19-Au09365								X		X		X	X
11	BH03_5.9-6.0	Aug 06, 2019		Soil	S19-Au09366								X		X		X	X
12	BH04_1.0-1.1	Aug 06, 2019		Soil	S19-Au09367								X		X		X	X
13	BH04_4.9-5.0	Aug 06, 2019		Soil	S19-Au09368								X		X		X	X
14	BH05_0-0.1	Aug 06, 2019		Soil	S19-Au09369								X		X		X	X
15	BH06_0-0.1	Aug 06, 2019		Soil	S19-Au09370								X		X		X	X
16	BH07_0-0.1	Aug 06, 2019		Soil	S19-Au09371								X		X		X	X
17	QC_01	Aug 06, 2019		Soil	S19-Au09372								X		X		X	X
18	QC_02	Aug 06, 2019		Soil	S19-Au09373								X		X		X	X
19	QR02	Aug 06, 2019		Water	S19-Au09374			X	X	X	X	X		X				
20	TPW1-3_0.0	Aug 06, 2019		Soil	S19-Au09375										X	X		
21	TPW1-5_0.5	Aug 06, 2019		Soil	S19-Au09376										X	X		

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Site # 23736

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
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Order No.:
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Phone: 02 9239 7100
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Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
22	TPW1-2_1.0	Aug 06, 2019		Soil	S19-Au09377										X	X		
23	TPW2-1_0.0	Aug 06, 2019		Soil	S19-Au09378										X	X		
24	TPW2-2_0.5	Aug 06, 2019		Soil	S19-Au09379										X	X		
25	TPW2-3_0.5	Aug 06, 2019		Soil	S19-Au09380										X	X		
26	TPW3-1_0.0	Aug 06, 2019		Soil	S19-Au09381										X	X		
27	TPW3-1_0.5	Aug 06, 2019		Soil	S19-Au09382										X	X		
28	TPW3-5_1.0	Aug 06, 2019		Soil	S19-Au09383										X	X		
29	TPE1-5_0.0	Aug 06, 2019		Soil	S19-Au09384										X	X		
30	TPE1-3_0.5	Aug 06, 2019		Soil	S19-Au09385										X	X		
31	TPE1-2_1.0	Aug 06, 2019		Soil	S19-Au09386										X	X		
32	TPE2-3_0.0	Aug 06, 2019		Soil	S19-Au09387										X	X		
33	TPE2-1_0.5	Aug 06, 2019		Soil	S19-Au09388										X	X		

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Site # 23736

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Order No.:
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Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
34	TPE2-2_1.0	Aug 06, 2019		Soil	S19-Au09389										X	X		
35	TPE3-3_0.0	Aug 06, 2019		Soil	S19-Au09390										X	X		
36	TPE3-1_0.5	Aug 06, 2019		Soil	S19-Au09391										X	X		
37	TPE3-3_0.8	Aug 06, 2019		Soil	S19-Au09392										X	X		
38	QA01	Aug 06, 2019		Soil	S19-Au09393										X	X		
39	QA03	Aug 06, 2019		Soil	S19-Au09394										X	X		
40	BH01_0.5-0.6	Aug 06, 2019		Soil	S19-Au09395	X												
41	BH01_1.0-1.1	Aug 06, 2019		Soil	S19-Au09396	X												
42	BH01_3.0-3.1	Aug 06, 2019		Soil	S19-Au09397	X												
43	BH01_4.0-4.1	Aug 06, 2019		Soil	S19-Au09398	X												
44	BH02_0-0.1	Aug 06, 2019		Soil	S19-Au09399	X												
45	BH02_1.0-1.1	Aug 06, 2019		Soil	S19-Au09400	X												

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Company Name: GHD Pty Ltd NSW
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Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
46	BH02_2.0-2.1	Aug 06, 2019		Soil	S19-Au09401	X												
47	BH02_4.0-4.1	Aug 06, 2019		Soil	S19-Au09402	X												
48	BH03_0-0.1	Aug 06, 2019		Soil	S19-Au09403	X												
49	BH03_0.5-0.6	Aug 06, 2019		Soil	S19-Au09404	X												
50	BH03_1.0-1.1	Aug 06, 2019		Soil	S19-Au09405	X												
51	BH03_2.0-2.1	Aug 06, 2019		Soil	S19-Au09406	X												
52	BH03_3.0-3.1	Aug 06, 2019		Soil	S19-Au09407	X												
53	BH03_5.0-5.1	Aug 06, 2019		Soil	S19-Au09408	X												
54	BH04_0-0.1	Aug 06, 2019		Soil	S19-Au09409	X												
55	BH04_0.5-0.6	Aug 06, 2019		Soil	S19-Au09410	X												
56	BH04_2.0-2.1	Aug 06, 2019		Soil	S19-Au09411	X												
57	BH04_3.0-3.1	Aug 06, 2019		Soil	S19-Au09412	X												

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Eurofins Analytical Services Manager : Alena Bounkeua

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
58	BH04_4.0-4.1	Aug 06, 2019		Soil	S19-Au09413	X												
59	TPW1-1_0.0	Aug 06, 2019		Soil	S19-Au09414	X												
60	TPW1-2_0.0	Aug 06, 2019		Soil	S19-Au09415	X												
61	TPW1-4_0.0	Aug 06, 2019		Soil	S19-Au09416	X												
62	TPW1-5_0.0	Aug 06, 2019		Soil	S19-Au09417	X												
63	TPW1-1_0.5	Aug 06, 2019		Soil	S19-Au09418	X												
64	TPW1-2_0.5	Aug 06, 2019		Soil	S19-Au09419	X												
65	TPW1-3_0.5	Aug 06, 2019		Soil	S19-Au09420	X												
66	TPW1-4_0.5	Aug 06, 2019		Soil	S19-Au09421	X												
67	TPW1-1_1.0	Aug 06, 2019		Soil	S19-Au09422	X												
68	TPW1-3_1.0	Aug 06, 2019		Soil	S19-Au09423	X												
69	TPW1-4_1.0	Aug 06, 2019		Soil	S19-Au09424	X												

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Eurofins Analytical Services Manager : Alena Bounkeua

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
70	TPW1-5_1.0	Aug 06, 2019		Soil	S19-Au09425	X												
71	TPW2-2_0.0	Aug 06, 2019		Soil	S19-Au09426	X												
72	TPW2-3_0.0	Aug 06, 2019		Soil	S19-Au09427	X												
73	TPW2-4_0.0	Aug 06, 2019		Soil	S19-Au09428	X												
74	TPW2-5_0.0	Aug 06, 2019		Soil	S19-Au09429	X												
75	TPW2-1_0.5	Aug 06, 2019		Soil	S19-Au09430	X												
76	TPW2-4_0.5	Aug 06, 2019		Soil	S19-Au09431	X												
77	TPW2-5_0.5	Aug 06, 2019		Soil	S19-Au09432	X												
78	TPW2-1_1.0	Aug 06, 2019		Soil	S19-Au09433	X												
79	TPW2-2_1.0	Aug 06, 2019		Soil	S19-Au09434	X												
80	TPW2-3_1.0	Aug 06, 2019		Soil	S19-Au09435	X												
81	TPW2-4_1.0	Aug 06, 2019		Soil	S19-Au09436	X												

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Eurofins Analytical Services Manager : Alena Bounkeua

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
82	TPW2-5_1.0	Aug 06, 2019		Soil	S19-Au09437	X												
83	TPW3-2_0.0	Aug 06, 2019		Soil	S19-Au09438	X												
84	TPW3-3_0.0	Aug 06, 2019		Soil	S19-Au09439	X												
85	TPW3-4_0.0	Aug 06, 2019		Soil	S19-Au09440	X												
86	TPW3-5_0.0	Aug 06, 2019		Soil	S19-Au09441	X												
87	TPW3-2_0.5	Aug 06, 2019		Soil	S19-Au09442	X												
88	TPW3-3_0.5	Aug 06, 2019		Soil	S19-Au09443	X												
89	TPW3-4_0.5	Aug 06, 2019		Soil	S19-Au09444	X												
90	TPW3-5_0.5	Aug 06, 2019		Soil	S19-Au09445	X												
91	TPW3-1_1.0	Aug 06, 2019		Soil	S19-Au09446	X												
92	TPW3-2_1.0	Aug 06, 2019		Soil	S19-Au09447	X												
93	TPW3-3_1.0	Aug 06, 2019		Soil	S19-Au09448	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
94	TPW3-4_1.0	Aug 06, 2019		Soil	S19-Au09449	X												
95	TPE1-1_0.0	Aug 06, 2019		Soil	S19-Au09450	X												
96	TPE1-2_0.0	Aug 06, 2019		Soil	S19-Au09451	X												
97	TPE1-3_0.0	Aug 06, 2019		Soil	S19-Au09452	X												
98	TPE1-4_0.0	Aug 06, 2019		Soil	S19-Au09453	X												
99	TPE1-1_0.5	Aug 06, 2019		Soil	S19-Au09454	X												
100	TPE1-2_0.5	Aug 06, 2019		Soil	S19-Au09455	X												
101	TPE1-4_0.5	Aug 06, 2019		Soil	S19-Au09456	X												
102	TPE1-5_0.5	Aug 06, 2019		Soil	S19-Au09457	X												
103	TPE1-1_1.0	Aug 06, 2019		Soil	S19-Au09458	X												
104	TPE1-3_1.0	Aug 06, 2019		Soil	S19-Au09459	X												
105	TPE1-4_1.0	Aug 06, 2019		Soil	S19-Au09460	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
106	TPE1-5_1.0	Aug 06, 2019		Soil	S19-Au09461	X												
107	TPE2-1_0.0	Aug 06, 2019		Soil	S19-Au09462	X												
108	TPE2-2_0.0	Aug 06, 2019		Soil	S19-Au09463	X												
109	TPE2-2_0.5	Aug 06, 2019		Soil	S19-Au09464	X												
110	TPE2-3_0.5	Aug 06, 2019		Soil	S19-Au09465	X												
111	TPE2-1_1.0	Aug 06, 2019		Soil	S19-Au09466	X												
112	TPE2-3_1.0	Aug 06, 2019		Soil	S19-Au09467	X												
113	TPE3-1_0.0	Aug 06, 2019		Soil	S19-Au09468	X												
114	TPE3-2_0.0	Aug 06, 2019		Soil	S19-Au09469	X												
115	TPE3-2_0.5	Aug 06, 2019		Soil	S19-Au09470	X												
116	TPE3-3_0.5	Aug 06, 2019		Soil	S19-Au09471	X												
117	TPE3-1_0.8	Aug 06, 2019		Soil	S19-Au09472	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
118	TPE3-2_0.8	Aug 06, 2019		Soil	S19-Au09473	X												
119	RB01	Aug 06, 2019		Water	S19-Au09474	X												
120	TRIP BLANK	Aug 06, 2019		Soil	S19-Au09475		X											
121	TRIP SPIKE	Aug 06, 2019		Soil	S19-Au10358		X											
122	TRIP SPIKE LAB	Aug 06, 2019		Soil	S19-Au10359		X											
Test Counts						83	83	2	2	2	2	2	14	2	37	23	14	14

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NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Emma Harrison**

Report **670027-S**
Project name HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID 2126457-26
Received Date Aug 07, 2019

Client Sample ID			**GS01_0-0.1**	**GS02_0-0.1**	**GS03_0-0.1**	**BH01_0-0.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S19-Au09356**	**S19-Au09357**	**S19-Au09358**	**S19-Au09360**
Date Sampled			**Aug 06, 2019**	**Aug 06, 2019**	**Aug 06, 2019**	**Aug 06, 2019**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	0.3
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	55	80	61	70
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dibromoethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	-	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.3-Dichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
2-Butanone (MEK)	0.5	mg/kg	-	-	-	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	-	-	-	< 0.5
4-Chlorotoluene	0.5	mg/kg	-	-	-	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	-	< 0.5
Allyl chloride	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			GS01_0-0.1	GS02_0-0.1	GS03_0-0.1	BH01_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09356	S19-Au09357	S19-Au09358	S19-Au09360
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Volatile Organics						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Bromobenzene	0.5	mg/kg	-	-	-	< 0.5
Bromochloromethane	0.5	mg/kg	-	-	-	< 0.5
Bromodichloromethane	0.5	mg/kg	-	-	-	< 0.5
Bromoform	0.5	mg/kg	-	-	-	< 0.5
Bromomethane	0.5	mg/kg	-	-	-	< 0.5
Carbon disulfide	0.5	mg/kg	-	-	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	-	-	-	< 0.5
Chlorobenzene	0.5	mg/kg	-	-	-	< 0.5
Chloroethane	0.5	mg/kg	-	-	-	< 0.5
Chloroform	0.5	mg/kg	-	-	-	< 0.5
Chloromethane	0.5	mg/kg	-	-	-	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	-	< 0.5
Dibromochloromethane	0.5	mg/kg	-	-	-	< 0.5
Dibromomethane	0.5	mg/kg	-	-	-	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	-	-	-	< 0.5
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
Iodomethane	0.5	mg/kg	-	-	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	-	< 0.5
m&p-Xylenes	0.2	mg/kg	-	-	-	0.3
Methylene Chloride	0.5	mg/kg	-	-	-	< 0.5
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Styrene	0.5	mg/kg	-	-	-	< 0.5
Tetrachloroethene	0.5	mg/kg	-	-	-	< 0.5
Toluene	0.1	mg/kg	-	-	-	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	-	< 0.5
Trichloroethene	0.5	mg/kg	-	-	-	< 0.5
Trichlorofluoromethane	0.5	mg/kg	-	-	-	< 0.5
Vinyl chloride	0.5	mg/kg	-	-	-	< 0.5
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
Total MAH*	0.5	mg/kg	-	-	-	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	-	-	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	-	-	< 0.5
4-Bromofluorobenzene (surr.)	1	%	-	-	-	70
Toluene-d8 (surr.)	1	%	-	-	-	63
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100

Client Sample ID			GS01_0-0.1	GS02_0-0.1	GS03_0-0.1	BH01_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09356	S19-Au09357	S19-Au09358	S19-Au09360
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	67	61	52	136
p-Terphenyl-d14 (surr.)	1	%	138	91	81	142
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	107	104	91	92
Tetrachloro-m-xylene (surr.)	1	%	81	77	77	80

Client Sample ID			GS01_0-0.1	GS02_0-0.1	GS03_0-0.1	BH01_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09356	S19-Au09357	S19-Au09358	S19-Au09360
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	138	111	108	113
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	-	< 0.1
Total PCB*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	92
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	80

Client Sample ID			GS01_0-0.1	GS02_0-0.1	GS03_0-0.1	BH01_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09356	S19-Au09357	S19-Au09358	S19-Au09360
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.4.6-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.6-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	-	-	< 1
Pentachlorophenol	1	mg/kg	-	-	-	< 1
Tetrachlorophenols - Total	10	mg/kg	-	-	-	< 10
Total Halogenated Phenol*	1	mg/kg	-	-	-	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	-	-	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	-	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	-	< 0.2
2-Nitrophenol	1.0	mg/kg	-	-	-	< 1
2.4-Dimethylphenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dinitrophenol	5	mg/kg	-	-	-	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	-	< 0.4
4-Nitrophenol	5	mg/kg	-	-	-	< 5
Dinoseb	20	mg/kg	-	-	-	< 20
Phenol	0.5	mg/kg	-	-	-	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	-	-	-	< 20
Phenol-d6 (surr.)	1	%	-	-	-	27
Semivolatile Organics						
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	-	< 5
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
1-Chloronaphthalene	0.5	mg/kg	-	-	-	< 0.5
1-Naphthylamine	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2.3-Trichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2.3.4-Tetrachlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2.3.5-Tetrachlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2.4.5-Tetrachlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.3.5-Trichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
2-Chloronaphthalene	0.5	mg/kg	-	-	-	< 0.5
2-Chlorophenol	0.5	mg/kg	-	-	-	< 0.5
2-Methylnaphthalene	0.5	mg/kg	-	-	-	< 0.5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	-	< 0.2
2-Naphthylamine	0.5	mg/kg	-	-	-	< 0.5
2-Nitroaniline	0.5	mg/kg	-	-	-	< 0.5
2-Nitrophenol	1.0	mg/kg	-	-	-	< 1
2-Picoline	0.5	mg/kg	-	-	-	< 0.5
2.3.4.6-Tetrachlorophenol	5	mg/kg	-	-	-	< 5
2.4-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dimethylphenol	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			GS01_0-0.1	GS02_0-0.1	GS03_0-0.1	BH01_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09356	S19-Au09357	S19-Au09358	S19-Au09360
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
2.4-Dinitrophenol	5	mg/kg	-	-	-	< 5
2.4-Dinitrotoluene	0.5	mg/kg	-	-	-	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.4.6-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.6-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.6-Dinitrotoluene	0.5	mg/kg	-	-	-	< 0.5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	-	< 0.4
3-Methylcholanthrene	0.5	mg/kg	-	-	-	< 0.5
3.3'-Dichlorobenzidine	0.5	mg/kg	-	-	-	< 0.5
4-Aminobiphenyl	0.5	mg/kg	-	-	-	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	-	-	-	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	-	-	< 1
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	-	-	< 0.5
4-Nitrophenol	5	mg/kg	-	-	-	< 5
4.4'-DDD	0.5	mg/kg	-	-	-	< 0.5
4.4'-DDE	0.5	mg/kg	-	-	-	< 0.5
4.4'-DDT	0.5	mg/kg	-	-	-	< 0.5
7.12-Dimethylbenz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
a-BHC	0.5	mg/kg	-	-	-	< 0.5
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Acetophenone	0.5	mg/kg	-	-	-	< 0.5
Aldrin	0.5	mg/kg	-	-	-	< 0.5
Aniline	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
b-BHC	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Benzyl chloride	0.5	mg/kg	-	-	-	< 0.5
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	-	-	< 0.5
Bis(2-chloroisopropyl)ether	0.5	mg/kg	-	-	-	< 0.5
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	-	-	-	< 0.5
Butyl benzyl phthalate	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
d-BHC	0.5	mg/kg	-	-	-	< 0.5
Di-n-butyl phthalate	0.5	mg/kg	-	-	-	< 0.5
Di-n-octyl phthalate	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.j)acridine	0.5	mg/kg	-	-	-	< 0.5
Dibenzofuran	0.5	mg/kg	-	-	-	< 0.5
Dieldrin	0.5	mg/kg	-	-	-	< 0.5
Diethyl phthalate	0.5	mg/kg	-	-	-	< 0.5
Dimethyl phthalate	0.5	mg/kg	-	-	-	< 0.5
Dimethylaminoazobenzene	0.5	mg/kg	-	-	-	< 0.5
Diphenylamine	0.5	mg/kg	-	-	-	< 0.5
Endosulfan I	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			GS01_0-0.1	GS02_0-0.1	GS03_0-0.1	BH01_0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09356	S19-Au09357	S19-Au09358	S19-Au09360
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
Endosulfan II	0.5	mg/kg	-	-	-	< 0.5
Endosulfan sulphate	0.5	mg/kg	-	-	-	< 0.5
Endrin	0.5	mg/kg	-	-	-	< 0.5
Endrin aldehyde	0.5	mg/kg	-	-	-	< 0.5
Endrin ketone	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
g-BHC (Lindane)	0.5	mg/kg	-	-	-	< 0.5
Heptachlor	0.5	mg/kg	-	-	-	< 0.5
Heptachlor epoxide	0.5	mg/kg	-	-	-	< 0.5
Hexachlorobenzene	0.5	mg/kg	-	-	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	-	-	< 0.5
Hexachlorocyclopentadiene	0.5	mg/kg	-	-	-	< 0.5
Hexachloroethane	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Methoxychlor	0.5	mg/kg	-	-	-	< 0.5
N-Nitrosodibutylamine	0.5	mg/kg	-	-	-	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	-	-	-	< 0.5
N-Nitrosopiperidine	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Nitrobenzene	0.5	mg/kg	-	-	-	< 0.5
Pentachlorobenzene	0.5	mg/kg	-	-	-	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	-	-	-	< 0.5
Pentachlorophenol	1	mg/kg	-	-	-	< 1
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Phenol	0.5	mg/kg	-	-	-	< 0.5
Pronamide	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Trifluralin	0.5	mg/kg	-	-	-	< 0.5
Phenol-d6 (surr.)	1	%	-	-	-	27
Nitrobenzene-d5 (surr.)	1	%	-	-	-	72
2-Fluorobiphenyl (surr.)	1	%	-	-	-	136
2.4.6-Tribromophenol (surr.)	1	%	-	-	-	78
Heavy Metals						
Arsenic	2	mg/kg	3.2	2.1	2.4	2.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	160	140	66	100
Copper	5	mg/kg	40	36	22	35
Lead	5	mg/kg	7.9	< 5	13	6.9
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	160	180	100	110
Zinc	5	mg/kg	96	88	170	63
% Moisture	1	%	21	24	18	9.2

Client Sample ID			BH01_2.0-2.1	BH02_0.5-0.6	BH02_3.0-3.1	BH03_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09361	S19-Au09362	S19-Au09363	S19-Au09364
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	210	< 20	200
TRH C15-C28	50	mg/kg	< 50	500	< 50	750
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	710	< 50	950
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	56	76	81	85
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Carbon disulfide	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH01_2.0-2.1	BH02_0.5-0.6	BH02_3.0-3.1	BH03_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09361	S19-Au09362	S19-Au09363	S19-Au09364
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Volatile Organics						
Dibromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
Total MAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromofluorobenzene (surr.)	1	%	56	76	81	85
Toluene-d8 (surr.)	1	%	57	63	69	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	440	< 50	500
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	440	< 50	500
TRH >C16-C34	100	mg/kg	< 100	260	< 100	480
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	700	< 100	980
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH01_2.0-2.1	BH02_0.5-0.6	BH02_3.0-3.1	BH03_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09361	S19-Au09362	S19-Au09363	S19-Au09364
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	117	105	105	101
p-Terphenyl-d14 (surr.)	1	%	120	109	100	111
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	82	81	78	88
Tetrachloro-m-xylene (surr.)	1	%	74	99	100	98
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			BH01_2.0-2.1	BH02_0.5-0.6	BH02_3.0-3.1	BH03_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09361	S19-Au09362	S19-Au09363	S19-Au09364
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	86	88	76	86
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	82	81	78	88
Tetrachloro-m-xylene (surr.)	1	%	74	99	100	98
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	< 1	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5

Client Sample ID			BH01_2.0-2.1	BH02_0.5-0.6	BH02_3.0-3.1	BH03_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09361	S19-Au09362	S19-Au09363	S19-Au09364
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Phenols (non-Halogenated)						
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Dinoseb	20	mg/kg	< 20	< 20	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20	< 20	< 20	< 20
Phenol-d6 (surr.)	1	%	27	85	89	83
Semivolatile Organics						
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
1-Chloronaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1-Naphthylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3.4-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Chloronaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
2-Naphthylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Nitroaniline	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Nitrophenol	1.0	mg/kg	< 1	< 1	< 1	< 1
2-Picoline	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.3.4.6-Tetrachlorophenol	5	mg/kg	< 5	< 5	< 5	< 5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2.4-Dinitrotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.6-Dinitrotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
3-Methylcholanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
3.3'-Dichlorobenzidine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Aminobiphenyl	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
4-Chlorophenyl phenyl ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
4.4'-DDD	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4.4'-DDE	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH01_2.0-2.1	BH02_0.5-0.6	BH02_3.0-3.1	BH03_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09361	S19-Au09362	S19-Au09363	S19-Au09364
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
4.4'-DDT	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
7.12-Dimethylbenz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
a-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
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
Acetophenone	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aniline	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
b-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethoxy)methane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Butyl benzyl phthalate	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
d-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Di-n-octyl phthalate	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
Dibenz(a.j)acridine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dieldrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Diethyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dimethyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dimethylaminoazobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan II	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan sulphate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin aldehyde	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin ketone	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
g-BHC (Lindane)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorocyclopentadiene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachloroethane	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
Methoxychlor	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH01_2.0-2.1	BH02_0.5-0.6	BH02_3.0-3.1	BH03_4.0-4.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09361	S19-Au09362	S19-Au09363	S19-Au09364
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
N-Nitrosodibutylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosopiperidine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Nitrobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Phenanthrene	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pronamide	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
Trifluralin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	27	85	89	83
Nitrobenzene-d5 (surr.)	1	%	74	61	61	56
2-Fluorobiphenyl (surr.)	1	%	117	105	105	101
2.4.6-Tribromophenol (surr.)	1	%	46	58	33	96
Heavy Metals						
Arsenic	2	mg/kg	3.4	2.6	< 2	3.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	53	68	150	130
Copper	5	mg/kg	45	27	37	34
Lead	5	mg/kg	11	8.2	< 5	8.2
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	96	81	150	140
Zinc	5	mg/kg	60	58	86	86
% Moisture	1	%	20	15	12	17

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	79	65	115	66

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Carbon disulfide	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Volatile Organics						
Trichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
Total MAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromofluorobenzene (surr.)	1	%	79	65	115	66
Toluene-d8 (surr.)	1	%	70	58	90	60
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	86	93	117
p-Terphenyl-d14 (surr.)	1	%	93	73	92	93
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	73	61	66	56
Tetrachloro-m-xylene (surr.)	1	%	94	79	87	69
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	69	56	69	66
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	73	61	66	56
Tetrachloro-m-xylene (surr.)	1	%	94	79	87	69
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	< 1	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Dinoseb	20	mg/kg	< 20	< 20	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20	< 20	< 20	< 20
Phenol-d6 (surr.)	1	%	79	75	85	54
Semivolatile Organics						
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
1-Chloronaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1-Naphthylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
1.2.3-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3.4-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Chloronaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
2-Naphthylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Nitroaniline	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Nitrophenol	1.0	mg/kg	< 1	< 1	< 1	< 1
2-Picoline	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.3.4.6-Tetrachlorophenol	5	mg/kg	< 5	< 5	< 5	< 5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2.4-Dinitrotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.6-Dinitrotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
3-Methylcholanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
3.3'-Dichlorobenzidine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Aminobiphenyl	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
4-Chlorophenyl phenyl ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
4.4'-DDD	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4.4'-DDE	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4.4'-DDT	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
7.12-Dimethylbenz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
a-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
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
Acetophenone	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aniline	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
b-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethoxy)methane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Butyl benzyl phthalate	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
d-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Di-n-octyl phthalate	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
Dibenz(a.j)acridine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dieldrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Diethyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dimethyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dimethylaminoazobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan II	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan sulphate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin aldehyde	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin ketone	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
g-BHC (Lindane)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorocyclopentadiene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachloroethane	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
Methoxychlor	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodibutylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosopiperidine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Nitrobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pronamide	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
Trifluralin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	79	75	85	54

Client Sample ID			BH03_4.4-4.5	BH03_5.9-6.0	BH04_1.0-1.1	BH04_4.9-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09365	S19-Au09366	S19-Au09367	S19-Au09368
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
Nitrobenzene-d5 (surr.)	1	%	74	51	55	92
2-Fluorobiphenyl (surr.)	1	%	96	86	93	117
2.4.6-Tribromophenol (surr.)	1	%	30	29	26	55
Heavy Metals						
Arsenic	2	mg/kg	3.3	3.4	2.2	3.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	49	37	110	55
Copper	5	mg/kg	12	31	30	28
Lead	5	mg/kg	12	11	7.7	13
Mercury	0.1	mg/kg	< 0.1	0.1	< 0.1	0.1
Nickel	5	mg/kg	46	160	120	69
Zinc	5	mg/kg	50	140	71	62
% Moisture	1	%	12	18	8.1	22

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	200	< 50	76	64
TRH C29-C36	50	mg/kg	290	< 50	160	< 50
TRH C10-C36 (Total)	50	mg/kg	490	< 50	236	64
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	79	116	115	101
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Volatile Organics						
1.3-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Carbon disulfide	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
Total MAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromofluorobenzene (surr.)	1	%	79	116	115	101
Toluene-d8 (surr.)	1	%	69	96	91	84

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	390	< 100	180	< 100
TRH >C34-C40	100	mg/kg	170	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	560	< 100	180	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	97	95	81	51
p-Terphenyl-d14 (surr.)	1	%	103	107	86	76
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	79	73	97	77
Tetrachloro-m-xylene (surr.)	1	%	73	70	82	71
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	71	61	79	93

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	79	73	97	77
Tetrachloro-m-xylene (surr.)	1	%	73	70	82	71
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	< 1	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Dinoseb	20	mg/kg	< 20	< 20	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20	< 20	< 20	< 20
Phenol-d6 (surr.)	1	%	95	78	69	53
Semivolatile Organics						
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
1-Chloronaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1-Naphthylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3.4-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.3.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.2.4.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.3.5-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
2-Chloronaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
2-Naphthylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Nitroaniline	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Nitrophenol	1.0	mg/kg	< 1	< 1	< 1	< 1
2-Picoline	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.3.4.6-Tetrachlorophenol	5	mg/kg	< 5	< 5	< 5	< 5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2.4-Dinitrotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.6-Dinitrotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
3-Methylcholanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
3.3'-Dichlorobenzidine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Aminobiphenyl	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
4-Chlorophenyl phenyl ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
4.4'-DDD	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4.4'-DDE	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4.4'-DDT	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
7.12-Dimethylbenz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
a-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
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
Acetophenone	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aniline	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
b-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzyl chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethoxy)methane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Butyl benzyl phthalate	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
d-BHC	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Di-n-octyl phthalate	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
Dibenz(a.j)acridine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dieldrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Diethyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dimethyl phthalate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dimethylaminoazobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Diphenylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan II	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan sulphate	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin aldehyde	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Endrin ketone	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
g-BHC (Lindane)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorocyclopentadiene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Hexachloroethane	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
Methoxychlor	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodibutylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodipropylamine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosopiperidine	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Nitrobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachloronitrobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pronamide	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
Trifluralin	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	95	78	69	53
Nitrobenzene-d5 (surr.)	1	%	56	60	76	111
2-Fluorobiphenyl (surr.)	1	%	97	95	81	51
2.4.6-Tribromophenol (surr.)	1	%	54	44	35	34
Heavy Metals						
Arsenic	2	mg/kg	2.6	2.2	2.4	2.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	170	110	100	58
Copper	5	mg/kg	44	31	34	20

Client Sample ID			BH05_0-0.1	BH06_0-0.1	BH07_0-0.1	QC_01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09369	S19-Au09370	S19-Au09371	S19-Au09372
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	76	7.6	21	8.4
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	130	120	110	62
Zinc	5	mg/kg	120	87	130	45
% Moisture	1	%	8.5	15	10	14

Client Sample ID			QC_02	TPW1-3_0.0	TPW1-5_0.5	TPW1-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09373	S19-Au09375	S19-Au09376	S19-Au09377
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	24	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	100	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	124	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	80	94	71	74
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	-
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-	-
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
2-Butanone (MEK)	0.5	mg/kg	< 0.5	-	-	-
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	-	-	-
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	-	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	-	-	-
Allyl chloride	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			QC_02	TPW1-3_0.0	TPW1-5_0.5	TPW1-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09373	S19-Au09375	S19-Au09376	S19-Au09377
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Volatile Organics						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Bromobenzene	0.5	mg/kg	< 0.5	-	-	-
Bromochloromethane	0.5	mg/kg	< 0.5	-	-	-
Bromodichloromethane	0.5	mg/kg	< 0.5	-	-	-
Bromoform	0.5	mg/kg	< 0.5	-	-	-
Bromomethane	0.5	mg/kg	< 0.5	-	-	-
Carbon disulfide	0.5	mg/kg	< 0.5	-	-	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	-	-
Chlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Chloroethane	0.5	mg/kg	< 0.5	-	-	-
Chloroform	0.5	mg/kg	< 0.5	-	-	-
Chloromethane	0.5	mg/kg	< 0.5	-	-	-
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	-
Dibromochloromethane	0.5	mg/kg	< 0.5	-	-	-
Dibromomethane	0.5	mg/kg	< 0.5	-	-	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
Iodomethane	0.5	mg/kg	< 0.5	-	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
Methylene Chloride	0.5	mg/kg	< 0.5	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Styrene	0.5	mg/kg	< 0.5	-	-	-
Tetrachloroethene	0.5	mg/kg	< 0.5	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-	-
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-	-
Trichloroethene	0.5	mg/kg	< 0.5	-	-	-
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	-	-
Vinyl chloride	0.5	mg/kg	< 0.5	-	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	-
Total MAH*	0.5	mg/kg	< 0.5	-	-	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	-	-	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	-	-	-
4-Bromofluorobenzene (surr.)	1	%	80	-	-	-
Toluene-d8 (surr.)	1	%	89	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	57	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	57	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100

Client Sample ID			QC_02	TPW1-3_0.0	TPW1-5_0.5	TPW1-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09373	S19-Au09375	S19-Au09376	S19-Au09377
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	100	87	64	61
p-Terphenyl-d14 (surr.)	1	%	64	70	55	80
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	78	109	78	105
Tetrachloro-m-xylene (surr.)	1	%	52	91	62	57

Client Sample ID			QC_02	TPW1-3_0.0	TPW1-5_0.5	TPW1-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09373	S19-Au09375	S19-Au09376	S19-Au09377
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	84	77	58	93
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	-
Total PCB*	0.1	mg/kg	< 0.1	-	-	-
Dibutylchlorendate (surr.)	1	%	78	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	52	-	-	-

Client Sample ID			QC_02	TPW1-3_0.0	TPW1-5_0.5	TPW1-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09373	S19-Au09375	S19-Au09376	S19-Au09377
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	-	-
2.4.6-Trichlorophenol	1	mg/kg	< 1	-	-	-
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-	-
Tetrachlorophenols - Total	10	mg/kg	< 10	-	-	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	-	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	-	-	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	-
2-Nitrophenol	1.0	mg/kg	< 1	-	-	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	-
2.4-Dinitrophenol	5	mg/kg	< 5	-	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	-
4-Nitrophenol	5	mg/kg	< 5	-	-	-
Dinoseb	20	mg/kg	< 20	-	-	-
Phenol	0.5	mg/kg	< 0.5	-	-	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	-	-
Phenol-d6 (surr.)	1	%	56	-	-	-
Semivolatile Organics						
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	-	-
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
1-Chloronaphthalene	0.5	mg/kg	< 0.5	-	-	-
1-Naphthylamine	0.5	mg/kg	< 0.5	-	-	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2.3-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2.3.4-Tetrachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2.3.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.2.4.5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.3.5-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
2-Chloronaphthalene	0.5	mg/kg	< 0.5	-	-	-
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2-Methylnaphthalene	0.5	mg/kg	< 0.5	-	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	-
2-Naphthylamine	0.5	mg/kg	< 0.5	-	-	-
2-Nitroaniline	0.5	mg/kg	< 0.5	-	-	-
2-Nitrophenol	1.0	mg/kg	< 1	-	-	-
2-Picoline	0.5	mg/kg	< 0.5	-	-	-
2.3.4.6-Tetrachlorophenol	5	mg/kg	< 5	-	-	-
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			QC_02	TPW1-3_0.0	TPW1-5_0.5	TPW1-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09373	S19-Au09375	S19-Au09376	S19-Au09377
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
2.4-Dinitrophenol	5	mg/kg	< 5	-	-	-
2.4-Dinitrotoluene	0.5	mg/kg	< 0.5	-	-	-
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	-	-
2.4.6-Trichlorophenol	1	mg/kg	< 1	-	-	-
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.6-Dinitrotoluene	0.5	mg/kg	< 0.5	-	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	-
3-Methylcholanthrene	0.5	mg/kg	< 0.5	-	-	-
3.3'-Dichlorobenzidine	0.5	mg/kg	< 0.5	-	-	-
4-Aminobiphenyl	0.5	mg/kg	< 0.5	-	-	-
4-Bromophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	-	-
4-Chlorophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	-
4-Nitrophenol	5	mg/kg	< 5	-	-	-
4.4'-DDD	0.5	mg/kg	< 0.5	-	-	-
4.4'-DDE	0.5	mg/kg	< 0.5	-	-	-
4.4'-DDT	0.5	mg/kg	< 0.5	-	-	-
7.12-Dimethylbenz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
a-BHC	0.5	mg/kg	< 0.5	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Acetophenone	0.5	mg/kg	< 0.5	-	-	-
Aldrin	0.5	mg/kg	< 0.5	-	-	-
Aniline	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
b-BHC	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Benzyl chloride	0.5	mg/kg	< 0.5	-	-	-
Bis(2-chloroethoxy)methane	0.5	mg/kg	< 0.5	-	-	-
Bis(2-chloroisopropyl)ether	0.5	mg/kg	< 0.5	-	-	-
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	< 0.5	-	-	-
Butyl benzyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
d-BHC	0.5	mg/kg	< 0.5	-	-	-
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Di-n-octyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a.j)acridine	0.5	mg/kg	< 0.5	-	-	-
Dibenzofuran	0.5	mg/kg	< 0.5	-	-	-
Dieldrin	0.5	mg/kg	< 0.5	-	-	-
Diethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dimethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dimethylaminoazobenzene	0.5	mg/kg	< 0.5	-	-	-
Diphenylamine	0.5	mg/kg	< 0.5	-	-	-
Endosulfan I	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			QC_02	TPW1-3_0.0	TPW1-5_0.5	TPW1-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09373	S19-Au09375	S19-Au09376	S19-Au09377
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Semivolatile Organics						
Endosulfan II	0.5	mg/kg	< 0.5	-	-	-
Endosulfan sulphate	0.5	mg/kg	< 0.5	-	-	-
Endrin	0.5	mg/kg	< 0.5	-	-	-
Endrin aldehyde	0.5	mg/kg	< 0.5	-	-	-
Endrin ketone	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
g-BHC (Lindane)	0.5	mg/kg	< 0.5	-	-	-
Heptachlor	0.5	mg/kg	< 0.5	-	-	-
Heptachlor epoxide	0.5	mg/kg	< 0.5	-	-	-
Hexachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	-
Hexachlorocyclopentadiene	0.5	mg/kg	< 0.5	-	-	-
Hexachloroethane	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Methoxychlor	0.5	mg/kg	< 0.5	-	-	-
N-Nitrosodibutylamine	0.5	mg/kg	< 0.5	-	-	-
N-Nitrosodipropylamine	0.5	mg/kg	< 0.5	-	-	-
N-Nitrosopiperidine	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Nitrobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachloronitrobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Phenol	0.5	mg/kg	< 0.5	-	-	-
Pronamide	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Trifluralin	0.5	mg/kg	< 0.5	-	-	-
Phenol-d6 (surr.)	1	%	56	-	-	-
Nitrobenzene-d5 (surr.)	1	%	114	-	-	-
2-Fluorobiphenyl (surr.)	1	%	100	-	-	-
2.4.6-Tribromophenol (surr.)	1	%	65	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	3.3	2.8	2.9	3.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	130	120	88	120
Copper	5	mg/kg	33	32	28	34
Lead	5	mg/kg	8.3	7.4	7.5	8.1
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	130	120	91	120
Zinc	5	mg/kg	85	76	59	70
% Moisture	1	%	15	11	13	13

Client Sample ID			TPW2-1_0.0	TPW2-2_0.5	TPW2-3_0.5	TPW3-1_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09378	S19-Au09379	S19-Au09380	S19-Au09381
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	74	89	74	64
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	69	55	68	85
p-Terphenyl-d14 (surr.)	1	%	58	81	90	74

Client Sample ID			TPW2-1_0.0	TPW2-2_0.5	TPW2-3_0.5	TPW3-1_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09378	S19-Au09379	S19-Au09380	S19-Au09381
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	83	55	66	109
Tetrachloro-m-xylene (surr.)	1	%	70	61	66	92
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			TPW2-1_0.0	TPW2-2_0.5	TPW2-3_0.5	TPW3-1_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09378	S19-Au09379	S19-Au09380	S19-Au09381
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	65	101	116	85
Heavy Metals						
Arsenic	2	mg/kg	2.4	< 2	3.1	2.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	120	71	160	75
Copper	5	mg/kg	30	22	35	25
Lead	5	mg/kg	7.9	13	11	7.6
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	120	72	150	80
Zinc	5	mg/kg	72	64	110	62
% Moisture	1	%	15	12	12	13

Client Sample ID			TPW3-1_0.5	TPW3-5_1.0	TPE1-5_0.0	TPE1-3_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09382	S19-Au09383	S19-Au09384	S19-Au09385
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	62	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	62	55
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	124	55
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	60	103	86	63

Client Sample ID			TPW3-1_0.5	TPW3-5_1.0	TPE1-5_0.0	TPE1-3_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09382	S19-Au09383	S19-Au09384	S19-Au09385
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	101	67	96	87
p-Terphenyl-d14 (surr.)	1	%	87	98	85	71
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			TPW3-1_0.5	TPW3-5_1.0	TPE1-5_0.0	TPE1-3_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09382	S19-Au09383	S19-Au09384	S19-Au09385
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	127	77	128	109
Tetrachloro-m-xylene (surr.)	1	%	110	70	104	91
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	98	52	101	86

Client Sample ID			TPW3-1_0.5	TPW3-5_1.0	TPE1-5_0.0	TPE1-3_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09382	S19-Au09383	S19-Au09384	S19-Au09385
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	3.0	2.2	3.0	2.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	58	120	11	9.0
Copper	5	mg/kg	19	29	13	9.7
Lead	5	mg/kg	12	5.9	15	16
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	56	130	8.8	6.8
Zinc	5	mg/kg	65	78	43	37
% Moisture	1	%	14	17	8.5	9.0

Client Sample ID			TPE1-2_1.0	TPE2-3_0.0	TPE2-1_0.5	TPE2-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09386	S19-Au09387	S19-Au09388	S19-Au09389
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	68	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	98	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	166	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	86	122	105	66
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	120	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	120	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			TPE1-2_1.0	TPE2-3_0.0	TPE2-1_0.5	TPE2-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09386	S19-Au09387	S19-Au09388	S19-Au09389
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	0.8	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	0.9	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	1.7	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	52	55	57	57
p-Terphenyl-d14 (surr.)	1	%	83	86	93	100
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	0.08	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	88	95	96	67
Tetrachloro-m-xylene (surr.)	1	%	77	81	84	58
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2

Client Sample ID			TPE1-2_1.0	TPE2-3_0.0	TPE2-1_0.5	TPE2-2_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09386	S19-Au09387	S19-Au09388	S19-Au09389
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	98	109	110	50
Heavy Metals						
Arsenic	2	mg/kg	2.3	6.0	2.3	3.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.0	17	15	50
Copper	5	mg/kg	12	24	7.6	14
Lead	5	mg/kg	17	45	14	11
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	13	11	50
Zinc	5	mg/kg	14	67	36	62
% Moisture	1	%	11	10	8.7	10

Client Sample ID			TPE3-3_0.0	TPE3-1_0.5	TPE3-3_0.8	QA01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09390	S19-Au09391	S19-Au09392	S19-Au09393
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	110	110	< 50	59
TRH C29-C36	50	mg/kg	130	200	58	54
TRH C10-C36 (Total)	50	mg/kg	240	310	58	113
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	74	58	108	113
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	180	220	< 100	< 100
TRH >C34-C40	100	mg/kg	110	170	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	290	390	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	2	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108	97	106	106
p-Terphenyl-d14 (surr.)	1	%	114	105	110	110

Client Sample ID			TPE3-3_0.0	TPE3-1_0.5	TPE3-3_0.8	QA01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09390	S19-Au09391	S19-Au09392	S19-Au09393
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	101	88	94	97
Tetrachloro-m-xylene (surr.)	1	%	103	92	102	101
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			TPE3-3_0.0	TPE3-1_0.5	TPE3-3_0.8	QA01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S19-Au09390	S19-Au09391	S19-Au09392	S19-Au09393
Date Sampled			Aug 06, 2019	Aug 06, 2019	Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	99	91	96	94
Heavy Metals						
Arsenic	2	mg/kg	3.2	3.7	2.4	3.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	14	20	15	170
Copper	5	mg/kg	15	21	11	38
Lead	5	mg/kg	22	43	29	15
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	9.7	11	12	160
Zinc	5	mg/kg	49	57	50	110
% Moisture	1	%	9.8	9.0	9.2	12

Client Sample ID			QA03
Sample Matrix			Soil
Eurofins Sample No.			S19-Au09394
Date Sampled			Aug 06, 2019
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	116

Client Sample ID			QA03
Sample Matrix			Soil
Eurofins Sample No.			S19-Au09394
Date Sampled			Aug 06, 2019
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108
p-Terphenyl-d14 (surr.)	1	%	114
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05

Client Sample ID			QA03
Sample Matrix			Soil
Eurofins Sample No.			S19-Au09394
Date Sampled			Aug 06, 2019
Test/Reference	LOR	Unit	
Organochlorine Pesticides			
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	92
Tetrachloro-m-xylene (surr.)	1	%	104
Organophosphorus Pesticides			
Azinphos-methyl	0.2	mg/kg	< 0.2
Bolstar	0.2	mg/kg	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2
Coumaphos	2	mg/kg	< 2
Demeton-S	0.2	mg/kg	< 0.2
Demeton-O	0.2	mg/kg	< 0.2
Diazinon	0.2	mg/kg	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2
Dimethoate	0.2	mg/kg	< 0.2
Disulfoton	0.2	mg/kg	< 0.2
EPN	0.2	mg/kg	< 0.2
Ethion	0.2	mg/kg	< 0.2
Ethoprop	0.2	mg/kg	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2
Fenthion	0.2	mg/kg	< 0.2
Malathion	0.2	mg/kg	< 0.2
Merphos	0.2	mg/kg	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2
Mevinphos	0.2	mg/kg	< 0.2
Monocrotophos	2	mg/kg	< 2
Naled	0.2	mg/kg	< 0.2
Omethoate	2	mg/kg	< 2
Phorate	0.2	mg/kg	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2
Ronnel	0.2	mg/kg	< 0.2
Terbufos	0.2	mg/kg	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2
Tokuthion	0.2	mg/kg	< 0.2
Trichloronate	0.2	mg/kg	< 0.2
Triphenylphosphate (surr.)	1	%	96

Client Sample ID			QA03
Sample Matrix			**Soil**
Eurofins Sample No.			**S19-Au09394**
Date Sampled			**Aug 06, 2019**
Test/Reference	LOR	Unit	
Heavy Metals			
Arsenic	2	mg/kg	2.9
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	12
Copper	5	mg/kg	9.4
Lead	5	mg/kg	15
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	7.1
Zinc	5	mg/kg	41
% Moisture	1	%	8.3

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7A			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Aug 14, 2019	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Aug 14, 2019	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 14, 2019	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 14, 2019	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 14, 2019	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Melbourne	Aug 13, 2019	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Aug 13, 2019	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Aug 14, 2019	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Volatile Organics	Melbourne	Aug 13, 2019	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Semivolatile Organics	Melbourne	Aug 13, 2019	14 Days
- Method: LTM-ORG-2190 SVOC in Water & Soil by GC-MS			
Eurofins | mgt Suite B10			
Organochlorine Pesticides	Melbourne	Aug 14, 2019	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Organophosphorus Pesticides	Melbourne	Aug 14, 2019	14 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS (USEPA 8081)			
Eurofins | mgt Suite B15			
Polychlorinated Biphenyls	Melbourne	Aug 13, 2019	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
% Moisture	Melbourne	Aug 07, 2019	14 Days
- Method: LTM-GEN-7080 Moisture			

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Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
External Laboratory																		
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**													
1	GS01_0-0.1	Aug 06, 2019		Soil	S19-Au09356										X	X		
2	GS02_0-0.1	Aug 06, 2019		Soil	S19-Au09357										X	X		
3	GS03_0-0.1	Aug 06, 2019		Soil	S19-Au09358										X	X		
4	SW_01	Aug 06, 2019		Water	S19-Au09359			X	X	X	X	X		X				
5	BH01_0-0.1	Aug 06, 2019		Soil	S19-Au09360								X		X		X	X
6	BH01_2.0-2.1	Aug 06, 2019		Soil	S19-Au09361								X		X		X	X
7	BH02_0.5-0.6	Aug 06, 2019		Soil	S19-Au09362								X		X		X	X
8	BH02_3.0-3.1	Aug 06, 2019		Soil	S19-Au09363								X		X		X	X
9	BH03_4.0-4.1	Aug 06, 2019		Soil	S19-Au09364								X		X		X	X

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
10	BH03_4.4-4.5	Aug 06, 2019		Soil	S19-Au09365								X		X		X	X
11	BH03_5.9-6.0	Aug 06, 2019		Soil	S19-Au09366								X		X		X	X
12	BH04_1.0-1.1	Aug 06, 2019		Soil	S19-Au09367								X		X		X	X
13	BH04_4.9-5.0	Aug 06, 2019		Soil	S19-Au09368								X		X		X	X
14	BH05_0-0.1	Aug 06, 2019		Soil	S19-Au09369								X		X		X	X
15	BH06_0-0.1	Aug 06, 2019		Soil	S19-Au09370								X		X		X	X
16	BH07_0-0.1	Aug 06, 2019		Soil	S19-Au09371								X		X		X	X
17	QC_01	Aug 06, 2019		Soil	S19-Au09372								X		X		X	X
18	QC_02	Aug 06, 2019		Soil	S19-Au09373								X		X		X	X
19	QR02	Aug 06, 2019		Water	S19-Au09374			X	X	X	X	X		X				
20	TPW1-3_0.0	Aug 06, 2019		Soil	S19-Au09375										X	X		
21	TPW1-5_0.5	Aug 06, 2019		Soil	S19-Au09376										X	X		

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Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
22	TPW1-2_1.0	Aug 06, 2019		Soil	S19-Au09377										X	X		
23	TPW2-1_0.0	Aug 06, 2019		Soil	S19-Au09378										X	X		
24	TPW2-2_0.5	Aug 06, 2019		Soil	S19-Au09379										X	X		
25	TPW2-3_0.5	Aug 06, 2019		Soil	S19-Au09380										X	X		
26	TPW3-1_0.0	Aug 06, 2019		Soil	S19-Au09381										X	X		
27	TPW3-1_0.5	Aug 06, 2019		Soil	S19-Au09382										X	X		
28	TPW3-5_1.0	Aug 06, 2019		Soil	S19-Au09383										X	X		
29	TPE1-5_0.0	Aug 06, 2019		Soil	S19-Au09384										X	X		
30	TPE1-3_0.5	Aug 06, 2019		Soil	S19-Au09385										X	X		
31	TPE1-2_1.0	Aug 06, 2019		Soil	S19-Au09386										X	X		
32	TPE2-3_0.0	Aug 06, 2019		Soil	S19-Au09387										X	X		
33	TPE2-1_0.5	Aug 06, 2019		Soil	S19-Au09388										X	X		

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Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
34	TPE2-2_1.0	Aug 06, 2019		Soil	S19-Au09389										X	X		
35	TPE3-3_0.0	Aug 06, 2019		Soil	S19-Au09390										X	X		
36	TPE3-1_0.5	Aug 06, 2019		Soil	S19-Au09391										X	X		
37	TPE3-3_0.8	Aug 06, 2019		Soil	S19-Au09392										X	X		
38	QA01	Aug 06, 2019		Soil	S19-Au09393										X	X		
39	QA03	Aug 06, 2019		Soil	S19-Au09394										X	X		
40	BH01_0.5-0.6	Aug 06, 2019		Soil	S19-Au09395	X												
41	BH01_1.0-1.1	Aug 06, 2019		Soil	S19-Au09396	X												
42	BH01_3.0-3.1	Aug 06, 2019		Soil	S19-Au09397	X												
43	BH01_4.0-4.1	Aug 06, 2019		Soil	S19-Au09398	X												
44	BH02_0-0.1	Aug 06, 2019		Soil	S19-Au09399	X												
45	BH02_1.0-1.1	Aug 06, 2019		Soil	S19-Au09400	X												

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Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
46	BH02_2.0-2.1	Aug 06, 2019		Soil	S19-Au09401	X												
47	BH02_4.0-4.1	Aug 06, 2019		Soil	S19-Au09402	X												
48	BH03_0-0.1	Aug 06, 2019		Soil	S19-Au09403	X												
49	BH03_0.5-0.6	Aug 06, 2019		Soil	S19-Au09404	X												
50	BH03_1.0-1.1	Aug 06, 2019		Soil	S19-Au09405	X												
51	BH03_2.0-2.1	Aug 06, 2019		Soil	S19-Au09406	X												
52	BH03_3.0-3.1	Aug 06, 2019		Soil	S19-Au09407	X												
53	BH03_5.0-5.1	Aug 06, 2019		Soil	S19-Au09408	X												
54	BH04_0-0.1	Aug 06, 2019		Soil	S19-Au09409	X												
55	BH04_0.5-0.6	Aug 06, 2019		Soil	S19-Au09410	X												
56	BH04_2.0-2.1	Aug 06, 2019		Soil	S19-Au09411	X												
57	BH04_3.0-3.1	Aug 06, 2019		Soil	S19-Au09412	X												

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Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
58	BH04_4.0-4.1	Aug 06, 2019		Soil	S19-Au09413	X												
59	TPW1-1_0.0	Aug 06, 2019		Soil	S19-Au09414	X												
60	TPW1-2_0.0	Aug 06, 2019		Soil	S19-Au09415	X												
61	TPW1-4_0.0	Aug 06, 2019		Soil	S19-Au09416	X												
62	TPW1-5_0.0	Aug 06, 2019		Soil	S19-Au09417	X												
63	TPW1-1_0.5	Aug 06, 2019		Soil	S19-Au09418	X												
64	TPW1-2_0.5	Aug 06, 2019		Soil	S19-Au09419	X												
65	TPW1-3_0.5	Aug 06, 2019		Soil	S19-Au09420	X												
66	TPW1-4_0.5	Aug 06, 2019		Soil	S19-Au09421	X												
67	TPW1-1_1.0	Aug 06, 2019		Soil	S19-Au09422	X												
68	TPW1-3_1.0	Aug 06, 2019		Soil	S19-Au09423	X												
69	TPW1-4_1.0	Aug 06, 2019		Soil	S19-Au09424	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
70	TPW1-5_1.0	Aug 06, 2019		Soil	S19-Au09425	X												
71	TPW2-2_0.0	Aug 06, 2019		Soil	S19-Au09426	X												
72	TPW2-3_0.0	Aug 06, 2019		Soil	S19-Au09427	X												
73	TPW2-4_0.0	Aug 06, 2019		Soil	S19-Au09428	X												
74	TPW2-5_0.0	Aug 06, 2019		Soil	S19-Au09429	X												
75	TPW2-1_0.5	Aug 06, 2019		Soil	S19-Au09430	X												
76	TPW2-4_0.5	Aug 06, 2019		Soil	S19-Au09431	X												
77	TPW2-5_0.5	Aug 06, 2019		Soil	S19-Au09432	X												
78	TPW2-1_1.0	Aug 06, 2019		Soil	S19-Au09433	X												
79	TPW2-2_1.0	Aug 06, 2019		Soil	S19-Au09434	X												
80	TPW2-3_1.0	Aug 06, 2019		Soil	S19-Au09435	X												
81	TPW2-4_1.0	Aug 06, 2019		Soil	S19-Au09436	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
82	TPW2-5_1.0	Aug 06, 2019		Soil	S19-Au09437	X												
83	TPW3-2_0.0	Aug 06, 2019		Soil	S19-Au09438	X												
84	TPW3-3_0.0	Aug 06, 2019		Soil	S19-Au09439	X												
85	TPW3-4_0.0	Aug 06, 2019		Soil	S19-Au09440	X												
86	TPW3-5_0.0	Aug 06, 2019		Soil	S19-Au09441	X												
87	TPW3-2_0.5	Aug 06, 2019		Soil	S19-Au09442	X												
88	TPW3-3_0.5	Aug 06, 2019		Soil	S19-Au09443	X												
89	TPW3-4_0.5	Aug 06, 2019		Soil	S19-Au09444	X												
90	TPW3-5_0.5	Aug 06, 2019		Soil	S19-Au09445	X												
91	TPW3-1_1.0	Aug 06, 2019		Soil	S19-Au09446	X												
92	TPW3-2_1.0	Aug 06, 2019		Soil	S19-Au09447	X												
93	TPW3-3_1.0	Aug 06, 2019		Soil	S19-Au09448	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
94	TPW3-4_1.0	Aug 06, 2019		Soil	S19-Au09449	X												
95	TPE1-1_0.0	Aug 06, 2019		Soil	S19-Au09450	X												
96	TPE1-2_0.0	Aug 06, 2019		Soil	S19-Au09451	X												
97	TPE1-3_0.0	Aug 06, 2019		Soil	S19-Au09452	X												
98	TPE1-4_0.0	Aug 06, 2019		Soil	S19-Au09453	X												
99	TPE1-1_0.5	Aug 06, 2019		Soil	S19-Au09454	X												
100	TPE1-2_0.5	Aug 06, 2019		Soil	S19-Au09455	X												
101	TPE1-4_0.5	Aug 06, 2019		Soil	S19-Au09456	X												
102	TPE1-5_0.5	Aug 06, 2019		Soil	S19-Au09457	X												
103	TPE1-1_1.0	Aug 06, 2019		Soil	S19-Au09458	X												
104	TPE1-3_1.0	Aug 06, 2019		Soil	S19-Au09459	X												
105	TPE1-4_1.0	Aug 06, 2019		Soil	S19-Au09460	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
106	TPE1-5_1.0	Aug 06, 2019		Soil	S19-Au09461	X												
107	TPE2-1_0.0	Aug 06, 2019		Soil	S19-Au09462	X												
108	TPE2-2_0.0	Aug 06, 2019		Soil	S19-Au09463	X												
109	TPE2-2_0.5	Aug 06, 2019		Soil	S19-Au09464	X												
110	TPE2-3_0.5	Aug 06, 2019		Soil	S19-Au09465	X												
111	TPE2-1_1.0	Aug 06, 2019		Soil	S19-Au09466	X												
112	TPE2-3_1.0	Aug 06, 2019		Soil	S19-Au09467	X												
113	TPE3-1_0.0	Aug 06, 2019		Soil	S19-Au09468	X												
114	TPE3-2_0.0	Aug 06, 2019		Soil	S19-Au09469	X												
115	TPE3-2_0.5	Aug 06, 2019		Soil	S19-Au09470	X												
116	TPE3-3_0.5	Aug 06, 2019		Soil	S19-Au09471	X												
117	TPE3-1_0.8	Aug 06, 2019		Soil	S19-Au09472	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
118	TPE3-2_0.8	Aug 06, 2019		Soil	S19-Au09473	X												
119	RB01	Aug 06, 2019		Water	S19-Au09474	X												
120	TRIP BLANK	Aug 06, 2019		Soil	S19-Au09475		X											
121	TRIP SPIKE	Aug 06, 2019		Soil	S19-Au10358		X											
122	TRIP SPIKE LAB	Aug 06, 2019		Soil	S19-Au10359		X											
Test Counts						83	83	2	2	2	2	2	14	2	37	23	14	14

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
1-Chloronaphthalene	mg/kg	< 0.5			0.5	Pass	
1-Naphthylamine	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.3.4-Tetrachlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.3.5-Tetrachlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2.4.5-Tetrachlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Chloronaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2-Methylnaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Naphthylamine	mg/kg	< 0.5			0.5	Pass	
2-Nitroaniline	mg/kg	< 0.5			0.5	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2-Picoline	mg/kg	< 0.5			0.5	Pass	
2.3.4.6-Tetrachlorophenol	mg/kg	< 5			5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
2.4-Dinitrotoluene	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.6-Dinitrotoluene	mg/kg	< 0.5			0.5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
3-Methylcholanthrene	mg/kg	< 0.5			0.5	Pass	
3.3'-Dichlorobenzidine	mg/kg	< 0.5			0.5	Pass	
4-Aminobiphenyl	mg/kg	< 0.5			0.5	Pass	
4-Bromophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
4-Chlorophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
4.4'-DDD	mg/kg	< 0.5			0.5	Pass	
4.4'-DDE	mg/kg	< 0.5			0.5	Pass	
4.4'-DDT	mg/kg	< 0.5			0.5	Pass	
7.12-Dimethylbenz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
a-BHC	mg/kg	< 0.5			0.5	Pass	
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Acetophenone	mg/kg	< 0.5			0.5	Pass	
Aldrin	mg/kg	< 0.5			0.5	Pass	
Aniline	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
b-BHC	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzyl chloride	mg/kg	< 0.5			0.5	Pass	
Bis(2-chloroethoxy)methane	mg/kg	< 0.5			0.5	Pass	
Bis(2-chloroisopropyl)ether	mg/kg	< 0.5			0.5	Pass	
Bis(2-ethylhexyl)phthalate	mg/kg	< 0.5			0.5	Pass	
Butyl benzyl phthalate	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
d-BHC	mg/kg	< 0.5			0.5	Pass	
Di-n-butyl phthalate	mg/kg	< 0.5			0.5	Pass	
Di-n-octyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.j)acridine	mg/kg	< 0.5			0.5	Pass	
Dibenzofuran	mg/kg	< 0.5			0.5	Pass	
Dieldrin	mg/kg	< 0.5			0.5	Pass	
Diethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethylaminoazobenzene	mg/kg	< 0.5			0.5	Pass	
Diphenylamine	mg/kg	< 0.5			0.5	Pass	
Endosulfan I	mg/kg	< 0.5			0.5	Pass	
Endosulfan II	mg/kg	< 0.5			0.5	Pass	
Endosulfan sulphate	mg/kg	< 0.5			0.5	Pass	
Endrin	mg/kg	< 0.5			0.5	Pass	
Endrin aldehyde	mg/kg	< 0.5			0.5	Pass	
Endrin ketone	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
g-BHC (Lindane)	mg/kg	< 0.5			0.5	Pass	
Heptachlor	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/kg	< 0.5			0.5	Pass	
Hexachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Hexachlorocyclopentadiene	mg/kg	< 0.5			0.5	Pass	
Hexachloroethane	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Methoxychlor	mg/kg	< 0.5			0.5	Pass	
N-Nitrosodibutylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosodipropylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosopiperidine	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Nitrobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachloronitrobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Pronamide	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Trifluralin	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	90			70-130	Pass	
TRH C10-C14	%	129			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	97			70-130	Pass	
Toluene	%	119			70-130	Pass	
Ethylbenzene	%	114			70-130	Pass	
m&p-Xylenes	%	106			70-130	Pass	
Xylenes - Total	%	110			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	87			70-130	Pass	
1.1.1-Trichloroethane	%	96			70-130	Pass	
1.2-Dichlorobenzene	%	88			70-130	Pass	
1.2-Dichloroethane	%	103			70-130	Pass	
Benzene	%	91			70-130	Pass	
Ethylbenzene	%	86			70-130	Pass	
m&p-Xylenes	%	91			70-130	Pass	
Toluene	%	93			70-130	Pass	
Trichloroethene	%	81			70-130	Pass	
Xylenes - Total	%	115			70-130	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	91			70-130	Pass	
TRH C6-C10	%	87			70-130	Pass	
TRH >C10-C16	%	125			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	77			70-130	Pass	
Anthracene	%	91			70-130	Pass	
Benz(a)anthracene	%	88			70-130	Pass	
Benzo(a)pyrene	%	84			70-130	Pass	
Benzo(b&j)fluoranthene	%	80			70-130	Pass	
Benzo(g.h.i)perylene	%	86			70-130	Pass	
Benzo(k)fluoranthene	%	77			70-130	Pass	
Chrysene	%	88			70-130	Pass	
Dibenz(a.h)anthracene	%	84			70-130	Pass	
Fluoranthene	%	74			70-130	Pass	
Fluorene	%	79			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	120			70-130	Pass	
Naphthalene	%	78			70-130	Pass	
Phenanthrene	%	71			70-130	Pass	
Pyrene	%	80			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	106			70-130	Pass	
4.4'-DDD	%	95			70-130	Pass	
4.4'-DDE	%	110			70-130	Pass	
4.4'-DDT	%	90			70-130	Pass	
a-BHC	%	101			70-130	Pass	
Aldrin	%	103			70-130	Pass	
b-BHC	%	94			70-130	Pass	
d-BHC	%	101			70-130	Pass	
Dieldrin	%	110			70-130	Pass	
Endosulfan I	%	111			70-130	Pass	
Endosulfan II	%	98			70-130	Pass	
Endosulfan sulphate	%	92			70-130	Pass	
Endrin	%	81			70-130	Pass	
Endrin aldehyde	%	80			70-130	Pass	
Endrin ketone	%	100			70-130	Pass	
g-BHC (Lindane)	%	112			70-130	Pass	
Heptachlor	%	89			70-130	Pass	
Heptachlor epoxide	%	97			70-130	Pass	
Hexachlorobenzene	%	113			70-130	Pass	
Methoxychlor	%	72			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	116			70-130	Pass	
Dimethoate	%	108			70-130	Pass	
Ethion	%	72			70-130	Pass	
Fenitrothion	%	85			70-130	Pass	
Methyl parathion	%	92			70-130	Pass	
Mevinphos	%	119			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	%	126			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	82			30-130	Pass	
2.4-Dichlorophenol	%	76			30-130	Pass	
2.4.5-Trichlorophenol	%	78			30-130	Pass	
2.4.6-Trichlorophenol	%	81			30-130	Pass	
2.6-Dichlorophenol	%	81			30-130	Pass	
4-Chloro-3-methylphenol	%	76			30-130	Pass	
Pentachlorophenol	%	104			30-130	Pass	
Tetrachlorophenols - Total	%	81			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	65			30-130	Pass	
2-Methyl-4.6-dinitrophenol	%	79			30-130	Pass	
2-Methylphenol (o-Cresol)	%	79			30-130	Pass	
2-Nitrophenol	%	74			30-130	Pass	
2.4-Dimethylphenol	%	81			30-130	Pass	
2.4-Dinitrophenol	%	94			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	77			30-130	Pass	
4-Nitrophenol	%	104			30-130	Pass	
Dinoseb	%	69			30-130	Pass	
Phenol	%	76			30-130	Pass	
LCS - % Recovery							
Semivolatile Organics							
2-Methyl-4.6-dinitrophenol	%	74			30-130	Pass	
1.2-Dichlorobenzene	%	87			75-125	Pass	
1.2.3-Trichlorobenzene	%	82			75-125	Pass	
1.2.4-Trichlorobenzene	%	81			70-130	Pass	
1.4-Dichlorobenzene	%	81			70-130	Pass	
2-Chlorophenol	%	114			30-130	Pass	
2-Methylphenol (o-Cresol)	%	73			30-130	Pass	
2-Nitrophenol	%	68			30-130	Pass	
2.4-Dichlorophenol	%	65			30-130	Pass	
2.4-Dimethylphenol	%	67			30-130	Pass	
2.4-Dinitrophenol	%	53			30-130	Pass	
2.4-Dinitrotoluene	%	94			70-130	Pass	
2.4.5-Trichlorophenol	%	80			30-130	Pass	
2.4.6-Trichlorophenol	%	78			30-130	Pass	
2.6-Dichlorophenol	%	65			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	74			30-130	Pass	
4-Chloro-3-methylphenol	%	114			30-130	Pass	
4-Nitrophenol	%	62			30-130	Pass	
Acenaphthene	%	84			70-130	Pass	
Acenaphthylene	%	83			70-130	Pass	
Anthracene	%	73			70-130	Pass	
Benz(a)anthracene	%	80			70-130	Pass	
Benzo(a)pyrene	%	86			70-130	Pass	
Benzo(b&j)fluoranthene	%	112			70-130	Pass	
Benzo(g.h.i)perylene	%	72			70-130	Pass	
Benzo(k)fluoranthene	%	129			70-130	Pass	
Chrysene	%	85			70-130	Pass	
Dibenz(a.h)anthracene	%	101			70-130	Pass	
Fluoranthene	%	86			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluorene			%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	103			70-130	Pass	
N-Nitrosodipropylamine			%	116			70-130	Pass	
Naphthalene			%	82			70-130	Pass	
Pentachlorophenol			%	97			30-130	Pass	
Phenanthrene			%	87			70-130	Pass	
Phenol			%	89			30-130	Pass	
Pyrene			%	86			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	86			80-120	Pass	
Cadmium			%	98			80-120	Pass	
Chromium			%	84			80-120	Pass	
Copper			%	90			80-120	Pass	
Lead			%	103			80-120	Pass	
Mercury			%	92			75-125	Pass	
Nickel			%	82			80-120	Pass	
Zinc			%	106			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S19-Au09357	CP	%	92			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S19-Au09357	CP	%	76			70-130	Pass	
Toluene	S19-Au09357	CP	%	89			70-130	Pass	
Ethylbenzene	S19-Au09357	CP	%	101			70-130	Pass	
m&p-Xylenes	S19-Au09357	CP	%	101			70-130	Pass	
o-Xylene	S19-Au09357	CP	%	100			70-130	Pass	
Xylenes - Total	S19-Au09357	CP	%	101			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S19-Au09357	CP	%	103			70-130	Pass	
TRH C6-C10	S19-Au09357	CP	%	90			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S19-Au09358	CP	%	126			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S19-Au09358	CP	%	122			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	M19-Au07788	NCP	%	97			70-130	Pass	
4.4'-DDD	M19-Au07788	NCP	%	88			70-130	Pass	
4.4'-DDE	M19-Au07788	NCP	%	95			70-130	Pass	
4.4'-DDT	M19-Au07788	NCP	%	74			70-130	Pass	
a-BHC	M19-Au07788	NCP	%	100			70-130	Pass	
Aldrin	M19-Au07788	NCP	%	92			70-130	Pass	
b-BHC	M19-Au07788	NCP	%	92			70-130	Pass	
d-BHC	M19-Au07788	NCP	%	98			70-130	Pass	
Dieldrin	M19-Au07788	NCP	%	96			70-130	Pass	
Endosulfan I	M19-Au07788	NCP	%	84			70-130	Pass	
Endosulfan II	M19-Au07788	NCP	%	82			70-130	Pass	
Endosulfan sulphate	M19-Au07788	NCP	%	78			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin	M19-Au07788	NCP	%	84			70-130	Pass	
Endrin aldehyde	M19-Au07788	NCP	%	92			70-130	Pass	
Endrin ketone	M19-Au07788	NCP	%	93			70-130	Pass	
g-BHC (Lindane)	M19-Au07788	NCP	%	102			70-130	Pass	
Heptachlor	M19-Au07788	NCP	%	100			70-130	Pass	
Heptachlor epoxide	M19-Au07788	NCP	%	88			70-130	Pass	
Hexachlorobenzene	M19-Au07788	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
1.1-Dichloroethene	M19-Au10042	NCP	%	88			70-130	Pass	
1.1.1-Trichloroethane	M19-Au10042	NCP	%	90			70-130	Pass	
1.2-Dichlorobenzene	M19-Au10042	NCP	%	78			70-130	Pass	
1.2-Dichloroethane	M19-Au10042	NCP	%	85			70-130	Pass	
Trichloroethene	M19-Au10042	NCP	%	71			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	M19-Au07788	NCP	%	110			70-130	Pass	
Aroclor-1260	M19-Au07788	NCP	%	115			70-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2.4-Dinitrophenol	S19-Au11231	NCP	%	41			30-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S19-Au09372	CP	%	73			70-130	Pass	
Acenaphthylene	S19-Au09372	CP	%	74			70-130	Pass	
Anthracene	S19-Au09372	CP	%	101			70-130	Pass	
Benz(a)anthracene	S19-Au09372	CP	%	71			70-130	Pass	
Benzo(a)pyrene	S19-Au09372	CP	%	75			70-130	Pass	
Benzo(b&j)fluoranthene	S19-Au09372	CP	%	77			70-130	Pass	
Benzo(g.h.i)perylene	S19-Au09372	CP	%	81			70-130	Pass	
Benzo(k)fluoranthene	S19-Au09372	CP	%	79			70-130	Pass	
Chrysene	S19-Au09372	CP	%	82			70-130	Pass	
Dibenz(a.h)anthracene	S19-Au09372	CP	%	90			70-130	Pass	
Fluoranthene	S19-Au09372	CP	%	112			70-130	Pass	
Fluorene	S19-Au09372	CP	%	78			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S19-Au09372	CP	%	83			70-130	Pass	
Naphthalene	S19-Au09372	CP	%	84			70-130	Pass	
Phenanthrene	S19-Au09372	CP	%	106			70-130	Pass	
Pyrene	S19-Au09372	CP	%	113			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	S19-Au09372	CP	%	98			30-130	Pass	
2.4-Dichlorophenol	S19-Au09372	CP	%	75			30-130	Pass	
2.4.5-Trichlorophenol	S19-Au09372	CP	%	94			30-130	Pass	
2.4.6-Trichlorophenol	S19-Au09372	CP	%	98			30-130	Pass	
2.6-Dichlorophenol	S19-Au09372	CP	%	74			30-130	Pass	
4-Chloro-3-methylphenol	S19-Au09372	CP	%	69			30-130	Pass	
Pentachlorophenol	S19-Au09372	CP	%	58			30-130	Pass	
Tetrachlorophenols - Total	S19-Au09372	CP	%	98			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4.6-dinitrophenol	S19-Au09372	CP	%	33			30-130	Pass	
2-Methyl-4.6-dinitrophenol	S19-Au09372	CP	%	51			30-130	Pass	
2-Methylphenol (o-Cresol)	S19-Au09372	CP	%	92			30-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Nitrophenol	S19-Au09372	CP	%	79			30-130	Pass	
2.4-Dimethylphenol	S19-Au09372	CP	%	83			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S19-Au09372	CP	%	89			30-130	Pass	
4-Nitrophenol	S19-Au09372	CP	%	53			30-130	Pass	
Dinoseb	S19-Au09372	CP	%	48			30-130	Pass	
Phenol	S19-Au09372	CP	%	86			30-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Methoxychlor	S19-Au07185	NCP	%	76			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	M19-Au19507	NCP	%	92			70-130	Pass	
Dimethoate	M19-Au19507	NCP	%	78			70-130	Pass	
Ethion	M19-Au19507	NCP	%	80			70-130	Pass	
Fenitrothion	M19-Au19507	NCP	%	99			70-130	Pass	
Methyl parathion	M19-Au19507	NCP	%	91			70-130	Pass	
Mevinphos	M19-Au19507	NCP	%	84			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S19-Au09376	CP	%	94			75-125	Pass	
Cadmium	S19-Au09376	CP	%	76			75-125	Pass	
Chromium	S19-Au09376	CP	%	150			75-125	Fail	Q08
Copper	S19-Au09376	CP	%	103			75-125	Pass	
Lead	S19-Au09376	CP	%	96			75-125	Pass	
Mercury	S19-Au09376	CP	%	89			70-130	Pass	
Nickel	S19-Au09376	CP	%	109			75-125	Pass	
Zinc	S19-Au09376	CP	%	112			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S19-Au09377	CP	%	109			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S19-Au09377	CP	%	104			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S19-Au09380	CP	%	127			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S19-Au09380	CP	%	117			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S19-Au09386	CP	%	107			75-125	Pass	
Cadmium	S19-Au09386	CP	%	85			75-125	Pass	
Chromium	S19-Au09386	CP	%	117			75-125	Pass	
Copper	S19-Au09386	CP	%	121			75-125	Pass	
Lead	S19-Au09386	CP	%	118			75-125	Pass	
Mercury	S19-Au09386	CP	%	98			70-130	Pass	
Nickel	S19-Au09386	CP	%	112			75-125	Pass	
Zinc	S19-Au09386	CP	%	126			75-125	Fail	Q08
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S19-Au09356	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S19-Au09356	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S19-Au09356	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S19-Au09356	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S19-Au09356	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S19-Au09356	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S19-Au09356	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S19-Au09356	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S19-Au09356	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M19-Au09857	NCP	%	13	13	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S19-Au09357	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S19-Au09357	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S19-Au09357	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S19-Au09357	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S19-Au09357	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S19-Au09357	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S19-Au09361	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S19-Au09361	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S19-Au09361	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Demeton-O	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethyl parathion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	S19-Au09361	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Naled	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Omethoate	S19-Au09361	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tetrachlorvinphos	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	S19-Au09361	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S19-Au09367	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S19-Au09367	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S19-Au09367	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S19-Au09367	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S19-Au09367	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S19-Au09367	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S19-Au09367	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.3.5-Trimethylbenzene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorotoluene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromobenzene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Iodomethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Vinyl chloride	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S19-Au09367	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S19-Au09367	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Toxaphene	M19-Au16342	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M19-Au09981	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M19-Au09981	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M19-Au09981	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M19-Au09981	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M19-Au09981	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M19-Au09981	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Aroclor-1260	M19-Au09981	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M19-Au09981	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S19-Au09376	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S19-Au09376	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S19-Au09376	CP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S19-Au09376	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S19-Au09376	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S19-Au09376	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S19-Au09376	CP	mg/kg	2.9	3.0	2.0	30%	Pass	
Cadmium	S19-Au09376	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S19-Au09376	CP	mg/kg	88	90	2.0	30%	Pass	
Copper	S19-Au09376	CP	mg/kg	28	29	1.0	30%	Pass	
Lead	S19-Au09376	CP	mg/kg	7.5	7.6	1.0	30%	Pass	
Mercury	S19-Au09376	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S19-Au09376	CP	mg/kg	91	93	2.0	30%	Pass	
Zinc	S19-Au09376	CP	mg/kg	59	60	2.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S19-Au09379	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S19-Au09379	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S19-Au09379	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S19-Au09379	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S19-Au09379	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S19-Au09379	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S19-Au09385	CP	mg/kg	2.2	2.5	14	30%	Pass	
Cadmium	S19-Au09385	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S19-Au09385	CP	mg/kg	9.0	10	11	30%	Pass	
Copper	S19-Au09385	CP	mg/kg	9.7	12	20	30%	Pass	
Lead	S19-Au09385	CP	mg/kg	16	14	11	30%	Pass	
Mercury	S19-Au09385	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S19-Au09385	CP	mg/kg	6.8	7.9	15	30%	Pass	
Zinc	S19-Au09385	CP	mg/kg	37	41	11	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S19-Au09386	CP	mg/kg	2.3	2.4	3.0	30%	Pass	
Cadmium	S19-Au09386	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S19-Au09386	CP	mg/kg	8.0	8.2	3.0	30%	Pass	
Copper	S19-Au09386	CP	mg/kg	12	12	3.0	30%	Pass	
Lead	S19-Au09386	CP	mg/kg	17	17	3.0	30%	Pass	
Mercury	S19-Au09386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S19-Au09386	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S19-Au09386	CP	mg/kg	14	15	4.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

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

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Emma Harrison**

Report **670027-W**
Project name HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID 2126457-26
Received Date Aug 07, 2019

Client Sample ID			**SW_01**	**QR02**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**S19-Au09359**	**S19-Au09374**
Date Sampled			**Aug 06, 2019**	**Aug 06, 2019**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	82	73
p-Terphenyl-d14 (surr.)	1	%	59	55
Organochlorine Pesticides				
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001

Client Sample ID			SW_01	QR02
Sample Matrix			Water	Water
Eurofins Sample No.			S19-Au09359	S19-Au09374
Date Sampled			Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit		
Organochlorine Pesticides				
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	73	68
Tetrachloro-m-xylene (surr.)	1	%	84	77
Organophosphorus Pesticides				
Azinphos-methyl	0.002	mg/L	< 0.002	< 0.002
Bolstar	0.002	mg/L	< 0.002	< 0.002
Chlorfenvinphos	0.002	mg/L	< 0.002	< 0.002
Chlorpyrifos	0.02	mg/L	< 0.02	< 0.02
Chlorpyrifos-methyl	0.002	mg/L	< 0.002	< 0.002
Coumaphos	0.02	mg/L	< 0.02	< 0.02
Demeton-S	0.02	mg/L	< 0.02	< 0.02
Demeton-O	0.002	mg/L	< 0.002	< 0.002
Diazinon	0.002	mg/L	< 0.002	< 0.002
Dichlorvos	0.002	mg/L	< 0.002	< 0.002
Dimethoate	0.002	mg/L	< 0.002	< 0.002
Disulfoton	0.002	mg/L	< 0.002	< 0.002
EPN	0.002	mg/L	< 0.002	< 0.002
Ethion	0.002	mg/L	< 0.002	< 0.002
Ethoprop	0.002	mg/L	< 0.002	< 0.002
Ethyl parathion	0.002	mg/L	< 0.002	< 0.002
Fenitrothion	0.002	mg/L	< 0.002	< 0.002
Fensulfothion	0.002	mg/L	< 0.002	< 0.002
Fenthion	0.002	mg/L	< 0.002	< 0.002
Malathion	0.002	mg/L	< 0.002	< 0.002
Merphos	0.002	mg/L	< 0.002	< 0.002
Methyl parathion	0.002	mg/L	< 0.002	< 0.002
Mevinphos	0.002	mg/L	< 0.002	< 0.002
Monocrotophos	0.002	mg/L	< 0.002	< 0.002
Naled	0.002	mg/L	< 0.002	< 0.002
Omethoate	0.002	mg/L	< 0.002	< 0.002
Phorate	0.002	mg/L	< 0.002	< 0.002
Pirimiphos-methyl	0.02	mg/L	< 0.02	< 0.02
Pyrazophos	0.002	mg/L	< 0.002	< 0.002
Ronnel	0.002	mg/L	< 0.002	< 0.002
Terbufos	0.002	mg/L	< 0.002	< 0.002

Client Sample ID			SW_01	QR02
Sample Matrix			Water	Water
Eurofins Sample No.			S19-Au09359	S19-Au09374
Date Sampled			Aug 06, 2019	Aug 06, 2019
Test/Reference	LOR	Unit		
Organophosphorus Pesticides				
Tetrachlorvinphos	0.002	mg/L	< 0.002	< 0.002
Tokuthion	0.002	mg/L	< 0.002	< 0.002
Trichloronate	0.002	mg/L	< 0.002	< 0.002
Triphenylphosphate (surr.)	1	%	77	72
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1
Heavy Metals				
Arsenic	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001
Lead	0.001	mg/L	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7A			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Aug 14, 2019	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 14, 2019	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 14, 2019	
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	Aug 12, 2019	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins | mgt Suite B10			
Organochlorine Pesticides	Melbourne	Aug 14, 2019	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Organophosphorus Pesticides	Melbourne	Aug 14, 2019	7 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS (USEPA 8081)			

eurofins | Environment Testing

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Site # 23736

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
External Laboratory																		
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**													
1	GS01_0-0.1	Aug 06, 2019		Soil	S19-Au09356										X	X		
2	GS02_0-0.1	Aug 06, 2019		Soil	S19-Au09357										X	X		
3	GS03_0-0.1	Aug 06, 2019		Soil	S19-Au09358										X	X		
4	SW_01	Aug 06, 2019		Water	S19-Au09359			X	X	X	X	X		X				
5	BH01_0-0.1	Aug 06, 2019		Soil	S19-Au09360								X		X		X	X
6	BH01_2.0-2.1	Aug 06, 2019		Soil	S19-Au09361								X		X		X	X
7	BH02_0.5-0.6	Aug 06, 2019		Soil	S19-Au09362								X		X		X	X
8	BH02_3.0-3.1	Aug 06, 2019		Soil	S19-Au09363								X		X		X	X
9	BH03_4.0-4.1	Aug 06, 2019		Soil	S19-Au09364								X		X		X	X

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Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
10	BH03_4.4-4.5	Aug 06, 2019		Soil	S19-Au09365								X		X		X	X
11	BH03_5.9-6.0	Aug 06, 2019		Soil	S19-Au09366								X		X		X	X
12	BH04_1.0-1.1	Aug 06, 2019		Soil	S19-Au09367								X		X		X	X
13	BH04_4.9-5.0	Aug 06, 2019		Soil	S19-Au09368								X		X		X	X
14	BH05_0-0.1	Aug 06, 2019		Soil	S19-Au09369								X		X		X	X
15	BH06_0-0.1	Aug 06, 2019		Soil	S19-Au09370								X		X		X	X
16	BH07_0-0.1	Aug 06, 2019		Soil	S19-Au09371								X		X		X	X
17	QC_01	Aug 06, 2019		Soil	S19-Au09372								X		X		X	X
18	QC_02	Aug 06, 2019		Soil	S19-Au09373								X		X		X	X
19	QR02	Aug 06, 2019		Water	S19-Au09374			X	X	X	X	X		X				
20	TPW1-3_0.0	Aug 06, 2019		Soil	S19-Au09375										X	X		
21	TPW1-5_0.5	Aug 06, 2019		Soil	S19-Au09376										X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
22	TPW1-2_1.0	Aug 06, 2019		Soil	S19-Au09377										X	X		
23	TPW2-1_0.0	Aug 06, 2019		Soil	S19-Au09378										X	X		
24	TPW2-2_0.5	Aug 06, 2019		Soil	S19-Au09379										X	X		
25	TPW2-3_0.5	Aug 06, 2019		Soil	S19-Au09380										X	X		
26	TPW3-1_0.0	Aug 06, 2019		Soil	S19-Au09381										X	X		
27	TPW3-1_0.5	Aug 06, 2019		Soil	S19-Au09382										X	X		
28	TPW3-5_1.0	Aug 06, 2019		Soil	S19-Au09383										X	X		
29	TPE1-5_0.0	Aug 06, 2019		Soil	S19-Au09384										X	X		
30	TPE1-3_0.5	Aug 06, 2019		Soil	S19-Au09385										X	X		
31	TPE1-2_1.0	Aug 06, 2019		Soil	S19-Au09386										X	X		
32	TPE2-3_0.0	Aug 06, 2019		Soil	S19-Au09387										X	X		
33	TPE2-1_0.5	Aug 06, 2019		Soil	S19-Au09388										X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
34	TPE2-2_1.0	Aug 06, 2019		Soil	S19-Au09389										X	X		
35	TPE3-3_0.0	Aug 06, 2019		Soil	S19-Au09390										X	X		
36	TPE3-1_0.5	Aug 06, 2019		Soil	S19-Au09391										X	X		
37	TPE3-3_0.8	Aug 06, 2019		Soil	S19-Au09392										X	X		
38	QA01	Aug 06, 2019		Soil	S19-Au09393										X	X		
39	QA03	Aug 06, 2019		Soil	S19-Au09394										X	X		
40	BH01_0.5-0.6	Aug 06, 2019		Soil	S19-Au09395	X												
41	BH01_1.0-1.1	Aug 06, 2019		Soil	S19-Au09396	X												
42	BH01_3.0-3.1	Aug 06, 2019		Soil	S19-Au09397	X												
43	BH01_4.0-4.1	Aug 06, 2019		Soil	S19-Au09398	X												
44	BH02_0-0.1	Aug 06, 2019		Soil	S19-Au09399	X												
45	BH02_1.0-1.1	Aug 06, 2019		Soil	S19-Au09400	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
46	BH02_2.0-2.1	Aug 06, 2019		Soil	S19-Au09401	X												
47	BH02_4.0-4.1	Aug 06, 2019		Soil	S19-Au09402	X												
48	BH03_0-0.1	Aug 06, 2019		Soil	S19-Au09403	X												
49	BH03_0.5-0.6	Aug 06, 2019		Soil	S19-Au09404	X												
50	BH03_1.0-1.1	Aug 06, 2019		Soil	S19-Au09405	X												
51	BH03_2.0-2.1	Aug 06, 2019		Soil	S19-Au09406	X												
52	BH03_3.0-3.1	Aug 06, 2019		Soil	S19-Au09407	X												
53	BH03_5.0-5.1	Aug 06, 2019		Soil	S19-Au09408	X												
54	BH04_0-0.1	Aug 06, 2019		Soil	S19-Au09409	X												
55	BH04_0.5-0.6	Aug 06, 2019		Soil	S19-Au09410	X												
56	BH04_2.0-2.1	Aug 06, 2019		Soil	S19-Au09411	X												
57	BH04_3.0-3.1	Aug 06, 2019		Soil	S19-Au09412	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
58	BH04_4.0-4.1	Aug 06, 2019		Soil	S19-Au09413	X												
59	TPW1-1_0.0	Aug 06, 2019		Soil	S19-Au09414	X												
60	TPW1-2_0.0	Aug 06, 2019		Soil	S19-Au09415	X												
61	TPW1-4_0.0	Aug 06, 2019		Soil	S19-Au09416	X												
62	TPW1-5_0.0	Aug 06, 2019		Soil	S19-Au09417	X												
63	TPW1-1_0.5	Aug 06, 2019		Soil	S19-Au09418	X												
64	TPW1-2_0.5	Aug 06, 2019		Soil	S19-Au09419	X												
65	TPW1-3_0.5	Aug 06, 2019		Soil	S19-Au09420	X												
66	TPW1-4_0.5	Aug 06, 2019		Soil	S19-Au09421	X												
67	TPW1-1_1.0	Aug 06, 2019		Soil	S19-Au09422	X												
68	TPW1-3_1.0	Aug 06, 2019		Soil	S19-Au09423	X												
69	TPW1-4_1.0	Aug 06, 2019		Soil	S19-Au09424	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
70	TPW1-5_1.0	Aug 06, 2019		Soil	S19-Au09425	X												
71	TPW2-2_0.0	Aug 06, 2019		Soil	S19-Au09426	X												
72	TPW2-3_0.0	Aug 06, 2019		Soil	S19-Au09427	X												
73	TPW2-4_0.0	Aug 06, 2019		Soil	S19-Au09428	X												
74	TPW2-5_0.0	Aug 06, 2019		Soil	S19-Au09429	X												
75	TPW2-1_0.5	Aug 06, 2019		Soil	S19-Au09430	X												
76	TPW2-4_0.5	Aug 06, 2019		Soil	S19-Au09431	X												
77	TPW2-5_0.5	Aug 06, 2019		Soil	S19-Au09432	X												
78	TPW2-1_1.0	Aug 06, 2019		Soil	S19-Au09433	X												
79	TPW2-2_1.0	Aug 06, 2019		Soil	S19-Au09434	X												
80	TPW2-3_1.0	Aug 06, 2019		Soil	S19-Au09435	X												
81	TPW2-4_1.0	Aug 06, 2019		Soil	S19-Au09436	X												

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
82	TPW2-5_1.0	Aug 06, 2019		Soil	S19-Au09437	X												
83	TPW3-2_0.0	Aug 06, 2019		Soil	S19-Au09438	X												
84	TPW3-3_0.0	Aug 06, 2019		Soil	S19-Au09439	X												
85	TPW3-4_0.0	Aug 06, 2019		Soil	S19-Au09440	X												
86	TPW3-5_0.0	Aug 06, 2019		Soil	S19-Au09441	X												
87	TPW3-2_0.5	Aug 06, 2019		Soil	S19-Au09442	X												
88	TPW3-3_0.5	Aug 06, 2019		Soil	S19-Au09443	X												
89	TPW3-4_0.5	Aug 06, 2019		Soil	S19-Au09444	X												
90	TPW3-5_0.5	Aug 06, 2019		Soil	S19-Au09445	X												
91	TPW3-1_1.0	Aug 06, 2019		Soil	S19-Au09446	X												
92	TPW3-2_1.0	Aug 06, 2019		Soil	S19-Au09447	X												
93	TPW3-3_1.0	Aug 06, 2019		Soil	S19-Au09448	X												

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Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
94	TPW3-4_1.0	Aug 06, 2019		Soil	S19-Au09449	X												
95	TPE1-1_0.0	Aug 06, 2019		Soil	S19-Au09450	X												
96	TPE1-2_0.0	Aug 06, 2019		Soil	S19-Au09451	X												
97	TPE1-3_0.0	Aug 06, 2019		Soil	S19-Au09452	X												
98	TPE1-4_0.0	Aug 06, 2019		Soil	S19-Au09453	X												
99	TPE1-1_0.5	Aug 06, 2019		Soil	S19-Au09454	X												
100	TPE1-2_0.5	Aug 06, 2019		Soil	S19-Au09455	X												
101	TPE1-4_0.5	Aug 06, 2019		Soil	S19-Au09456	X												
102	TPE1-5_0.5	Aug 06, 2019		Soil	S19-Au09457	X												
103	TPE1-1_1.0	Aug 06, 2019		Soil	S19-Au09458	X												
104	TPE1-3_1.0	Aug 06, 2019		Soil	S19-Au09459	X												
105	TPE1-4_1.0	Aug 06, 2019		Soil	S19-Au09460	X												

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Melbourne
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Site # 1254 & 14271

Sydney
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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
106	TPE1-5_1.0	Aug 06, 2019		Soil	S19-Au09461	X												
107	TPE2-1_0.0	Aug 06, 2019		Soil	S19-Au09462	X												
108	TPE2-2_0.0	Aug 06, 2019		Soil	S19-Au09463	X												
109	TPE2-2_0.5	Aug 06, 2019		Soil	S19-Au09464	X												
110	TPE2-3_0.5	Aug 06, 2019		Soil	S19-Au09465	X												
111	TPE2-1_1.0	Aug 06, 2019		Soil	S19-Au09466	X												
112	TPE2-3_1.0	Aug 06, 2019		Soil	S19-Au09467	X												
113	TPE3-1_0.0	Aug 06, 2019		Soil	S19-Au09468	X												
114	TPE3-2_0.0	Aug 06, 2019		Soil	S19-Au09469	X												
115	TPE3-2_0.5	Aug 06, 2019		Soil	S19-Au09470	X												
116	TPE3-3_0.5	Aug 06, 2019		Soil	S19-Au09471	X												
117	TPE3-1_0.8	Aug 06, 2019		Soil	S19-Au09472	X												

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

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Order No.:
Report #: 670027
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 7, 2019 1:59 PM
Due: Aug 14, 2019
Priority: 5 Day
Contact Name: Emma Harrison

Project Name: HORNSBY QUARRY CONTAMINATION INVESTIGATION
Project ID: 2126457-26

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						HOLD	HOLD	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Metals M8	Eurofins | mgt Suite B15	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Moisture Set	Eurofins | mgt Suite B10	Eurofins | mgt Suite B7A	Eurofins | mgt Suite SVV: SVOC/VOC
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X											
Brisbane Laboratory - NATA Site # 20794																		
Perth Laboratory - NATA Site # 23736																		
118	TPE3-2_0.8	Aug 06, 2019		Soil	S19-Au09473	X												
119	RB01	Aug 06, 2019		Water	S19-Au09474	X												
120	TRIP BLANK	Aug 06, 2019		Soil	S19-Au09475		X											
121	TRIP SPIKE	Aug 06, 2019		Soil	S19-Au10358		X											
122	TRIP SPIKE LAB	Aug 06, 2019		Soil	S19-Au10359		X											
Test Counts						83	83	2	2	2	2	2	14	2	37	23	14	14

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	79			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	72			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	118			80-120	Pass	
Cadmium	%	94			80-120	Pass	
Chromium	%	92			80-120	Pass	
Copper	%	80			80-120	Pass	
Lead	%	96			80-120	Pass	
Mercury	%	90			75-125	Pass	
Nickel	%	86			80-120	Pass	
Zinc	%	90			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M19-Au15008	NCP	%	119			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M19-Au15008	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M19-Au10485	NCP	%	118			75-125	Pass	
Cadmium	M19-Au10485	NCP	%	94			75-125	Pass	
Chromium	M19-Au10485	NCP	%	93			75-125	Pass	
Copper	M19-Au10485	NCP	%	82			75-125	Pass	
Lead	M19-Au10485	NCP	%	96			75-125	Pass	
Mercury	M19-Au10485	NCP	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel	M19-Au10485	NCP	%	84			75-125	Pass	
Zinc	M19-Au10485	NCP	%	87			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M19-Au14639	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M19-Au14639	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M19-Au14639	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M19-Au14639	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M19-Au14639	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M19-Au14639	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M19-Au10485	NCP	mg/L	0.007	0.007	5.0	30%	Pass	
Cadmium	M19-Au10485	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M19-Au10485	NCP	mg/L	0.014	0.013	5.0	30%	Pass	
Copper	M19-Au10485	NCP	mg/L	0.005	0.005	3.0	30%	Pass	
Lead	M19-Au10485	NCP	mg/L	0.006	0.006	4.0	30%	Pass	
Mercury	M19-Au10485	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M19-Au10485	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M19-Au10485	NCP	mg/L	0.033	0.032	1.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Alena Bounkeua	Analytical Services Manager
Joseph Edouard	Senior Analyst-Organic (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ **Sydney Laboratory** Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory** Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory** Unit 2, 91 Leach Highway, Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory** 2 Kingston Town Close, Oakleigh, VIC 3166 03 8564 5000 EnviroSampleVic@eurofins.com

Company	GHD Pty Ltd	Project №	2126457-26	Project Manager	Emma Harrison
Address	Level 15, 133 Castlereagh St Sydney, 2000	Project Name	Hornsby Quarry Contamination Investigation	Report Format	ESDat
Contact Name	Emma Harrison				
Phone №	0408 401 511				
Special Direction	Please email results to: emma.harrison@ghd.com felicity.harrison@ghd.com				
Purchase Order					
Quote ID №	181121GHDN				

Relinquished by: ____ ___:___ ___/___/___

Email for Results:

Analysis (Note: Where metals are requested, please specify "Total" or "Filtered")

№	Client Sample ID	Date	Matrix	Suite B10: TRH, BTEXN, PAH, OCP, OPP, Metals	Suie B7A: TRH, BTEXN, PAH, Phenols. Metals	SuiteB15: OCP, OPP, PCB	Suite SVV: SVOC, VOC	Asbestos ID in soil	Containers: 1L Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mLvial	125mL Amber Glass	Jar	Other ( )	Sample Comments / DG Hazard Warning
1	BH01_0_0.1							X									
2	BH05_0_0.1							X									
3	BH06_0_0.1							X									
4	BH07_0_0.1							X									
5																	
6																	
7																	
8																	
9																	
10																	
	Total Counts							#									

Containers

Turn Around Requirements

- ☐ Overnight (9am)*
- ☐ 1 Day* ☐ 2 Day*
- ☐ 3 Day* ☑ 5 Day
- ☐ Other ( )

* Surcharges apply

Method of Shipment	☐ Courier (#) ☐ Hand Delivered ☐ Postal	Name		Signature		Date	___/___/___	Time	___:___
Laboratory Use Only	Received By: Grace Tuckwell (SYD / BNE / MEL / PER / ADL / NEW / DAR)	Signature		Date: 27/8/19	Time: 9.04	Temperature	
	Received By: (SYD / BNE / MEL / PER / ADL / NEW / DAR)	Signature		Date: ___/___/___	Time: ___:___	Report №	673397

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NATA # 1261 Site # 23736

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

Sample Receipt Advice

Company name:	**GHD Pty Ltd NSW**
Contact name:	Emma Harrison
Project name:	HORNSBY QUARRAY CONTAMINATION INVESTIGATION
Project ID:	2126457-26
COC number:	Not provided
Turn around time:	Same day
Date/Time received:	Aug 27, 2019 9:04 AM
Eurofins reference:	**673397**

Sample information

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

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 8.2 degrees Celsius.

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

☑ COC has been completed correctly.

N/A Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

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

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

Alena Bounkeua on Phone : or by e.mail: AlenaBounkeua@eurofins.com

Results will be delivered electronically via e.mail to Emma Harrison - emma.harrison@ghd.com.

eurofins | Environment Testing

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NATA # 1261 Site # 20794

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

Company Name:	GHD Pty Ltd NSW	**Order No.:**		**Received:**	Aug 27, 2019 9:04 AM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:**	673397	**Due:**	Aug 27, 2019
		Phone:	02 9239 7100	**Priority:**	Same day
		Fax:	02 9239 7199	**Contact Name:**	Emma Harrison
Project Name:	HORNSBY QUARRAY CONTAMINATION INVESTIGATION				
Project ID:	2126457-26				

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Asbestos - AS4964
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						X
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	BH01_0_0.1	Aug 06, 2019		Soil	S19-Au37842	X
2	BH05_0_0.1	Aug 06, 2019		Soil	S19-Au37843	X
3	BH06_0_0.1	Aug 06, 2019		Soil	S19-Au37844	X
4	BH07_0_0.1	Aug 06, 2019		Soil	S19-Au37845	X
Test Counts						4

Certificate of Analysis

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NATA Accredited
Accreditation Number 1261
Site Number 18217

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

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Attention:	Emma Harrison
Report	673397-AID
Project Name	HORNSBY QUARRAY CONTAMINATION INVESTIGATION
Project ID	2126457-26
Received Date	Aug 27, 2019
Date Reported	Aug 27, 2019

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name HORNSBY QUARRAY CONTAMINATION INVESTIGATION
Project ID 2126457-26
Date Sampled Aug 06, 2019
Report 673397-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH01_0_0.1	19-Au37842	Aug 06, 2019	Approximate Sample 187g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH05_0_0.1	19-Au37843	Aug 06, 2019	Approximate Sample 199g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH06_0_0.1	19-Au37844	Aug 06, 2019	Approximate Sample 234g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH07_0_0.1	19-Au37845	Aug 06, 2019	Approximate Sample 224g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Aug 27, 2019	Indefinite

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

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

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

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

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

Company Name:	GHD Pty Ltd NSW	**Order No.:**		**Received:**	Aug 27, 2019 9:04 AM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:** **Phone:** **Fax:**	673397 02 9239 7100 02 9239 7199	**Due:** **Priority:** **Contact Name:**	Aug 27, 2019 Same day Emma Harrison
Project Name:	HORNSBY QUARRAY CONTAMINATION INVESTIGATION				
Project ID:	2126457-26				

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Asbestos - AS4964
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						X
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	BH01_0_0.1	Aug 06, 2019		Soil	S19-Au37842	X
2	BH05_0_0.1	Aug 06, 2019		Soil	S19-Au37843	X
3	BH06_0_0.1	Aug 06, 2019		Soil	S19-Au37844	X
4	BH07_0_0.1	Aug 06, 2019		Soil	S19-Au37845	X
Test Counts						4

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)

Authorised by:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

Appendix G – Airmet Certificate

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-107189**

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	Low	High	TWA	STEL
	Settings	✓	50ppm	100ppm		
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		92ppm Isobutylene	NATA	SY245		91.6ppm

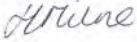
Calibrated by: Sarah Lian **Sarah Lian**

Calibration date: **2/08/2019**

Next calibration due: **29/01/2020**

GHD

Level 15
133 Castlereagh St, Sydney 2000
T: 61 2 9239 7100 F: 61 2 9239 7199 E: sydmail@ghd.com

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Draft	F. Harrison E. Harrison J. Ewing	H. Milne				
Rev 0	E Harrison	H. Milne		D. Gamble		25/09/2018

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Appendix J – Remedial Action Plan

Hornsby Shire Council

Hornsby Quarry Rehabilitation
UST Remedial Action Plan

October 2019

Executive Summary

Hornsby Shire Council (HSC) instructed GHD Pty Ltd (GHD) to prepare a remedial action plan (RAP) for the decommissioning of an underground storage tank (UST) and remediation of associated contaminated soil (if any) at the former workshop area within the Hornsby quarry site located at Quarry Road, Hornsby, NSW 2077.

GHD recently completed a targeted detailed site investigation (DSI) at the site (ref: 212645726, 28 August 2019). The investigation identified one UST and two fuel bowsers associated with machinery and equipment maintenance at the site, as well as two above ground storage tanks (ASTs). The investigation also identified low-level hydrocarbon contamination in soils surrounding the UST. GHD recommended in the report to remove the UST in accordance with industry guidelines; the ASTs and fuel bowser will remain at the site.

The purpose of this RAP is to provide a framework for the remediation and validation of soil from excavated areas following the removal of underground petroleum storage system (UPSS) infrastructure to evaluate the suitability of the site for its proposed use as a public park (public open space)

The actions required to carry out the RAP are summarised as follows:

- Develop a Site Management Plan (to be prepared by the nominated contractor).
- Prior to any excavation works, undertake a dial before you dig search and underground service identification.
- Remove concrete and excavate to expose UST.
- Remove all fuel from drainage points, pipework and UST. De-gas the UST prior to safe removal and transport for off-site destruction.
- Dispose of the UST off-site by a licensed waste contractor.
- Remove any associated infrastructure including underground pipework.
- Collect validation soil samples from the walls and base of the excavations for UST and fuel line excavations for laboratory analysis.
- Ensure that the validation samples show that no contamination exists within the excavation that is above the nominated screening criteria. If this is not the case, undertake further excavation of affected soils, until validation samples show that the remediation criteria has been achieved.
- Stockpile and separate any impacted soils that are considered unsuitable, which are to be classified and disposed off-site to an EPA approved waste facility.
- Backfill the resulting excavations with validated existing site soils from the tank excavation that are deemed suitable for re-use, approved excavated natural material (ENM) already on site from the North Connex project, or approved virgin excavated natural material (VENM) imported to site.
- Prepare a Validation Report

The validation report will be provided in accordance with the expected conditions of the development consent.

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Appendix A - Figures

1. Introduction

Hornsby Shire Council (HSC) instructed GHD Pty Ltd (GHD) to prepare a remedial action plan (RAP) for the decommissioning of an underground storage tank (UST) and remediation of associated contaminated soil (if any) at the former workshop area within the Hornsby quarry site located at Quarry Road, Hornsby, NSW 2077 (hereinafter referred to as the site). The site location is shown in Figure 1, Appendix A.

GHD recently completed a targeted detailed site investigation (DSI) at the site (ref: 212645726, 28 August 2019). The investigation identified one UST and two fuel bowsers associated with machinery and equipment maintenance at the site, and above ground storage tanks (ASTs). GHD recommended in the report to remove the fuel infrastructure in accordance with industry guidelines; the ASTs and bowsers will remain at the site.

The purpose of this RAP is to describe the scope and controls for remediation and management during the removal of underground petroleum storage systems (UPSS), associated infrastructure and associated impacted soils.

1.1 Objectives

The objective of this RAP is to outline the approach and procedures in respect to:

- Removal of the UPSS;
- Management of potential contamination encountered during the removal; and
- Evaluate the suitability of the soils remaining in-situ for the intended land use (public open space).

1.2 Scope

Preparation of this RAP included:

- A desktop review of available contamination assessment reports for the site.
- Outlining procedures and activities that are required for the implementation of the remediation works.
- Identifying requirements for site management (including occupational health and safety) to be implemented during the remediation works.
- Developing requirements for a contingency plan and unexpected finds protocol for the remediation.

1.3 Technical framework for preparation of RAP

This RAP was prepared in general accordance with:

- Australian standard AS 1940:2017 The storage and handling of flammable and combustible liquids.
- Australian Standard AS 4482.1, 2005, Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds.
- Australian standard AS 4482.2, 1999, Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances.
- Australian standard AS 4976:2008: The removal and disposal of underground storage tanks.
- *Contaminated Land Management Act 1997*, as amended 2019.
- Department of Environment, Climate Change and Water 2008, Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation.
- Department of Environment, Climate Change and Water, 2010, *UPSS Technical Note: Site Validation Reporting.*
- Friebel and Nadebaum 2011, CRC CARE Technical Report No. 10: *Health screening levels for petroleum hydrocarbons in soil and groundwater.*
- National Environment Protection Council, 2013. National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013 (NEPM, 1999).
- NSW Department of Environment and Conservation 2007, *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination.*
- NSW Department of Urban Affairs and Planning 1998, *Managing Land Contamination: Planning Guidelines SEPP 55 Remediation of Land.*
- NSW Environment Protection Authority 1995, Contaminated Sites: *Sampling Design Guidelines.*
- NSW Environmental Protection Authority 2014, *Waste Classification Guidelines Part 1: Classifying Waste.*
- NSW Environmental Protection Authority 2015 *Guidelines on the Duty to Report Land Contamination under the Contaminated Land Management Act 1997.*
- NSW Environmental Protection Authority 2017, *Guidelines for the NSW Site Auditor Scheme (3rd edition).*
- NSW Environmental Protection Authority, 2014, Technical Note: Investigation of Service Station Sites.
- NSW Office of Environment and Heritage 2011, *Guidelines for Consultants Reporting on Contaminated Sites.*
- NSW *Work Health and Safety Act 2011.*
- Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 under the Protection of the Environment Operations Act 1997.
- WorkCover NSW 2005, Storage and Handling of Dangerous Goods Code of Practice.
- Work Health and Safety Regulation 2017.

1.4 Limitations

This report should be read in conjunction with, and is subject to, the limitations provided in Section 10.

2. Site setting

The following information has been obtained from the GHD (2019) targeted DSI report, and assumes the reader is fully cognisant with the findings.

2.1 Site details

The site details are summarised in Table 1. The site location is shown on Figure 1, Appendix A.

Table 1 Site location summary

Street Address	Hornsby Quarry, Quarry Road, Hornsby, NSW 2077
Title Identifiers	Portion of Lot E DP318676
Local Government Area	Hornsby Council
Current Land Use	Former quarry
Local Land Use Zoning	RE1 – Public Recreation

This RAP is focused on the former workshop area to the west of the main former quarry (Figure 2, Appendix A). This area currently comprises:

- Two bunded Above-Ground Storage Tanks (ASTs) (one empty, one containing diesel fuel) underneath an awning. The tanks appear to in good condition. Minor hydrocarbon staining was noted at the outlet taps of the ASTs, but was entirely contained within the concrete bunding.
- One petrol UST (containing 50 mm of hydrocarbon residue). No hydrocarbon staining was noted on the surface concrete pad covering the UST.
- Two fuel bowsers (and potentially related underground petroleum storage systems). Hydrocarbon staining was noted on the concrete base pad.
- One medium-sized (approximately 2.5 m x 2.5 m x 2.5 m) locked, inaccessible and corroded metal container.
- Patches of concrete hard-stand

2.2 Surrounding land use

General observations of the surrounding land use are shown in Table 2

Table 2 Surrounding land uses

Direction	Land Use
North	Bushland then residential
East	Residential and commercial
South	Bushland then residential
West	Bushland and Rosemead Trail (bushwalking trail).

2.3 Topography

The overall quarry site is situated between 53 and 148 m AHD (LotSearch, 2019). The site has very steep embankments from the perimeter of the site to the centre of quarry. The pre-existing site topography (prior to the quarry development) consisted of a moderately steep gully running from northeast downwards to the south-west of the site. Surrounding landforms to the north and east are generally steep, with topography sloping moderately away from the quarry towards the south and west. The former workshop area, where the UST is located is relatively flat.

2.4 Geology

The Sydney 1:100,000 *Geological Series Sheet 9130* (NSW Government Department of Resources and Geoscience, 1983) indicates the site is underlain by a Jurassic diatreme comprising volcanic breccia with various amounts of sedimentary breccia and basalt. The diatreme intruded the surrounding Triassic Hawkesbury Sandstone and Ashfield Shale of the Wianamatta Group, and produced a north-east to south-west elongated body which extends for approximately 1.5 kilometres and is less than 400 metres wide (Herbert, 1983, *in* Parsons Brinckerhoff (2004), *Hornsby Quarry and Environs Land Capability Study and Master Plan: Volume 1 – Technical Investigations, October 2004*).

The Hornsby Quarry diatreme forms part of the Hornsby – Thornleigh diatreme complex and was formed as a maar-diatreme volcano during the Early Jurassic, around 200 million years ago. The diatreme was created as a result of rising mafic magma intersecting the water table, producing a steam pressure driven explosion which forced pyroclastic ejecta upwards and which subsequently fell to create a small ring-like cavity, and associated volcanic breccia, sedimentary breccia and basalt.

The quarry was mined for its hard rock basalt which was crushed and used as road base material and gravels. The eastern face of the quarry has exposed a vertical cross-section through the diatreme, and is valued for its expression of this geological phenomenon. It provides exposure to geological information that is important to understanding the history of creation of the Sydney Basin, and Council intend to preserve this exposure as part of the redevelopment plans for the quarry.

During the Detailed Site Investigation undertaken by GHD in August 2019, four push tube / solid stem drilled augered boreholes (BH01 – BH04) and three shallow hand augered holes (BH05 – BH07) were completed at the former workshop area (refer to Figure 3, Appendix A).

Lithology encountered at all locations was fairly consistent, comprising the following:

- Coarse grained, dark grey, gravelly sand fill of variable thickness from surface to 0.5 metres below ground level (mbgl), Gravel fragments generally consisted of angular basalt.
- A layer of mottled creamy - orange clays and sandy clay with medium to high plasticity at variable depths from 0.5 to 4.0 mbgl.
- Possible natural sandy clays from 4.9 to 6.0 mbgl.

Additional observations of note during drilling included:

- Fragments of concrete were intersected at 1.0 mbgl in BH02, and at 0.5 in BH03, indicating the boreholes intersected the edges of the UST foundations.

Hydrocarbon staining and odour in gravelly to clayey sand fill material at BH02 from 0.4 – 0.6 mbgl, and BH03 from 4.0 – 4.1 mbgl, and 4.4 – 4.5 mbgl. Slightly elevated PID readings above background were recorded for these samples (see borehole logs, and varying in colour from orange and yellow to creamy brown.

2.5 Hydrology

Surface water is expected to follow the local topography on site. Along the northern margin of the quarry void, the diversion channel diverts storm water westwards from Old Mans Valley in the east and from Manor Road in the north.

A natural waterway runs through the site from northeast to southeast. This waterway flows into Jimmy Bancks Creek, 670 m south of the site. Waitara and Berowra Creeks are 680 and 980 m west of the site.

2.6 Hydrogeology

A search of the NSW Department of Primary Industries Office of Water Groundwater Bore Map revealed that there are six registered groundwater wells within two kilometres of the site. The closest registered bore to the site was a monitoring bore (GW111573) situated 1118 m to the northeast. This bore was drilled to a depth of 5.0 m below ground level and sits in silty clay, weathered shale and sandstone.

Standing water levels in all six bores was recorded between 0.63 m and 2.0 mbgl, however, depth to groundwater at the site itself is unknown, but expected to be relatively deep based on the water ponding at the base of the quarry. Salinity levels are not anticipated to be an issue at the site, and no dryland salinity is reported for the site in the National Assessment database (National Land and Water Resources audit, 2013), or the Dryland Salinity Potential of Western Sydney map (Department of Infrastructure, Planning and Natural Resources, March 2003).

Groundwater in the region surrounding the site is expected to flow from the northeast to the southwest.

During the Detailed Site Investigation undertaken by GHD in August 2019, groundwater was not encountered.

2.7 Acid sulphate soil risk

The *NSW Office of Environment and Heritage Acid Sulfate Soils Risk Map* (NSW Government, n.d.) indicates the site is within an area with no known occurrence of Acid Sulfate Soils.

The Atlas of Australian Acid Sulfate Soils indicates the site is Class B (low probability of occurrence. 6 to 70% chance of occurrence) and Class C (extremely low probability of occurrence. 1 to 5 % chance of occurrence with occurrences in small localised areas).

2.8 Site history

Hornsby Quarry is a former breccia hard rock quarry that was operated by private business from the early 1900s and ceased quarry operations in the early 2000s. The Safework NSW storage of hazardous chemicals search indicated that there has been a fuel UST located at the site since 1955.

3. Contamination status

3.1 Previous reports

A number of previous investigations have been undertaken on the site which include the following:

- PB, 2004: Land Capability Study.
- PB, 2004: Technical Investigations.
- GHD Pty Ltd, May 2019. Hornsby Quarry Rehabilitation EIS – Geophysical Investigation Report.
- GHD Pty Ltd, September 2019, Hornsby Quarry Rehabilitation, Targeted Detailed Site Investigation.

GHD present the following pertinent information related to the area of the workshop area.

3.1.1 PB, 2004: Technical Investigations

The Council engaged PB to undertake a Phase 1 Environmental Site Assessment of the site. This included the review of historical documentation, including a WorkCover NSW Dangerous Goods Licence information and records, NSW EPA notices, property records, land title information and aerial photographs.

A review of the title information and aerial photographs indicated that the site was used as market gardens and orchard cultivation from the 1820s to the 1960s. Parts of the site were leased to Hornsby Blue Metal Limited in 1924. Hornsby Blue Metal Limited acquired the majority of the site between 1960 and 1968. Site quarrying infrastructure was constructed by 1969. Extensive quarrying activities appeared to have ceased by late 1992.WorkCover NSW records confirmed a UST was located in the vicinity of the office and workshop area, and was used to store petrol. The initial UST had the capacity to hold 9,000 L. This tank was replaced in 1968 with a smaller capacity tank (4,500 L). The UST was reported to have been removed in 1997/98. PB is not aware of any reports relating to the removal of this UST. Two above ground storage tanks (ASTs) are located in the same area. These were used to store diesel and have the capacity to hold 30,000 L and 25,000 L. These remain on site in a bunded area.

Also in this area was a detonator magazine used to store up to 5,000 detonators. All detonators and explosives were utilised prior to the cessation of quarrying activities on site. GHD did not observe this magazine during their site visit.

A site investigation was undertaken by PB in 2004. The two diesel ASTs were observed in the workshop area, along with a waste oil AST with a capacity of 2,000 to 5,000 L. GHD note that the waste oil AST was not observed during their site visit. All ASTs were reported to be in covered, bunded areas.

PB identified a number of areas of environmental concern as a result of this Phase 1 Environmental Site Assessment. To address the potential contamination issues identified, PB recommended a *Phase 2 Detailed Site Investigation* be scoped and implemented as part of future management principles for the site (Parsons Brinckerhoff, 2004).

3.1.2 GHD Pty Ltd, May 2019. Hornsby Quarry Rehabilitation EIS – Geophysical Investigation Report

This report details the geophysical investigation of the UST at the former workshop area with the use of ground penetrating radar (GPR). The survey determined that the UST is slightly smaller than the overlying concrete slab, at approximately 8600 mm x 4500 mm. The GPR

reflection suggested that the depth to the top of the top underneath the slab is approximately 700 mm below surface. A measuring tape placed within the sump/downpipe hit the assumed base of the tank at 2500 mm depth. A dipstick removed from the tank indicated there was 50 mm of hydrocarbon residue at the base of the tank.

3.1.3 GHD Pty Ltd, September 2019, Hornsby Quarry Rehabilitation, Targeted Detailed Site Investigation

GHD was commissioned by the Hornsby Shire Council (the Council) to undertake a targeted detailed site contamination investigation (DSI) at the Hornsby Quarry in Hornsby, New South Wales (NSW). One aspect of this was an investigation of the former workshop area.

The objective of this DSI was to assess, to the extent practicable using available information, the potential for contamination to be present at the site as a result of historical or current use of the site, which may pose a risk to human health or the environment. For the workshop area, GHD completed a desktop study, site walkover and a limited soil sampling program.

A field investigation conducted on 6 August 2019 included: four push tube / solid stem augered boreholes and three shallow hand augered holes at the former workshop area. Sampling locations in workshop area are provided on Figure 3, Appendix A.

All analytical results were reported below the nominated human and ecological criteria, with the exception of nickel and zinc results in some soil samples. GHD consider these results to be related to the natural rock and soil properties of the sampled material, and are not considered to be indicative of contamination.

Visual and olfactory indicators of hydrocarbon contamination were noted in two boreholes adjacent to the southern and eastern sides of the underground storage tank (UST). These samples reported results below the selected site assessment criteria.

The extent of hydrocarbon contamination associated with the UST is currently unknown and requires further investigation, or removal, of the potentially contaminated soils during removal of the UST.

Based on the findings of this investigation, GHD consider the risk of exposure to contaminants of potential concern (COPC) for on-site and off-site receptors to be low, however, we acknowledge the potential for contamination to exist associated with the UST.

Based on the completed scope of work, and in consideration of the proposed future recreational land use for the site, GHD recommended the following:

- Removal of the UST in accordance with the Work Health and Safety *Regulation 2017.* This would include site validation following removal and preparation of a validation report prepared by a suitably qualified person, such as a contaminated land consultant, in addition to completion of any soil or groundwater remediation following decommissioning of the UST, if remediation is required.
- A remedial action plan (RAP) should be developed for the removal of the UST and associated impacted soils (if required).

3.2 Summary of sources of contamination

It is understood that the sources of contamination in the former workshop area consist of

- One UST.
- Two AST's.
- Two fuel bowsers.

- Fuel lines associated with UST and bowsers.

Soil analytical results indicated hydrocarbon impact in soils down gradient of the UST however the detected concentrations were less than one order of magnitude greater than the laboratory limit of reporting and did not exceed the adopted guideline concentrations.

3.3 Conceptual site model

The conceptual site model (CSM) is a qualitative analysis tool, which identifies the contamination sources, transport mechanisms, exposure pathways and receptors considered. A CSM has been developed based on GHD's understanding of the site setting, including geology, hydrogeology and surrounding land use in order to identify potentially significant source-pathway-receptor (SPR) linkages in respect of risks to human health and the environment.

An analysis of potential source pathway receptor (SPR) linkages for human and environmental receptors is summarised in Table 3.

Table 3 Revised conceptual site model

Potential Sources	Potential Pathway	Potential Receptors	SPR Linkage
Spill and leaks of fuels and oils from UST, ASTs, and historical workshop equipment and maintenance activities	**Human exposure** Direct contact with contaminated soils Ingestion and inhalation of soils, vapours and dust **Environmental exposure** Vertical migration through the unsaturated zone into groundwater and subsequent infiltration into river system	**Human** Current and future occupants, construction and maintenance workers (both on- and off-site); Recreational users of the site; Surrounding residential receptors **Environmental** Groundwater and ecological systems such as the tributaries to Waitara and/or Berowra Creek and natural vegetation	Unlikely - Analytical results were reported below the selected human health and ecological guideline criteria, or can be explained by the natural rock properties of the gravel fill. Groundwater is deep at the site and is unlikely to be impacted by vertical migration of contaminants through the unsaturated zone.

Based on Table 3 one SPR pathway is potentially complete. This pathway is the release of fuel or fuel residues from the UST impacting human health or the environment. As detailed in Table 3, this pathway is considered unlikely based on investigation works to date.

It is noted that during the UPSS removal works there is the potential for site workers to come into contact with hydrocarbon impacts in the excavations.

4. Remedial options evaluation

4.1 Objectives of remediation

The remediation goals are consistent with NSW SEPP 55 guidelines and include:

- Meeting the conditions of the planning consent and to render the remediation area suitable for the land use;
- Demonstrating that the proposed remediation strategy for the remediation area is environmentally justifiable, practical and technically feasible;
- Adopting clean-up criteria appropriate for the future use of the remediation area to mitigate possible impacts to human health and the environment;
- Consideration of the principles of ecologically sustainable development in line with Section 9 of the *Contaminated Land Management Act* 1997; and
- Minimising waste generation under the *Waste Avoidance and Resource Recovery Act* 2001.

Further, the remediation must be completed in consideration of the Hornsby Shire Council development consent requirements.

4.2 Options for remediation

4.2.1 General

With regard to site remediation, the NSW EPA guidelines indicate that the preferred options for site remediation and management are (in descending order):

- On-site treatment of contamination so that the contaminant(s) are either destroyed or the associated hazard is reduced to an acceptable level; then
- Off-site treatment of contamination so that the contaminant(s) are either destroyed or the associated hazard is reduced to an acceptable level, after which the formerly contaminated material is returned to the site.

If these options cannot be implemented, then the other options that should be considered include:

- Removal of contaminated material to an approved site or facility (such as a landfill), followed, where necessary by the reinstatement of formed excavations using clean fill; then.
- Consolidation and isolation of the contaminated material on-site by containing the contaminated material within a properly designed barrier.

If remediation is likely to cause a greater adverse effect than would occur should the site be left undisturbed, then remediation should not proceed.

4.2.2 Options discussion

To establish the optimal remedial strategy for the UST and contaminated soil (if identified on site), GHD has completed screening of various available remediation options, taking into consideration the hierarchy endorsed by NSW EPA (as discussed in Section 5.2.1 of this report**)**, the principles of ecologically sustainable development and the objectives in Section 1.2. This list is not exhaustive; however, provides a list of technologies appropriate for addressing contamination at the site. A summary of this screening is presented on Table 4.

Table 4 UST and soil remedial options assessment

Process Type	Remedial Option	Effectiveness	Ease of Implementation	Ongoing Liability	Health / Environmental Risk	Time frame	Compliance	Capital Cost	Retained or Eliminated
UST and impacted soil									
Do nothing	Do nothing	Ineffective, UST and hydrocarbon impacted soil remains in situ	Easy to implement	Liability remains	No current risk based on investigations to date however potential future issues.	No time required	Does not comply with *Work Health and Safety Regulation 2017*	Lowest cost option	Eliminated – does not meet Councils objectives. Ongoing liability associated with disused UST in ground, potential non compliance with *Work Health and Safety Regulation 2017.*
Abandon in-situ, no soil excavation	Pump out UST, foam fill and leave in situ	Relatively effective however impacted soil remains in situ and potential future issues with UST degradation	Moderately easy to implement	Liability of UST in the ground remains – potential future issues with UST degradation, and ground subsidence.	No current risk based on investigations to date however potential future issues.	1 day	Complies with *Work Health and Safety Regulation 2017*	Moderate cost	Eliminated - does not meet Councils objectives. Ongoing liability associated with disused UST in ground
Remove UST, and impacted soil	Excavation and disposal	Effective and reliable – will remove liability associated with UST and impacted soil	Moderately easy to implement	None - will remove liability associated with UST and impacted soil	No current risk based on investigations to date. No future risks with infrastructure and impacted material removed.	2 weeks	Complies with *Work Health and Safety Regulation 2017*	Highest cost	Retained – removes liability associated with UST in ground, Complies with *Work Health and Safety Regulation 2017* and is in line with industry best practice.

4.3 Nominated remedial option

Option three to remove the UST and associated impacted soil was selected as the nominated remedial option. Whilst this option is the most time consuming and the most expensive, it removes ongoing liability, is compliant with the relevant legislation and removes any potential future risk associated with the presence of the UST and associated infrastructure.

5. Basis of remedial works

5.1 Data quality objectives

The purpose of establishing Data quality objectives (DQO) is to ensure the assessment is undertaken in a way that enables the collection and reporting of reliable data on which to base the assessment.

DQOs have been established for this assessment to assist the design and implementation of data collection activities, to ensure the type, quantity and quality of data obtained are appropriate and address the project objectives. The DQO process described in Schedule B2 of the National Environmental Protection Council (2013) *National Environment Protection (Assessment of Site Contamination) Amendment Measure (No.1)* (NEPM), was adopted for this project, and involves seven steps:

- Step 1: State the problem.
- Step 2: Identify the decisions.
- Step 3: Identify inputs to the decision.
- Step 4: Define the study boundaries.
- Step 5: Develop a decision rule.
- Step 6: Specify limits on decision errors.
- Step 7: Optimise the design for obtaining data.

A description of each DQO step developed for this project is provided in Table 5

Table 5 Data quality objectives

Step	Data quality objectives
Step 1 State the problem	The problem relates to the dis-used UPSS at the site, and that hydrocarbon contamination has been detected in soil adjacent to the UST. Potential source-pathway-receptor linkages of contaminants have been identified but not assessed and as such the contamination status of the site is unknown. The objectives of the remediation are to remove the UPSS and impacted soil surrounding the UPSS to the extent practicable. Validation of the UST pit and fuel line trenches can then be undertaken to demonstrate that all hydrocarbon impact has been removed to the extent practicable and that any remaining hydrocarbon impact does not pose a risk to receptors or affect the future use of the site. Investigation of the area to assess whether the potential contamination sources have actually caused site contamination and if these impacts may pose a risk to receptors or affect the proposed future use of the site.
Step 2 Identify the decision	The decisions for the assessment are the issues that need to be addressed arising from Step 1 and form the basis for risk characterisation: • Following UPSS removal and excavation of surrounding soils, is contamination present at the site and will the presence of any contamination affect the future use of the site or pose a risk to the identified receptors? • Is there a need for further assessment, remediation and/or management of contamination (if identified)?

Step 3 Inputs to the decision	The inputs to the decision represent the information and data that will be collected as part of the assessment include: • Sampling from the UST pit and fuel line trenches. Collection and laboratory analysis of soil samples; and • Comparison of the analytical data to applicable investigation levels to evaluate the potential for contamination to adversely impact upon human health and/or environmental receptors
Step 4 Boundaries of the study	The lateral boundaries of the study area are the boundaries of the remediation area, as depicted in Figure 2 Appendix A. The vertical boundary of the study area will be determined by the depth to the base of the tank and any potentially related soil contamination below the tank.
Step 5 Decision rules	The decision rules adopted in this investigation are as follows: • Spoil removed from the UST pit will be stockpiled separately and sampled for analysis of contaminants of potential concern (COPC) to assess the suitability for reuse or waste classification. • The concentrations of COPC are to be assessed against adopted site investigation levels, which are sourced from the NSW EPA, and NEPM endorsed guidelines with reference to site-specific exposure scenarios. • If concentrations of contaminants of potential concern are below the adopted investigation levels, then contamination at the site will be considered unlikely to pose an unacceptable risk to identified receptors. In such case, spoil will be returned to the UST pit as fill material. • Conversely, when concentration(s) of contaminants of potential concern exceed the adopted site investigation levels, spoil will be removed from site in accordance with the nominated remedial option as noted in Section 4.3.
Step 6 Tolerable limits on decision errors	Two types of decision errors are possible: • Sampling errors which occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site, i.e. the samples collected are not representative of the site conditions such that contamination is either missed or overstated. • Measurement errors which occur during sample collection, handling preparation, analysis and data reduction. To minimise the potential for decision errors, a number of data quality indicators (DQIs) will be evaluated, namely representativeness, completeness, comparability, precision, sensitivity and accuracy. The DQIs are based on those listed in Appendix C of the NEPM.
Step 7 Optimisation of the data collection process	For the assessment, the data collected will be optimised by: • Engagement of specialist GHD personnel with previous experience in the assessment and remediation of contaminated sites to cover all aspects of the assessment. • Laboratory analysis of selected soil samples for identified contaminants of potential concern. Samples will be selected on the basis of: • Visual and olfactory indications of potential contamination presence observed, as well as Photo Ionisation Detector (PID) screening results. • Assessment of data quality with reference to the specified DQIs, to evaluate the reliability and useability of the obtained data. • Assessment of laboratory analytical results against adopted criteria.

5.2 Validation criteria

The establishment of applicable remediation criteria is required to demonstrate that the site is suitable (with respect to contamination) for the proposed land use (i.e. public open space).

5.2.1 Soil – Human based investigation and screening levels

For assessing contamination levels in soil in urban settings during the UPSS removal, the NEPM (2013) presents health based investigation levels (HILs) and health screening levels (HSLs) for different land uses (e.g. industrial/commercial, residential, recreational etc).

The site is proposed to be developed into a public park containing playing fields etc. Contaminant concentrations, excluding TRH, BTEX and naphthalene, will be screened against the HILs applicable to public open space land use (HIL C) as per the current zoning (public recreation).

Similarly, TRH, BTEX and naphthalene concentrations will be assessed against the soil HSLs for vapour intrusion from the relevant depth and soil matrix applicable to public open space land use (HSL C) from the NEPM (2013).

For the intrusive maintenance workers, the recommended assessment criteria for vapour and direct contact pathways provided in the *Cooperative Research Council for Contamination Assessment and Remediation for the Environment* (CRC CARE) Technical Report no. 10 (Friebel and Nadebaum, 2011) will be adopted.

5.2.2 Soil – Ecological screening levels

To assess the risk posed by contaminants of concern to ecological receptors, the NEPM (2013) Ecological Investigation Levels (EILs) have been adopted. EILs have been developed for common metal contaminants in soil as well as several other compounds based on a species sensitivity distribution model. EILs consider the physiochemical properties of soil and contaminants and the capacity of the soil to accommodate increases in contaminant levels above natural background while maintaining ecosystem protection.

EILs apply principally to contaminants in the top two metres of soil at the finished surface/ ground level which corresponds to the root zone and habitation of many species. For the purposes of this assessment the urban, residential and public open space EIL is considered the most appropriate given the proposed land use of the site.

Additionally to assess the risk posed by hydrocarbon contamination to ecological receptors by petroleum hydrocarbons, NEPM Ecological Screening Levels (ESLs) have been adopted. ESLs have been developed for Total Petroleum Hydrocarbon fractions F1 – F4 as well as BTEX and benzo (a) pyrene in soil. For the purposes of this assessment, the urban, residential and public open space ESL is considered the most appropriate given the proposed land use of the site.

5.2.3 Soil – waste classification criteria

Material requiring off site disposal will be classified prior to transport and disposal. Soil analytical results will be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines – Part 1: Classifying Waste.

5.2.4 Water

Based on the conceptual site model, it is not anticipated that groundwater will be encountered during the UPSS removal works.

6. Remedial works plan

6.1 Roles and responsibilities

Currently, the responsible parties are as follows:

Client: Hornsby Shire Council.

Environmental Consultant: GHD.

Remediation Contractor: To be appointed.

6.2 Preliminaries and approvals

Prior to commencing remedial works, all relevant licences and approvals must be obtained by the site owner or by the Environmental Consultant and/or Remediation Contractor (on their behalf).

Prior to establishment at the site, the Remediation Contractor must show Council that they possess the relevant plans, programs, licences, certificates and other documents necessary for the commencement of the work.

These documents are anticipated to include, but not limited by the following:

- A copy of the RAP that was submitted as part of the current DA application to Council (DA/101/2019)
- A copy of the DA consent conditions, relating to the remediation works. As the planned remediation works for the UPSS replacement are considered to be classified as 'Category 1 remediation works: work needing a consent' based on the site being a scenic area and classified as significant biodiversity – Tree and Vegetation Preservation (SEPP 55). UPSS removal works will be assessed as part of the current Development Application (DA/101/2019) for the quarry earthworks
- Management plans including a project management plan, site management plan, health and safety plan, and a community consultation plan (if required); and
- WorkCover Authority notifications.

6.3 General

All excavation works should be undertaken by licensed contractors, experienced in the decommissioning and removal of fuel infrastructure and the remediation of contaminated soils.

An environmental scientist should be present during the excavation works, particularly to assess the contamination status of the soil excavated from around the tanks, and to determine whether further excavation of tank pit walls and floor is required to remove contaminated soil.

As a minimum, the relevant Codes of Practice and guidelines detailed in Section 1.3 should be adhered to.

6.4 Primary source removal for UPSS infrastructure

The UST and associated pipework and bowsers are located adjacent to two bunded AST's which will be remaining in situ. The UST and associated infrastructure is to be removed is shown in Figure 2, Appendix A. Based on a geophysical assessment, the UST is estimated to be approximately 7.8 m long with a diameter of approximately 2.2 m. There are two AST's present at the site, which are similar in size.

Initially the tank contents (if any) will be removed by a licensed liquid waste contractor and disposed at a licensed disposal / processing facility. After the tanks have been de-gassed and are certified gas free, an experienced contractor will remove the UST and pipework by appropriate methods and will then dispose of or recycle the tanks and pipes.

Work will be carried out in accordance with relevant codes of practice, Australian Standards and NSW WorkCover regulations. The contractor should make allowance for temporary shoring of excavations, if deemed necessary, particularly along the western boundary of the site to ensure that stability of the adjacent structure (AST's and shelter) is maintained.

Soils that are excavated to facilitate the removal of the underground infrastructure will be checked visually and screened using a photo-ionisation detector (PID) for the presence of petroleum hydrocarbon contamination. Excavated material with obvious visual evidence of hydrocarbon impact or elevated PID measurements will be segregated from cleaner or less impacted material and placed into separate stockpiles if practicable.

A suitably qualified and experienced Environmental Scientist will guide the excavation of potentially contaminated soils. The excavations will be extended to the extent practicable until visual, olfactory and field screening with a PID by on site personnel indicate that the contaminated soil above the site remediation criteria is likely to have been removed. Excavated soil will be temporarily stockpiled in a designated stockpile area.

Validation sampling will be carried out to confirm that contaminated soil has been removed. The excavation should be left open and fenced off to prevent access until validation results have been obtained. The contractor will need to maintain the excavation according to NSW WorkCover regulations.

6.5 Management of stockpiled material

Temporary stockpiles will be placed on hard standing or HDPE liner. Should the stockpiles be retained onsite for greater than 24 hours, they shall be covered to prevent dust, odour or run off.

The Environmental Consultant will collect samples of the stockpiled material created during the excavations, to assess its suitability for reuse or waste classification (as required).

6.6 Reinstatement of the excavations

Following the completion of excavation and validation works, remaining excavations will be backfilled with material that will comprise validated existing site soils that are deemed suitable for re-use on site, approved excavated natural material (ENM) already on site from North Connex, or approved virgin excavated natural material (VENM).

It is noted that excavated material that was imported to the site as ENM from the North Connex project is considered suitable for use at the site and therefore it would be acceptable to use this ENM material to backfill the excavation.

Any material that is imported to the former workshop area for backfilling, should be inspected and confirmed to be suitable for the intended use. This procedure would involve:

- Reviewing the history of the source of the material including any VENM or ENM certification.
- A visual inspection for foreign material, unusual staining and any odours.
- Sampling of the material for chemicals of potential concern (if required).

Where excavations are backfilled, the material will be compacted to a standard suitable for the proposed above ground usage.

6.7 Pollution Incidents

During the tank replacement works, all practicable measures will be implemented to prevent pollution incidents. This shall include: pumping out the UST and fuel lines etc prior to excavation; measures to prevent dust, soil or spills of impacted water or any other fluid entering the stormwater drains. In the event of a pollution event occurring, the following protocol will be implemented:

- Works will stop immediately. This area will be isolated to minimise potential disturbance or further pollution (unless clean up is underway).
- Immediate notification of sub-contractors on-site, the environmental consultant, Council and the NSW EPA. All parties should be notified within 24 hours.
- An appropriately experienced environmental consultant will assess of the nature and extent of the pollution, which may include sampling and laboratory analysis.
- The pollution will be cleaned up and measures put in place to prevent further pollution. Validation of the clean-up will be undertaken and documented as required.

7. Sampling and validation plan

To obtain agreement that the site has undergone appropriate and effective remediation works, and that it is suitable for the proposed site use, validation of the tank excavation will be undertaken.

This section summarises the scope of works for the on-site sampling and validation program. Sampling will be undertaken in accordance with the relevant guidelines listed in Section 1.4

7.1 Soil validation strategy

7.1.1 Validation of UST areas

Following completion of excavation works, the number and location of soil samples collected from the excavations will be in accordance with relevant guidelines and/or standards referenced in Section 1.4. Quality control samples will be collected as specified in Section 7.3.

The indicative extent of the excavation is shown on Figure 2, Appendix A.

The UST underlies a concrete slab with dimensions of 8.6 m x 4.5 m. This slab will be excavated to allow access to the soils and UST below. The minimum excavation area will be similar to the concrete slab (8.6 m x 4.5 m). Enlarging of the excavation to allow for benching or shoring may be required.

The minimum number of soil validation samples will be:

- Two from the base beneath the centre of the tank;
- Two soil samples from each of the longer north to south walls; and
- Two samples from each of the shorter east to west walls.

The wall samples are proposed to be collected at a mix of depths and will be collected when all material considered to impacted by hydrocarbons (based on visual observations and PID readings) has been removed.

The validation soil samples will be analysed for COPC including TRH, BTEXN, and lead.

7.1.2 Validation of fuel dispensing area and associated fuel lines

Following completion of the excavation works associated with the removal of fuel lines, soil validation samples will be collected at a rate of one sample per five lineal metres. Additional samples may be required if excavations extend beyond one metre depth.

The soil samples collected from this area will be analysed for TRH, BTEXN, and lead.

7.2 Stockpile sampling

For stockpiled material (including the bedding sands), sampling is proposed at a frequency of approximately one per 25 m^3 at each stockpile (not less than three per stockpile), or in accordance with NEPM (2013) guidance.

Excavated soils will be sampled for COPC and will be classified in accordance with guidelines for reuse on site (i.e. suitable for public open space) or disposed off-site to a licenced waste facility (as applicable). No material is to be disposed offsite without formal approval from Council.

The Environmental Consultant shall prepare appropriate reports for the stockpile sampling e.g. a waste classification report.

7.3 Quality control and quality assurance (QA/QC)

All fieldwork will be conducted in general accordance with industry standards. A summary of the QA/QC protocols to be followed is presented in Table 6

Table 6 QA/QC protocols

Task	Description
Decontamination procedures	The use of new disposable gloves for the collection of each sample, decontamination of all multiple use sampling equipment between each sampling location (using a phosphate free 'Decon' detergent) and the use of dedicated sampling containers provided by the laboratory.
Sample procedures	Samples will be collected and immediately transferred to sample containers of appropriate composition and preservation for the required laboratory analysis. All sample containers will be clearly labelled with a sample number, sample location, sample depth and sample date. The sample containers will then be transferred to an ice filled cooler for sample preservation prior to and during shipment under a chain of custody to the testing laboratory.
Duplicate samples	Duplicates will be collected and analysed at a rate not less than 10% for both inter and intra laboratory duplicates. A nominal acceptance criterion of 30% RPD for field duplicates and splits for inorganics and a nominal acceptance criterion of 50% RPD for field duplicates and splits for organics. It is noted that this may not always be achieved, or may be exceeded at low analyte concentrations.
Rinsate	One rinsate a day will be collected when non-dictated equipment or when equipment requires decontamination between sampling points is being used. Results should all be less than the laboratory's limit of detection.
Trip blanks	One trip blank per sample batch will be sent to the laboratory. Results should all be less than the laboratory's limit of detection.
Laboratory quality control	The primary and secondary project laboratories should adopt their internal procedures and NATA accredited methods in accordance with their quality assurance systems.

7.4 Reporting

At the completion of the site works, a UPSS validation report will be prepared in general accordance with the UPSS Regulation and NSW DECCW (2010) *UPSS Technical Note: Site Validation Reporting* and the relevant NSW EPA guidelines. The UPSS validation report will detail the methodologies and results of the validation works.

The UPSS Validation Report will need to include the following:

- Details of the remedial works completed, including sampling methodologies and quality control procedures.
- Calibration records.
- Laboratory chain of custody forms and certificates.
- Waste tracking documentation including characterisation sampling for off-site disposal, stockpile management, confirmation of off-site disposal and any imported fill (VENM) certificates.
- Photographs.
- Evaluation of results including statistical analysis and comparison with the relevant criteria.
- Graphical representation of the remedial works including identification of remedial areas and all validation sampling locations.

- Confirmation that the overall remedial goal has been achieved.

7.5 Unexpected finds

Should unexpected contamination be found on-site, works will stop immediately. This area will be isolated to minimise potential disturbance of affected soils.

Unexpected contamination could include:

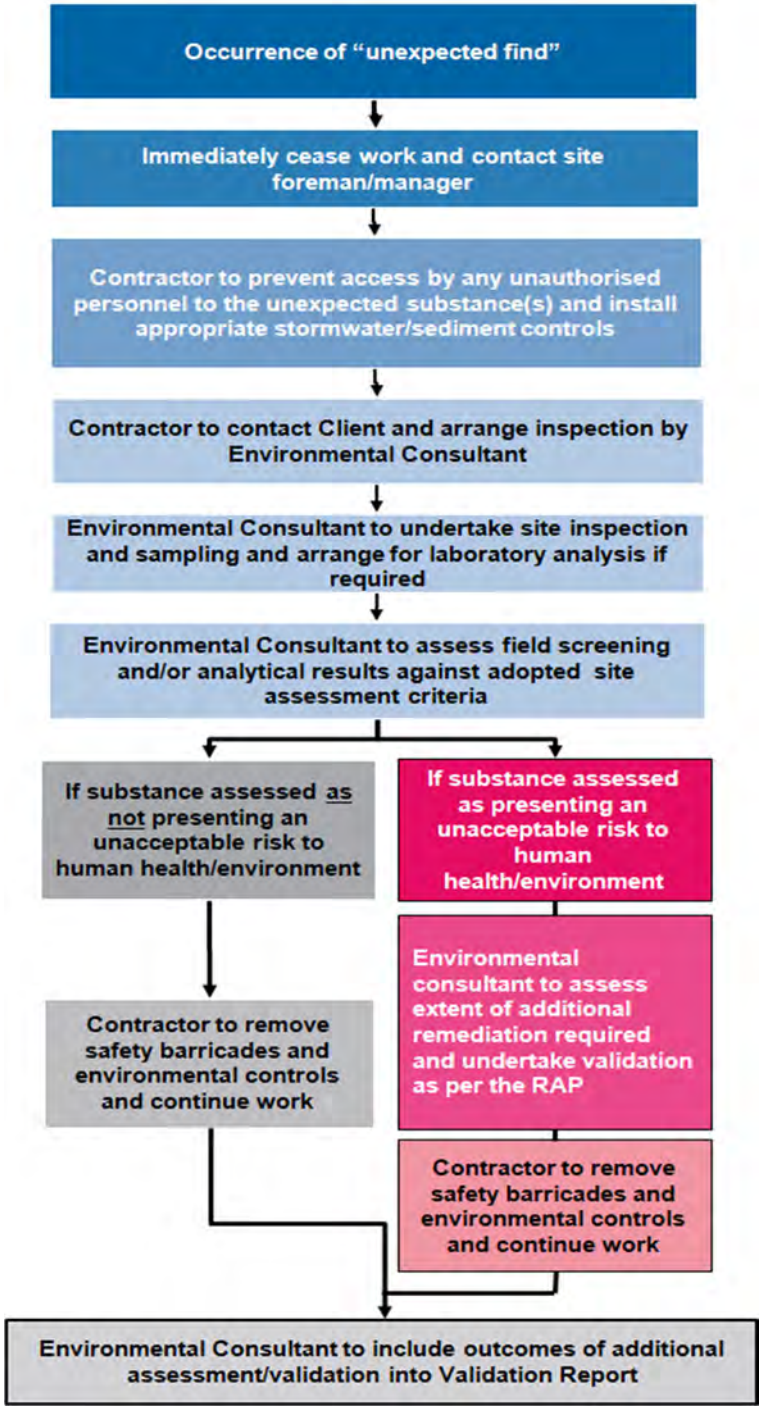
- Unexpected staining, presence of LNAPL or odours in soil.
- Additional subsurface infrastructure such as underground tanks and pipes that were not identified previously.
- Encountering contaminated shallow (perched) water.
- Asbestos fragments.
- Buried wastes.

The general approach for managing unexpected finds comprises:

- Immediate notification to Council and the Environmental Consultant of the unexpected find.
- An appropriately experienced Environmental Consultant will assess of the nature and extent of the unexpected contamination, which may include sampling, laboratory analysis and reporting.
- Additional remediation work (including an amendment to this RAP), and validation if required. If the RAP is amended, it will be submitted to council for approval before works are undertaken.

Procedures to be followed in the event of an unexpected find are shown in **Chart 1**.

Chart 1 – Unexpected finds flowchart



8. Site management

8.1 General

Given the proposed works will result in the disturbance and exposure of contaminated soils during remediation, an activity specific Site Health and Safety Plan (SHSP) and Safe Work Method Statement (SWMS) must be prepared by the contractor undertaking the works (with assistance from a suitably qualified health and safety or environmental consultant, where required). This is so the protection of the environment and the health and safety of workers can be adequately addressed.

The SHSP and SWMS shall include measures to manage the exposure of site workers and users to contamination to acceptable levels and detail the appropriate personal protective equipment (PPE) requirements during the work.

In addition, the SHSP and SWMS must have provisions for equipment and personnel decontamination to manage migration of contamination via equipment and personnel. All workers must be inducted into the SHSP and SWMS by an appropriate person prior to work commencing.

A Site Management Plan (SMP) must be prepared by the contractor and submitted to Council prior to starting the UPSS replacement works. It shall be the responsibility of the remediation contractor to provide, install and maintain all required environmental control measures and the project environmental consultant will undertake inspections of the environmental control measures. The contractor must implement all necessary environmental control measures in accordance with NSW OEH, Safe Work NSW and Council requirements.

The environmental control measures described in the following sections are those anticipated to be required and are not necessarily exhaustive. The contractor must identify any additional control measures considered required.

8.1.1 Occupational health and safety

The appointed contractor will ensure that a project specific occupational health and safety plan has been prepared. This RAP does not relieve the contractor of their responsibility for the health and safety of their employees, sub-contractors and visitors to the Site, nor their responsibility for preventing contamination of areas outside remediation work areas.

Specific safe work method details for the remediation and management of contamination on the site will be the responsibility of the appointed contractor and will depend upon the equipment used and the overall sequence of remediation.

The SMP must include details regarding safe loading and unloading of excavation machines, plant and equipment to ensure appropriate protection of existing landscaping, street trees and any public land.

8.1.2 Access control

The SMP must include details for safe access to and from the site (defined as the former workshop area) during works. Access to the site will be restricted to authorised staff and contractors who have been inducted and appropriately trained for the works being undertaken. It is anticipated that access to and from site will be via Quarry Road. Where required, traffic management will be employed for access to the site.

The SMP must also include provisions for site security. Fencing and/or hoarding will be maintained around the perimeter of the site during the works.

Signage, including contractor details and contact numbers, will be erected near the gate at the site. The signage will remain displayed on the site entrance throughout the duration of the remediation works. Any lighting requirements for the site, road and footpath should also be included in the SMP.

The contractor is responsible for keeping public roads on the routes of site vehicle traffic clean of any material sourced from the site. All equipment/ trucks are to be decontaminated if required prior to leaving the site to prevent the inadvertent transport of contaminated material off-site.

8.1.3 Inductions

The contractor will be responsible for conducting site safety inductions on all personnel required to be in the work area. Inductions will include, but may not be limited to, the following information:

- Safe work method statements.
- Personal protective equipment.
- Responsibilities of personnel.
- Emergency response procedures.
- Contact details of key personnel.

Documented evidence that site staff have completed the site induction must be recorded in the contractor's health and safety plan, which must be retained on-site at all times for inspection.

In addition to the general site induction, the site supervisor must conduct daily "toolbox" talks with site staff prior to commencing works each day. The toolbox talks must address the following as a minimum:

- Specific tasks to be conducted.
- Potential changes to the program.
- Issues and concerns.
- Site activities that may influence the works being carried out (e.g. other works onsite).
- Environmental factors that may influence the works, such as weather.

8.1.4 Incident Reporting Procedures and Timeframes

All incidents (including near miss incidents) occurring on the job must be immediately reported to the Site Manager. In the event of an emergency, all members of the project team shall assemble at the nominated assembly point and wait for further instruction from the Site Manager or delegate at the assembly area. The Site Manager will then assess the situation and, if required, inform other affected parties including Council, neighbours and site staff.

If there is an incident, which creates an immediate risk to the surrounding environment requiring an emergency response, the Site Manager will contact a suitably qualified hazardous materials contractor to contain the issue and mitigate the risk, as far as possible. Following the emergency response actions, the Site Manager should engage a suitably qualified environmental professional to assess the extent of impact to the environment and propose appropriate remedial actions to mitigate the risk to an acceptable level.

8.2 Soil and water management

The SMP must include details of soil and water management. The following measures outline generalised methods that should be implemented to manage soil and water (if any) related impacts. However, activity specific factors need to be considered and appropriate control

measures assessed for the specific activity. Management measures should include (but are not necessarily limited to):

- Installation and maintenance of secure fencing (with shade cloth) around the site boundaries to prevent public access.
- Implementation of sediment and erosion controls to divert surface water away from open excavations such as sand bags.
- Implementation of control measures to prevent surface run-off impacting local drainage networks.
- Covering of temporary stockpiles (if required) with high density polyethylene (HDPE) sheeting. Stockpiles should not be placed near the site boundary, drainage lines, easements, footpaths, roadways, gutters or stormwater pits.
- Significant quantities of groundwater are unlikely to be encountered during the excavation works. Where possible, accumulation of water in excavations will be minimised by back filling open excavations as soon as practicable. Any perched or groundwater ingress occurring during excavation works will be pumped into a mobile tanker, transported and disposed at an appropriately licenced facility. In the event that excessive volumes of water are encountered, further excavations will be terminated, and any open excavations backfilled until an appropriate way forward is established.
- Control of erosion or dust migration from stockpiles, which may involve:
  - Regular dampening of stockpiles with water mist to minimise dust generation. Note that the amount of water used for dust suppression needs to be minimal in order to prevent runoff.
  - Wetting down of exposed soils or delaying of excavation works, in the case that dust migration occurs due to high winds.

8.3 Stormwater run-off

The SMP must include details of methods to prevent pollutants entering the stormwater system and waterways. The following measures will be employed to minimise the risk imposed by stormwater run-off from impacted areas:

- Silt fences will be established across all areas where surface water could flow from the proposed excavation/stockpile areas using geofabric and absorbent booms.
- Covering of any stockpiles of contaminated soil in order to prevent leaching of chemicals and subsequent transport into site drainage.

No visibly dirty water shall migrate as surface water flow from the site.

8.4 Dust control

Generation of dust during remediation works may occur. Site activities will be managed to minimise the generation of dust and the movement of dust off the site.

The following strategies will be implemented to minimise dust generation and dust movement:

- Wetting down of dry soils during excavation and loading.
- Covering loads during transportation.
- Application of shade cloth or similar to perimeter fencing.
- Limiting excavation and loading activities during high winds.
- Wetting down stockpiles and/or covering with plastic/geofabric.

- Maintaining stockpile heights below the heights of perimeter fencing.

8.5 Odour control

Given the anticipated levels and type of contamination expected at the site, generation of odours to a level that requires action is not considered likely, however, odour controls should be adopted as appropriate to ensure that no offensive odours occur at or beyond the site boundary.

The following odour management procedures may be used:

- Undertaking the excavation works in a staged manner to limit the surface area and amount of potentially odorous materials being exposed.
- Application of odour suppressants (e.g. Biosolve® or Killsmell®).
- Covering of stockpiled material until disposal.
- Covering of transported soil, to suppress the release of the odours.

Should volatile hydrocarbon compounds be identified during remediation works, air monitoring will be carried out during the excavation works using a calibrated PID, to assess the potential for ionisable volatile organic compounds (VOC) to be present. Air quality within workers' breathing zones will be monitored during the remediation works using the PID. Workers will stop work and withdraw from the work area when PID readings are continuously greater than 10 ppm in the workers' breathing zone. Use of respirators, watering or covering of stockpiles, and suspension of site works will be implemented as appropriate.

8.6 Noise controls

Noise producing machinery and equipment will only be operated during approved working hours. Australian Standard AS2436-2010 (R2016) Guide to noise control on construction, maintenance and demolition sites outlines guidelines for the minimisation of noise on construction and demolition sites and these will be followed at all times.

Mechanical plant, equipment and the like used during remediation works/activities will use all practical and reasonable noise attenuating devices and measures to minimise noise being transmitted from the Site. All equipment and machinery must be properly maintained and operated in an efficient manner to minimise the emission of noise.

Best practical means to minimise noise levels will be used to minimise noise levels throughout remediation works.

8.7 Hours of operation

All operations will be conducted within the working hours permitted by Council. The only works permitted outside these hours shall be emergency response procedures and subject to approval by Council.

Remediation work are proposed to be conducted between the following nominal hours:-

Monday – Friday	0700 hrs – 1800 hrs
Saturday	0800 hrs – 1300 hrs
Sunday & Public Holidays	No work is permitted

8.8 Communication & complaints

Communication and complaints received for the site must be reported to Council. All communications and complaints will be assessed and an appropriate response, corrective and/or preventative action implemented (as necessary).

A communication and complaints register will be operated on site to ensure that concerns of local residents and businesses are recorded and addressed.

8.9 Emergency preparedness and response

The appointed contractor will ensure that plans to respond to incidents and emergencies (e.g. fires, spills or other uncontrolled releases) have been prepared. The appointed contractor will ensure that all employees, sub-contractors and visitors to the site are made aware of the emergency protocols in place. A Contingency and Emergency Response Plan should be prepared by the contractor. The purpose of the contingency plan is to identify unexpected situations that could occur during the project, and to specify procedures that can be implemented to manage such situations and prevent adverse impacts to the environment and human health. The information that will be contained herein will include, but is not necessarily limited to:

- Assignment of responsibilities to nominated key personnel.
- Hazard assessment of potential off-site impacts.
- Contingency responses.
- Reporting to regulatory authorities.
- Unexpected situations.

9. Summary

The purpose of this RAP is to provide a framework for the remediation and validation of soil from excavated areas following the removal of UPSS infrastructure to evaluate the suitability of the site for its proposed use as a public park (public open space)

The actions required to carry out the RAP are summarised as follows:

- Develop a Site Management Plan (to be prepared by the nominated contractor).
- Prior to any excavation works, undertake a dial before you dig search and underground service identification.
- Remove concrete and excavate to expose UST.
- Remove all fuel from drainage points, pipework and UST. De-gas the UST prior to safe removal and transport for off-site destruction.
- Dispose of the UST off-site by a licensed waste contractor.
- Remove any associated infrastructure including underground pipework.
- Collect validation soil samples from the walls and base of the excavations for UST and fuel line excavations for laboratory analysis.
- Ensure that the validation samples show that no contamination exists within the excavation that is above the nominated screening criteria. If this is not the case, undertake further excavation of affected soils, until validation samples show that the remediation criteria has been achieved.
- Stockpile and separate any impacted soils that are considered unsuitable, which are to be classified and disposed off-site to an EPA approved waste facility.
- Backfill the resulting excavations with validated existing site soils from the tank excavation that are deemed suitable for re-use, approved excavated natural material (ENM) already on site from the North Connex project, or approved virgin excavated natural material (VENM) imported to site.
- Prepare a Validation Report.

The validation report will be provided to Council in accordance with the expected conditions of the development consent.

10. Limitations

This Hornsby Quarry UST – Remedial Action Plan ("RAP"):

1. *has been prepared by GHD Pty. Ltd. ("GHD") for Hornsby Shire Council (Council)*
2. *may only be used and relied on by Council;*
3. *must not be copied to, used by, or relied on by any person other than Council without the prior written consent of GHD and subject always to the next paragraph;*
4. *may only be used for the purpose of Remedial Works (and must not be used for any other purpose).*

GHD has prepared this RAP on the basis of information provided by Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked ("Unverified Information") beyond the agreed scope of work, as well as site investigations undertaken by GHD.

GHD expressly disclaims responsibility in connection with the Unverified Information, including (but not limited to) errors in, or omissions from, the RAP, which were caused or contributed to by errors in, or omissions from, the Unverified Information.

The opinions, conclusions and any recommendations in this RAP are based on information obtained from, and testing undertaken at or in connection with, specific sampling points and may not fully represent the conditions that may be encountered across the site at other than these locations. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this RAP are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this RAP.

GHD has considered and/or tested for only those chemicals specifically referred to in this RAP and makes no statement or representation as to the existence (or otherwise) of any other chemicals.

Site conditions (including any the presence of hazardous substances and/or site contamination) may change after the date of this RAP. GHD expressly disclaims responsibility:

- *arising from, or in connection with, any change to the site conditions; and*
- *to update this RAP if the site conditions change.*

Except as otherwise expressly stated in this RAP, GHD makes no warranty or representation as to the presence or otherwise of asbestos and/or asbestos containing materials ("ACM") encountered in the remediation excavations or found elsewhere on the site. If fill material has been imported on to the site at any time, or if any buildings constructed prior to 1970 have been demolished on the site or material from such buildings disposed of on the site, the site could possibly contain asbestos or ACM.

Subsurface conditions can vary across a particular site and cannot be exhaustively defined by the investigations carried out prior to this RAP. As a result, it is unlikely that the results and estimations expressed or used to compile this RAP will represent conditions at any location other than the specific points of sampling. A site that appears to be unaffected by contamination at the time of the reports attached to this RAP may later, due to natural causes or human intervention, become contaminated.

Except as otherwise expressly stated in this RAP, GHD makes no warranty, statement or representation of any kind concerning the suitability of the site for any purpose or the permissibility of any use, development or re-development of the site.

These disclaimers should be read in conjunction with the entire RAP. This RAP must be read in full and no excerpts are taken to be representative of the findings of this RAP.

Appendices

Appendix A - Figures

Legend

- Site boundary
- Remediation area
- Watercourses

Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Hornsby Shire Council
Hornsby Quarry
UST RAP

Site location

Project No. 2126457
Revision No. A
Date 04/10/2019

FIGURE 1

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Print date: 04 Oct 2019 - 11:54

Legend

- Remediation area
- Excavation area
- UST - Proposed to be removed
- AST - Not proposed to be removed
- Existing bowser

Paper Size ISO A4

0 2.5 5 7.5 10

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Hornsby Shire Council
Hornsby Quarry
UST RAP

Project No. 2126457
Revision No. A
Date 04/10/2019

Site layout and extent of excavation

FIGURE 2

\\ghdnet\ghd\AU\Sydney\Projects\21\26457\GIS\Maps\Deliverables\Hornsby Quarry UST RAP\21_26457_Z004_ExtentofExcavation.mxd
Print date: 04 Oct 2019 - 14:25 Imagery extracted from Nearmap on the 02/10/2019

Data source: . Created by: jwatson2

Legend

Borehole

Paper Size ISO A4

0 5 10 15 20

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Hornsby Shire Council
Hornsby Quarry
UST RAP

Project No. 2126457
Revision No. A
Date 03/10/2019

Previous investigation locations

FIGURE 3

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Print date: 03 Oct 2019 - 10:33 Imagery extracted from Nearmap on the 02/10/2019

Data source: . Created by: jwatson2

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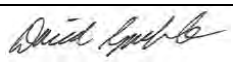
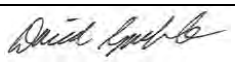
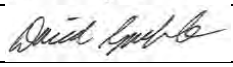
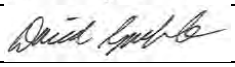
https://projects.ghd.com/oc/Sydney/hornsbyquarryrehabil/Delivery/Documents/2126457_Hornsby Quarry UST RAP.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	J. Ewing	H. Milne		A.Roberts		
0	J.Ewing	D. Gamble		D.Gamble		16/10/19
1	J.Ewing	D. Gamble		D.Gamble		22/10/19

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Appendix K – Preliminary Construction Environmental Management Plan

Hornsby Shire Council

Hornsby Quarry Rehabilitation EIS

Preliminary Construction Environmental Management Plan

November 2019

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Appendix A – Plans and Procedures

1. Introduction

1.1 Overview

Hornsby Shire Council (Council) proposes to rehabilitate the former Hornsby Quarry site (the project). GHD Pty Ltd (GHD) has been engaged by Council to prepare a Preliminary Construction Environmental Management Plan (CEMP) for the project.

1.2 Purpose of this preliminary CEMP

The purpose of this preliminary CEMP is to provide an environmental management framework and associated management procedures to avoid or minimise the actual and potential environmental impacts associated with rehabilitation of the quarry.

1.3 Limitations

This report: has been prepared by GHD for Hornsby Shire Council and may only be used and relied on by Hornsby Shire Council for the purpose agreed between GHD and the Hornsby Shire Council as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Hornsby Shire Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Hornsby Shire Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. General

2.1 Background

Hornsby Quarry is a former breccia hard rock quarry that was operated by private business from the early 1900s and ceased in the late 1990s. The quarry is considered a safety risk and has therefore been closed to the public since that time.

Hornsby Shire Council (Council) acquired the site in 2002 and has since undertaken a number of investigations and studies with regard to the future use of the site and the environmental and technical constraints that the site poses. Through these studies, Council identified the need to:

- stabilise the quarry
- manage the site in a safe and environmentally sustainable manner, and
- actively seek opportunities to fill the quarry void with spoil arising from major infrastructure projects in the region

Council also resolved to ultimately develop the site into a community parkland.

In 2016 approval was granted to Roads and Maritime Services (Roads and Maritime), to beneficially reuse up to 1.5 million cubic metres of excavated rock and soil (spoil) from the construction of the NorthConnex tunnel to partially fill the Hornsby Quarry (the '2016 Planning Approval'). Filling has been undertaken at the site under this approval.

Following completion of filling by NorthConnex, Council is proposing to rehabilitate and reshape the site in a suitable way to ensure public safety and allow future development into a parkland for community use (the project).

2.2 Site location

The project is located in the Hornsby local government area (LGA), approximately 21 kilometres (km) to the north west of the Sydney central business district.

The site can be defined as:

- Lots A, B, C, D and E in Deposited Plan (DP) 318676
- Lot 1 DP 926103
- Lot 1 DP 926449
- Lot 1 DP 114323
- Lots 1 and 2 in DP 169188
- Lot 7306 DP 1157797
- Lot 1 DP 859646
- Lot 1 DP 926449
- Lot 13 DP 734459
- Lot 114 DP 749606
- Lot 213 DP 713249
- Summers Avenue, Hornsby partly formed
- Old Mans Valley Trail

Figure 2-1 shows the location of the site.

2.2.1 Surrounding land uses

Land use and existing development in the areas surrounding the site are predominantly suburban residential, with commercial and light industrial land uses along Peats Ferry Road.

Residential areas are located to the south of the site and on the southern side of Quarry Road. Residential development also occurs to the north of the site, off Fern Tree Close and Manor Road and to the east on Bridge Road and Peats Ferry Road, as shown on Figure 2-1.

Other surrounding land uses include the Mt Wilga Private Hospital to the north and the Hornsby Town Centre to the east, Hornsby TAFE, the Hornsby Aquatic and Leisure Centre, Hornsby Park, Hornsby Shire Council Chambers, police and Court precinct, various businesses along Peats Ferry Road and the Hornsby railway station.

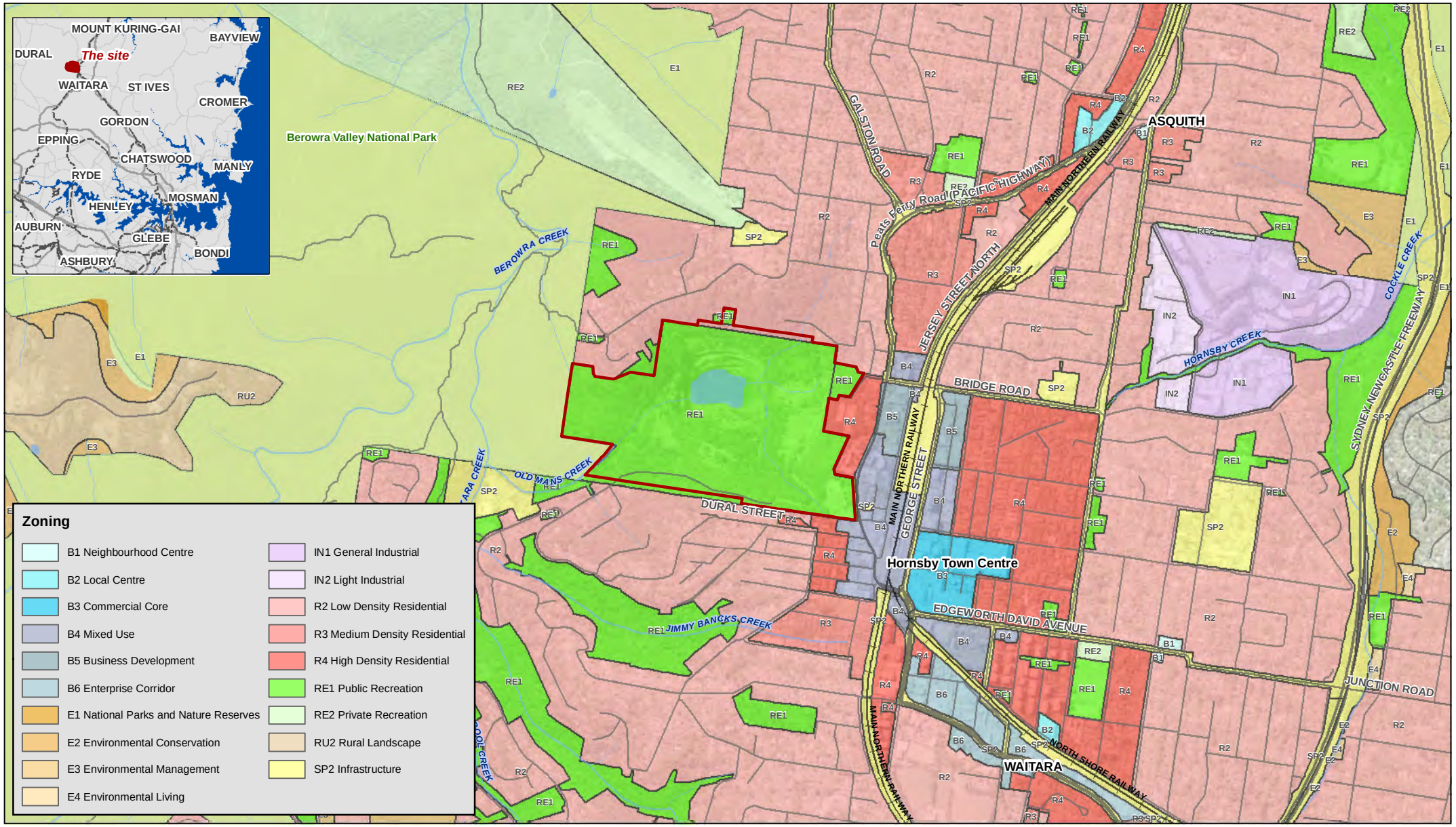
To the west of the site is an extensive bushland area known as Berowra Valley National Park, which is primarily managed by the NSW National Parks and Wildlife Service in conjunction with Council.

2.2.2 Land zoning

The majority of the site is zoned RE1 Public Recreation and a small section of land within the site that is connected to Summers Avenue is zoned R2 Low Density Residential. Land zoning is shown on Figure 2-1

2.2.3 Land ownership

The majority of the site is owned by Council. Lot 7606, DP1157797 is Crown land.



Paper Size A4

0 200 400 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Legend

- The site
- Watercourses
- Parks and reserves

Hornsby Shire Council
Hornsby Quarry Rehabilitation

Job Number 21-26457
Revision A
Date 29 Aug 2019

Site location, surrounding land uses and zoning

Figure 2-1

G:\21\26457\GIS\Maps\Deliverables\21_26457_Z015_LEP.mxd

Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

Data source: NSW LPI (DTDB), Topographic base data, 2012; NSW LPI (DCDB), Topographic base data, 2015. Created by:eibbertson

2.3 Work zones

The rehabilitation works are split across four work zones:

- Northern spoil mound works area
- Southwest fill works area
- Quarry void works area
- Old mans valley works area

The location of each work zone is shown in Figure 2-2.

2.3.1 Nature of work

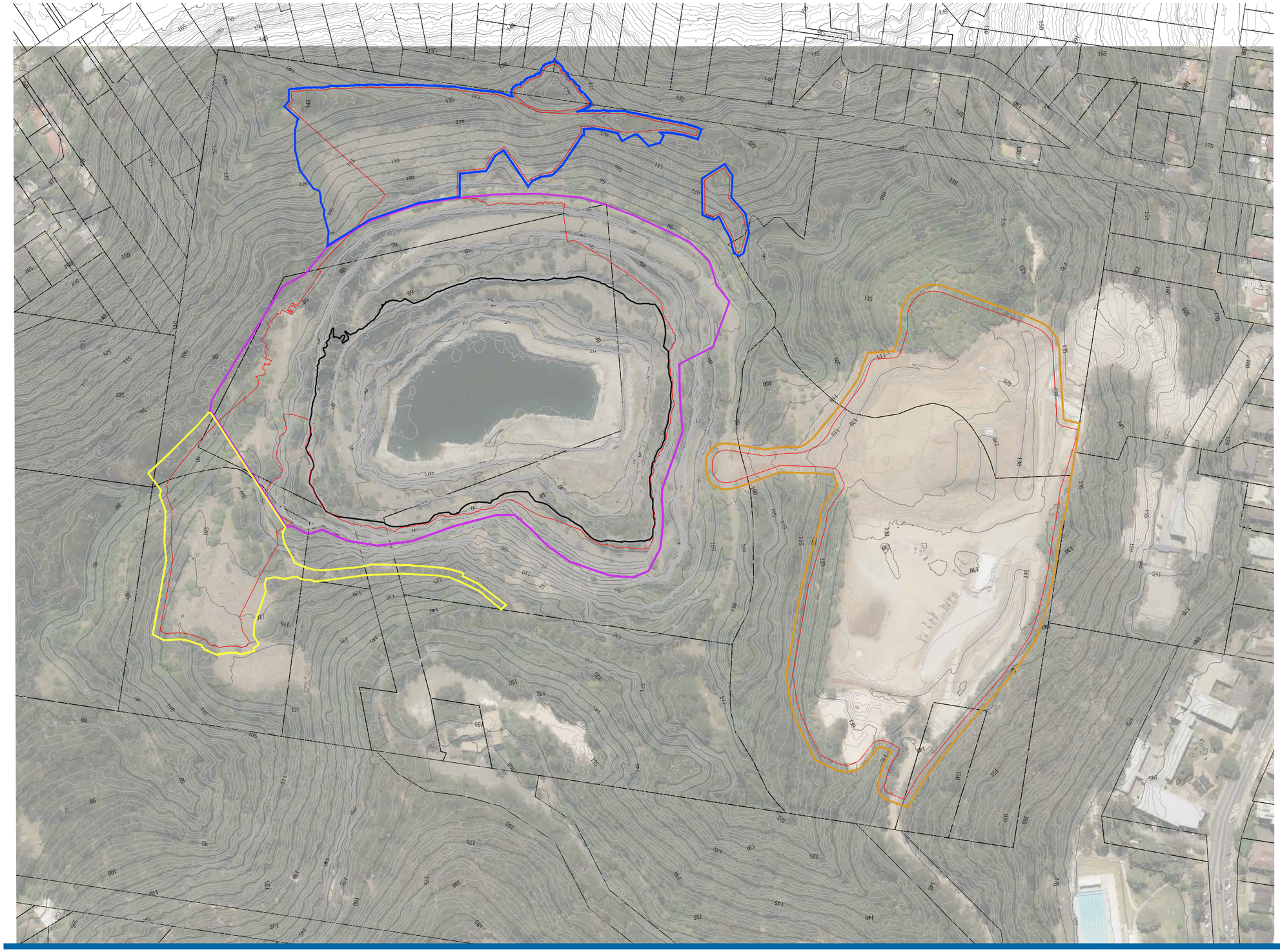
Rehabilitation works will be conducted across all four work zones identified in section 2.3. The works consist primarily of earthworks using heavy plant and equipment. Key features of the project include:

- Rehabilitation, stabilisation and geotechnical safety management works around various parts of the site
- Earthworks and placement of material won from within the site to create the desired final landform
- Revegetation of disturbed areas.

Approximately 300,000 m^3 of spoil is expected to be generated onsite from earthworks. Much of this material will be placed on the NorthConnex spoil to create a landform within the quarry void that has large level platforms and would allow for the creation of a new parkland to be constructed within the quarry void.

The landform will include a lake directly below the exposed eastern face of the quarry. There will also be cut and fill works on Old Mans Valley to create a landform suitable for future development into playing fields and other recreational activities.

It is expected that a combination of ripping, rock breaking and rock sawing will be required to shift the material. Rock fragments will be crushed onsite using a mobile crusher or rock breaker prior to placement as fill.



LEGEND

- CADASTRE
- PRE-NORTHCONNEX FILL SURVEY SURFACE
- APPROX. NORTHCONNEX FILL BOUNDARY
- EARTHWORKS DESIGN EXTENT
- NORTHERN SPOIL MOUND WORKS AREA
- SOUTH-WEST FILL WORKS AREA
- QUARRY VOID WORKS AREA
- OLD MANS VALLEY WORKS AREA

0 30 60 90m

SCALE 1:3000 AT ORIGINAL SIZE

N

HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION
EXTENT OF WORKS

Job Number 21-26457
Revision D
Date OCT 2019

Figure 2-2

Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia T 61 2 9239 7100 F 61 2 9239 7199 E sydmail@ghd.com W www.ghd.com

Plot Date: 28 October 2019 - 11:24 AM Plotted by: Alison Horlyck Cad File No: G:\21\26457\CADD\Drawings\21-26457-FIG6.1.dwg

2.3.2 Machinery/equipment to be used

Typical plant required to undertake the construction works by load and haul operation includes:

- Excavators – with rippers or rock-breakers
- Rock saw
- Vibratory roller/compactor
- Bulldozers
- Loaders
- Articulated dump trucks
- Mobile screen
- Mobile crusher
- Fuel truck
- Off-road - water cart
- Tub grinder and mulcher

Proposed geotechnical safety management works will also be installed using the same equipment. However specific attachments may be used (such as drilling equipment applied to excavators for micro-piling, grab arms for placing gabion/facings etc) where required.

2.3.3 Estimated duration of work

The project is expected to take approximately two years to complete. However the majority of key earthworks activities are expected to be completed in an approximate 15 month period. The estimated duration of works in each work zone is shown in Table 2-1.

Table 2-1 Estimated duration of works

Work area	Months							
	0	3	6	9	12	15	18	21
Quarry void	X	X	X	X	X	X	X	X
Northern spoil mound	X	X	X	X	X	X		
South west fill area		X	X	X	X			
Old Mans Valley					X	X	X	X

The proposed works will be carried out during the following standard construction times:

- Monday to Friday 7 am to 6 pm
- Saturday 8 am to 1 pm
- No work on Sundays or public holidays

While no works are anticipated to occur outside of standard hours there may be circumstances where out-of-hours activities associated with the project are necessary. Activities which may be undertaken outside of standard daytime hours (in accordance with Section 2.3 of the Interim Construction Noise guidelines (ICNG) would include the following circumstances:

- The delivery of materials or oversized plant as required by the Police or other authorities for safety reasons.

- Where it is required to avoid the loss of lives, property and/or to prevent environmental harm in an emergency.
- Activities which are determined to comply with the relevant Noise Management Level (NML) at the most affected sensitive receiver, excluding activities associated with the transport and handling of spoil. Such activities may include refuelling of plant and equipment maintenance.
- Where agreement is reached with affected receivers.

2.4 Site management and safety

2.4.1 Site contacts

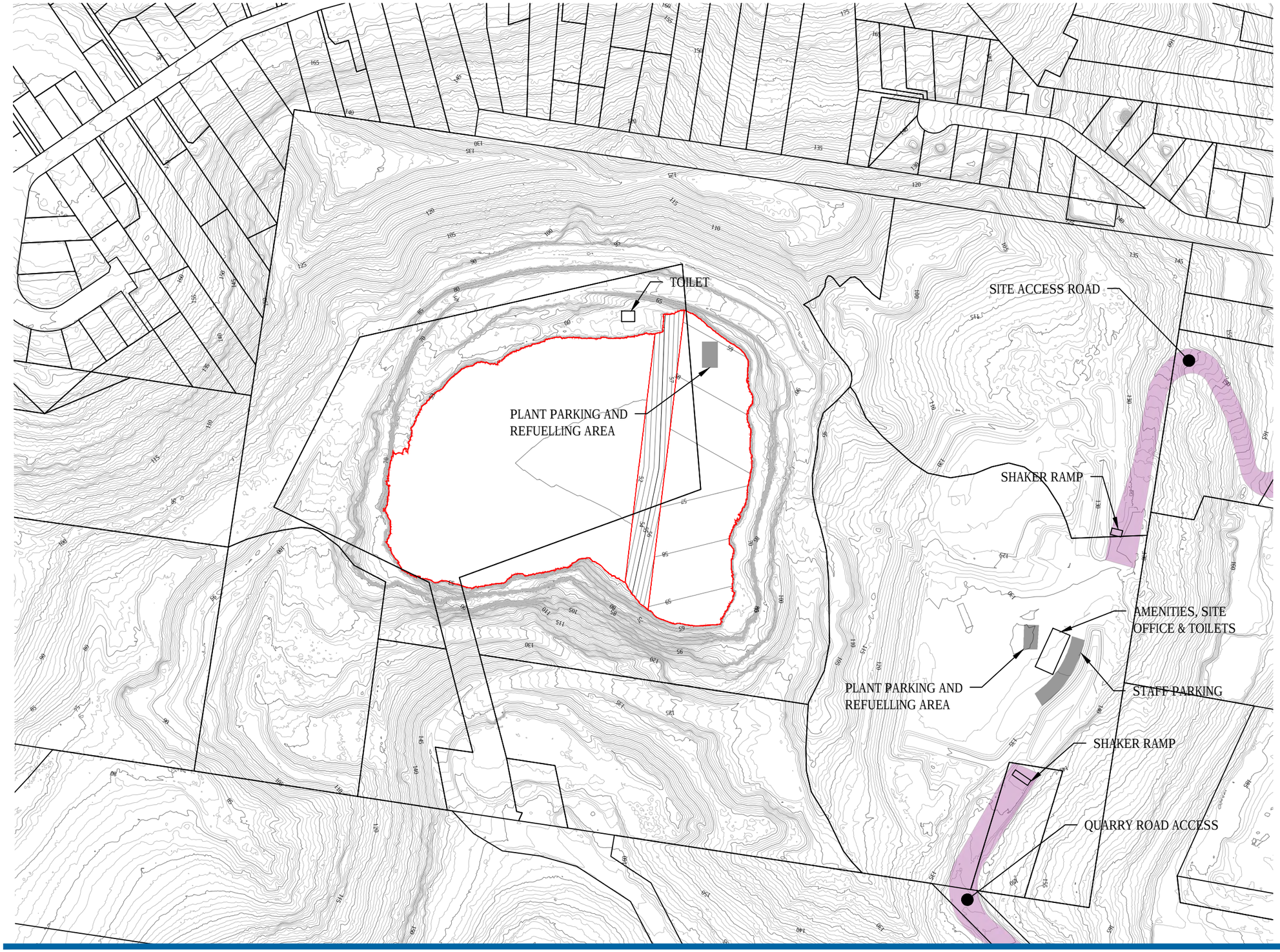
The CEMP will include contact details for (at a minimum):

- Key council personnel
- Key Contractor personnel
  - Contractor project manager
  - Contractor environmental manager

2.4.2 Site offices/amenities

The site office and amenities block are located on the eastern side of the site near Bridge Rd and Quarry Road access roads.

The location of the site office and amenities block is shown on Figure 2-3.



LEGEND

- SURVEY SURFACE
- APPROX. FILL SURFACE (NORTHCONNEX)
- APPROX. FILL BOUNDARY (NORTHCONNEX)

0 30 60 90m

SCALE 1:3000 AT ORIGINAL SIZE

N

HORNSBY SHIRE COUNCIL
HORNSBY QUARRY REHABILITATION

SITE MANAGEMENT PLAN

Job Number 21-26457
Revision B
Date AUG 2019

Figure 2-3

Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia T 61 2 9239 7100 F 61 2 9239 7199 E sydmail@ghd.com W www.ghd.com

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2.4.3 Waste management

Waste will be generated on the site as a result of rehabilitation activities. This includes construction waste (steel, packaging, etc.) and personnel waste (sewerage, general rubbish, etc.). Waste materials are to be managed and disposed of to avoid land contamination, maintain visual amenity and to reduce the proclivity of waste to attract fauna.

2.4.4 Site access and fencing

The site is surrounded by an extensive network of security fencing and gates.

The site is accessible via Quarry Road (off Dural Street and other local roads) from the south east and from Bridge Road (off the Peats Ferry Road) from the north east. Dural Street links to Peats Ferry Road, an arterial road that connects with the state road network, including the Sydney-Newcastle Freeway.

2.4.5 Induction protocols

All employees, contractors and sub-contractors will receive an environmental induction prior to commencing any work on site. The induction will include:

- all relevant project specific and standard noise and vibration mitigation measures
- relevant licence and approval conditions
- permissible hours of work
- any limitations on high noise generating activities
- location of nearest sensitive receivers
- construction employee parking areas
- designated loading/ unloading areas and procedures
- construction traffic routes
- site opening/closing times (including deliveries)
- environmental incident procedures
- unexpected find protocols
- ecological values of the study area, protection measures to be implemented to protect biodiversity and penalties for breaches.

2.4.6 Public safety

Site access will be restricted during rehabilitation works for safety reason. There will be no general public or pedestrian access to the site.

2.5 Incident and complaints protocols

2.5.1 Incident reporting

All personnel shall report all environmental incidents to the Project Manager and complete an environmental incident report form. The Contractor may use internal Health, Safety and Environment (HSE) incident management systems for recording, investigation and close-out of incidents. Examples of environmental incidents include the following:

- Fuel, oil and/or chemical spills
- Fire and/or explosions

- Unearthing of historical or Indigenous cultural heritage
- Major erosion and sediment control failure.

The Contractor shall be responsible for investigating environmental incidents and maintaining records of actions taken. Where applicable, environmental incidents shall be reported to Council and the relevant Administering Authority by the Project Manager, or in accordance with relevant contractual obligations.

2.5.2 Complaints

Complaints represent an opportunity for improvement or enhancement of project environmental performance. All project complaints, including those from members of the public, stakeholder groups and regulatory authorities, shall be recorded by the Contractor. The Contractor may use internal management systems for investigating and responding to complaints in a timely manner.

As a minimum, a standardised Environmental Complaint Record Form will be created to record all complaints. The Project Manager shall be responsible for investigating and responding to complaints in a timely manner.

2.5.3 Non-conformance and preventative/corrective actions

Non-conformances managed by the Contractors CEMP shall include the following:

- An incident or near miss with potential or actual environmental impact
- Complaints regarding project construction activities
- Not meeting an objective or target
- Management review not being undertaken.

The Project Manager shall be responsible for identifying and implementing any preventative and/or corrective actions in response to any non-conformance. Preventative and correction actions shall be incorporated into the Contractors CEMP as required.

2.5.4 Audit and inspections

Aspects with a potential for environmental impact shall be subject to environmental audits as required (risk based approach) and in accordance with internal Contractor procedures. Audits shall be conducted by the Project Manager (or qualified delegate). Audit objectives shall be to verify compliance with the Contractors CEMP and applicable permits, approvals and regulations.

Environmental inspections shall be conducted in accordance with internal Contractor procedures or on at least at least a weekly basis (minimum).

2.5.5 Reporting

Contractor reporting shall be undertaken in accordance with applicable third party approval conditions or as requested by the relevant Administering Authority and Council. Reporting shall include all relevant information pertaining to environmental matters (e.g. records, monitoring results, incidents, complaints, audits and inspections, etc.) as required under the approval or as requested by the Administering Authority.

The Project Manager shall be ultimately responsible for reporting with support from suitably experienced and qualified staff as required.

The Project Manager shall report on environmental performance to Council (as required) in any meetings or documented progress reports in accordance with contractual obligations.

2.6 Traffic

2.6.1 Vehicle movements

The expected traffic generation associated with the construction works at the Hornsby Quarry rehabilitation development is summarised in Table 2-2.

Table 2-2 Hornsby quarry development construction traffic generation

Type	Daily		AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Light vehicle movements	30	30	30	0	0	30
Heavy vehicle movements	20	20	10	5	5	10
Total	**50**	**50**	**40**	**5**	**5**	**40**

During each of the peak hour periods per day, 30 light vehicle movements and 15 heavy vehicle movements are expected to occur for a worst case scenario assessment. It is noted that most of the movements associated with construction activity will occur outside the road network peak periods (i.e. prior to 7 am and before 5 pm).

2.6.2 Adherence to construction traffic management plan

A detailed Construction Traffic Management Plan will be prepared and approved by Council prior to construction commencing. The Construction Traffic Management Plan will include the following:

- Traffic control measures in works areas
- Restrictions on the delivery of heavy plant and materials to site during peak traffic periods
- Appropriate entry/exit points for the proposed construction compound area(s)
- Advising motorists of the change in traffic conditions associated with the work.

2.6.3 General traffic and truck haulage routes

General traffic (light vehicles and some heavy vehicles) will access the site from Bridge Road.

Heavy vehicles such as low loaders, wide loaders and less manoeuvrable vehicles would be unable to navigate the steep Bridge Road access. Consequently, these vehicles will access the site via Quarry Road (utilising William Street/Fredrick Street). Heavy vehicles utilising Quarry Road will be limited to off-peak periods and will be limited to one vehicle per hour during the night period and a maximum of three heavy vehicle movements per night (after hours).

2.6.4 Parking

The project will operate with 30 employees at the site and adopting the conservative estimate (assuming a vehicle occupancy of one), 30 parking spaces will be required.

Provision has been made for onsite parking. Workers travelling to the site will use a designated available area to park their vehicles on site.

The designated parking zone should provide for:

- Construction crew members / workers
- Space for loading and unloading of equipment and materials.

Parking demands generated by the project will be satisfactorily accommodated on-site with no demand for on-street parking.

Therefore, the proposed parking provisions are considered supportable.

2.7 Site facilities

2.7.1 Equipment and fuel storage

Construction plant, equipment and fuel will be stored at the designated plant parking and refuelling area located on the eastern side on the site adjacent to the site office and amenities building. A refuelling procedure will be prepared by the Contractor to management potential spills and leaks.

2.7.2 Loading/unloading

Plant and equipment loading and unloading will occur at the designated loading area located near the on site parking area.

2.7.3 Materials storage/stockpiles

Storage/stockpile will be in bunded areas within Old Mans Valley and the quarry void.

2.8 Soil manufacturing

On site soil manufacturing will be undertaken to aid bush regeneration activities. All appropriate topsoil from the proposed earthworks will be retained on site for reuse in the bush revegetation work. To supplement the retained topsoils, soils will be 'manufactured' from areas of cut and by blending it with mulch or compost generated onsite from cleared vegetation (green waste). The 'manufactured' soil will replicate the original soil profile.

Inappropriate top soil will be used as fill material to shape the landform as required.

2.8.1 Equipment

A tub grinder and mulcher will be operated on site during the early part of the construction period to create mulch for onsite landscaping purposes, from the cleared vegetation.

2.8.2 Storage

Manufactured soil will be stored in windrows established in Old Mans Valley.

3. Construction environmental management plan

Environmental mitigation and management measures that will be undertaken during the construction of the project are detailed in this section.

3.1 Noise

Environmental aspect	Noise	
Objective	To minimise noise impacts to nearby receivers and preserve the noise amenity of the surrounding area	
Issue	**Risk**	**Mitigation and management measures**
• Noise generated during rehabilitation works	• Excessive noise • Noise disturbance and impact to nearby residences and commercial facilities	• A detailed Construction Noise and Vibration Management Plan (CNVMP) will be prepared by the Contractor and approved by Council prior to construction commencing. The CNVMP will describe the methods that will be implemented for each construction work phase to minimise noise and vibration impacts and will identify if any further noise modelling is required. • All activities on site will be confined between 7:00 am to 6:00 pm from Monday to Friday and 7:00 am to 1:00 pm on Saturday • All personnel on site will be made aware of the potential for noise impacts and should aim to minimise impact or elevated noise levels, where possible • Regular identification of noisy activities and adoption of improvement techniques • Minimise the need for vehicle reversing (for example, by arranging for one-way site traffic routes) • Construction heavy vehicles utilising William Street/Fredrick Street and Quarry Road will be limited to one vehicle per hour during the night period and there will be a maximum of three heavy vehicle movements per night (after hours). • Scheduling of respite periods for high noise activities including rock breaking, ripping and sawing • A noise monitoring program will be carried out for the duration of the works in accordance with any approval and license conditions. The noise monitoring program will include long-term verification monitoring of noise during construction should be conducted at a minimum of four affected receiver(s)1 surrounding the project

1 Affected receivers defined as receptors likely to experience noise levels 10 dB(A) greater than Noise Management Levels (NML).

Environmental aspect	Noise	
Objective	To minimise noise impacts to nearby receivers and preserve the noise amenity of the surrounding area	
Issue	Risk	Mitigation and management measures
		area. Monitoring should provide alerts to the contractor when the highly noise affected level is exceeded (or a level agreed with the regulator). • The purpose of monitoring is to confirm that: – construction noise and vibration from the project are consistent with the predictions in the noise assessment – mitigation and management of construction noise and vibration is appropriate for receivers affected by the works • Where noise monitoring finds that the actual noise levels exceed those predicted in the noise assessment then immediate refinement of mitigation measures may be required and the CNVMP amended • No swearing or unnecessary shouting or loud stereos/radios on site • All employees, contractors and sub-contractors will receive an environmental induction (details discussed in Section 2.4.5). • The community will be notified in advance about high noise generating works that are likely to exceed noise criteria. The notification will include a detailed description of work activities, dates and hours, impacts and mitigation measures indication of work schedule, and contact phone number (for noise complaints and project information). • Periodic notification will be given to receivers likely to experience noise levels 10 dB(A) greater than the Noise Management Levels (NML). The periodic notification entitled 'Project Update' or 'Construction Update' will be produced and distributed to stakeholders via letterbox drop and distributed to the project postal and/or email mailing lists. • Periodic notifications provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage, inform and provide project-specific messages. Advanced warning of potential disruptions (e.g. traffic changes or noisy works) can assist in reducing the impact on stakeholders. The approval conditions for projects specify requirements for notification to sensitive receivers where works may impact on them.

Environmental aspect	Noise	
Objective	To minimise noise impacts to nearby receivers and preserve the noise amenity of the surrounding area	
Issue	Risk	Mitigation and management measures
		• Specific notifications in the form of a personalised letter or phone call to stakeholders identified to experience noise level equal to or greater than 75 dB(A) no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. Alternatively (or in addition to), communications representatives from the contractor would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities and provide an individual briefing. – Letters may be letterbox dropped or hand distributed – Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and their specific needs – Individual briefings are used to inform stakeholders about the impacts of noisy activities and mitigation measures that will be implemented. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project • The following measures will be implemented to reduce noise at source: • Substitution: • Where reasonably practicable, noisy plant will be replaced by less noisy alternatives • Modification of equipment: • All engine covers will be kept closed while equipment is operating • Plant and vehicles will be kept properly serviced and fitted with appropriate mufflers and silencers, where applicable • The use of exhaust brakes will be eliminated, where practical • Where practical, plant operating on site will be fitted with broadband reversing alarms. • Acoustic enclosures will be provided for suitable equipment • Use and siting of plant:

Environmental aspect	Noise	
Objective	To minimise noise impacts to nearby receivers and preserve the noise amenity of the surrounding area	
Issue	Risk	Mitigation and management measures
		• The offset distance between noisy plant and adjacent sensitive receivers will be maximised where practical • Plant used intermittently will be throttled down or shut off • Noise-emitting plant will be directed away from sensitive receivers, where possible • Regular and effective maintenance: • Regular inspection and maintenance of equipment to ensure it is in good working order and checking the condition of mufflers • Machines found to produce excessive noise compared to industry best practice will be removed from the site or stood down until repairs or modifications can be made • Ensure air lines on pneumatic equipment do not leak • Return of any hired equipment that is causing noise that is not typical for the equipment – the increased noise may indicate the need for repair • Alternative methods: • Examine and implement, where feasible and reasonable, alternatives to rock-breaking work methods, such as hydraulic splitters for rock and concrete, hydraulic jaw crushers, chemical rock and concrete splitting. The suitability of alternative methods should be considered on a case-by-case basis

3.2 Vibration

Environmental aspect	Vibration	
Objective	To minimise vibration impacts to nearby structures and receivers	
Issue	Risk	Mitigation and management measures
• Vibration generated during remediation works	• Excessive vibration • Damage to nearby structures due to vibration from construction equipment	• Where vibratory rolling or compacting works undertaken within 100 metres of the most western building of the Hornsby TAFE, the occupants of this building will be notified of the expected impacts • Vibration monitoring will be undertaken to determine the extent of the vibration impact and to guide mitigation measures, which may include the use of smaller equipment when the TAFE is in use • Where practical, rolling works near the TAFE will be undertaken during their holiday break period to minimise potential vibration impacts.

3.3 Air quality

Environmental aspect	Air quality	
Objective	To minimise air quality (dust) impacts to nearby receptors	
Issue	**Risk**	**Mitigation and management measures**
• Dust generated during rehabilitation works	• Dust impacts to nearby receptors	• Where appropriate, material will be watered prior to it being loaded for on-site haulage and loads will be covered • The size of storage piles will be minimised where possible • Cleared areas will be monitored and dust suppression (watering) will be used when adverse conditions prevail • Cleared areas of land will be limited where practicable and only cleared when necessary to reduce fugitive dust emissions • On-site traffic will be controlled by designating specific routes for haulage and access and limiting vehicle speeds to below 25 km/h • All trucks hauling material on the way to the site will be covered and a reasonable amount of vertical space will be maintained between the top of the load and top of the trailer • Operations conducted in areas of low moisture content material will be suspended during high wind speed events or water sprays will be used • Rock saws will be equipped with in built wet control systems that reduce dust generation to negligible levels. These wet control systems will be used during all rock sawing activities. • Water will be applied to exposed surfaces that are causing dust generation. Surfaces may include unpaved roads, stockpiles, hardstand areas and other exposed surfaces (for example recently graded areas). • Vehicles must travel at appropriate speeds to limit dust generation.

3.4 Water quality

Environmental aspect	Water quality	
Objective	To minimise off site impacts of sediment transport and to minimise impacts to the water quality of nearby surface water and groundwater catchments.	
Issue	**Risk**	**Mitigation and management measures**
• Erosion and sediment control	• Off site impacts to water bodies due to sediment transportation	• A Soil and Water Management Plan will be developed prior to construction, in accordance with Landcom (2015) 'The Blue Book', including consideration of erosion and sediment control impacts. • The Soil and Water Management Plans (as part of the Soil and Water Management Plan) will ensure any areas disturbed will have soil and erosion control measure put in place (such as hydromulch) until longer-term vegetation is established in accordance with the Vegetation Management Plan (VMP) developed for the project.
• Dewatering of quarry void	• Dewatering discharge impact the	• All water discharge into creeks will be guided by the ANZECC Water Quality Guidelines (2000)

Environmental aspect	Water quality	
Objective	To minimise off site impacts of sediment transport and to minimise impacts to the water quality of nearby surface water and groundwater catchments.	
Issue	Risk	Mitigation and management measures
	natural waterways • Contamination of natural waterways	• Continuation of all requirements of the groundwater licence

3.5 Biodiversity

Environmental aspect	Biodiversity	
Objective	To protect flora and fauna biodiversity surrounding and within the project site	
Issue	Risk	Mitigation and management measures
• Clearing of vegetation	• Removal of habitat resources and degradation of landscape • Disruption and damage to natural habitats • Pollution of land	• An offset package for the project will be developed in accordance with Hornsby Shire Council's Green Offsets Code and with reference to OEH's recommendations • Collection of seeds and propagules from areas of Blue Gum High Forest will be considered prior to vegetation clearing occurring. Seeds (if collected) will be planted in Council's community nursery and any individuals grown used for on-site plantings during creation of the parkland • Disturbance of vegetation will be limited to the minimum necessary to construct works • Where the project area adjoins native vegetation, mark the limits of clearing and install temporary protective fencing around the vegetated area prior to the commencement of construction activities to prevent vegetation and habitat removal • Clearing of mature, native trees will be minimised where possible and exclusion barriers set up to prevent indirect impacts • Erosion and sediment control plans (as part of the Soil and Water Management Plan) will be prepared in accordance with Volume 2D of Managing Urban Stormwater: Soils and Construction (DECC, 2008c). The erosion and sediment control plans will be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase • All water discharge into creeks will be guided by the ANZECC Water Quality Guidelines (2000) • Temporary scour protection and energy dissipation measures should be designed to protect receiving environments from erosion • Erosion and sediment control measures will be established prior to construction • Erosion and sediment control measures will be regularly inspected, particularly following rainfall events, to ensure their ongoing functionality • Stabilised surfaces will be reinstated as quickly as practicable after construction

Environmental aspect	Biodiversity	
Objective	To protect flora and fauna biodiversity surrounding and within the project site	
Issue	Risk	Mitigation and management measures
		• All stockpiled material should be stored in bunded areas and kept away from waterways to avoid sediment entering the waterway
• Impacts on flora and fauna	• Further endanger threated flora and fauna • Loss of native species	• All workers will be provided with an environmental induction prior to starting work in the project area. This will include information on the ecological values of the study area, protection measures to be implemented to protect biodiversity and penalties for breaches. • A Flora and Fauna Management Plan will be prepared as part of the CEMP, incorporating recommendations below, and expanding where necessary • Equipment storage and stockpiling of resources will be limited to designated areas in cleared land • An unexpected finds procedure will be developed for any threatened biota or habitat resources detected during pre-clearing or clearing surveys or revealed by other sources • A trained ecologist will be present during the clearing of native vegetation or removal of potential fauna habitat to avoid impacts on resident fauna and to salvage habitat resources as far as is practicable. Clearing surveys should include: - inspections of native vegetation for resident fauna and/or nests or other signs of fauna occupancy - inspection of culverts proposed for demolition/removal for roosting microbats prior to works commencing - inspection and identification/marking of hollow-bearing trees and termite mounds - protocols for the removal of hollow-bearing trees and termite mounds must be developed prior to removal to minimise mortality or injury of native fauna - capture and relocation or captive rearing of less mobile fauna (such as nestling birds) by a trained fauna handler and with assistance from Wildlife Information Rescue and Education Service (WIRES) as required • salvage of habitat features such as mature tree trunks and woody debris from the project area for future use in the parkland or surrounding areas.
• Introduction of foreign species	• Foreign species (weeds) impact existing biodiversity	• A Vegetation Management Plan (VMP) was developed for the project • Weed management actions were developed (as part of the VMP) to manage weeds during the construction phase of the project. This included the management and disposal of the weeds that were recorded within the project area including the priority weeds listed in section 11.2.2 of the EIS (GHD, 2019) in accordance with the Biosecurity Act • Vehicles and other equipment to be used within the impact area will be cleaned to prevent the introduction of further exotic plant species or disease • Protocols to prevent introduction or spread of chytrid fungus will be implemented (as part of the VMP)

Environmental aspect	Biodiversity	
Objective	To protect flora and fauna biodiversity surrounding and within the project site	
Issue	Risk	Mitigation and management measures
		following OEH Hygiene protocol for the control of disease in frogs (DECC, 2008b).

3.6 Aboriginal heritage

Environmental aspect	Aboriginal heritage	
Objective	To minimise impact to Aboriginal heritage including archaeological remains and artefacts surrounding and within the project area	
Issue	Risk	Mitigation and management measures
• Rehabilitation works near Aboriginal heritage areas	• Damage to Aboriginal heritage including archaeological remains and artefacts	An unexpected finds policy will be implemented in the event of Aboriginal archaeological deposits being identified during ground works and excavation. The unexpected finds policy will involve the following actions: • Induction of workers • Stop work within the affected area, protect the potential archaeological find, and inform environment staff or supervisor • Contact a suitably qualified archaeologist to assess the potential archaeological find • If Aboriginal archaeological material is identified, works in the affected area will cease, and the OEH will be informed. Further archaeological mitigation may be required prior to works recommencing • If human remains are found: - not further disturb or move these remains - immediately cease all work at the particular location - notify NSW Police - notify OEH's Environment Line on 131 555 as soon as practicable and provide available details of the remains and their location • not recommence any work at the particular location unless authorised in writing by OEH.

3.7 Non-Aboriginal heritage

Environmental aspect	Non-Aboriginal heritage	
Objective	To minimise impact to heritage of the site and surrounding areas	
Issue	Risk	Mitigation and management measures
• Rehabilitation works near heritage areas	• Damage to site heritage including the diatreme and Old Man's Cemetery	• Induction of workers • Should any unexpected archaeological finds be made during the project, work will cease immediately and a suitably qualified archaeologist will be contacted to assess the finds before any works continue • A condition report will be prepared for the SHR listed Old Man's Valley Cemetery (SHR 01764) prior to

Environmental aspect	Non-Aboriginal heritage	
Objective	To minimise impact to heritage of the site and surrounding areas	
Issue	Risk	Mitigation and management measures
		commencement of works and integrated into the Heritage Management Plan • The Heritage Management Plan will identify working areas that contain Heritage items and supply appropriate remediation methods suitable to minimise potential impact to the heritage items and exposed diatreme face on the eastern side of the quarry void.

3.8 Traffic and transport

Environmental aspect	Traffic and transport	
Objective	To manage traffic to protect site worker and road user safety	
Issue	Risk	Mitigation and management measures
• Additional construction vehicle movements	• Project leads to overcrowding local roadways and disruption to local road users • Unsafe traffic conditions	• A detailed Construction Traffic Management Plan will be prepared by the Contractor and approved by Council prior to construction commencing. The Construction Traffic Management Plan will include the following: - Traffic control measures in works areas - Restrictions on the delivery of heavy plant and materials to site during peak traffic periods - Appropriate entry/exit points for the proposed construction compound area(s) - Advising residents and motorists of the change in traffic conditions associated with the work • The construction contractor will liaise with Council in relation to the location of proposed construction compound areas and any other requirements. If alternate construction compound locations are identified, approval will be obtained from Council and further assessment carried out • Only existing roads and access roads will be utilised • All traffic control devices will be in accordance with AS 1742.3-2009 – Manual of uniform traffic control devices: traffic control for works on roads and Roads and Maritime Traffic control at worksites manual.
• Interaction between vehicles and public	• Risk to pedestrians	• Appropriate exclusion barriers, signage and site supervision to ensure that the site is controlled and that unauthorised vehicles and pedestrians are excluded from the works area • The community will be kept informed about the project through advertisements in the local media, notices and/or signs, Council's website and Council's 40,000+ email list.

3.9 Land resources and contamination

Environmental aspect	Land resources and contamination	
Objective	To minimise the effects of erosion and spread of contamination	
Issue	**Risk**	**Mitigation and management measures**
• Erosion control	• Excessive erosion	• Soil and Water Management Plan which includes erosion and sediment control plans (as discussed in Section 10.4 of the EIS (GHD, 2019) will be prepared by the Contractor prior to commencing work.
• Contamination control	• Spread of contamination and hazardous materials • Impact to the environment from contamination • Exposure of site personnel to hazards	• The existing underground fuel tank and any associated contamination will be removed in accordance with a Remedial Action Plan (RAP) • Procedures to manage potential contaminants and or hazardous materials identified during the works would be developed by the Contractor • If acid sulfate soils are encountered, they will be managed in accordance with the Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998) • Potentially contaminated areas directly affected by the project will be managed in accordance with the requirements of the CLM Act and Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011)
• Vehicle refuelling	• Fuel spills and leaks contaminate land	• A refuelling procedure would be developed by the Contractor. This would include procedures to address spills and leaks from refuelling.

3.10 Waste management

Environmental aspect	Waste management	
Objective	To manage waste generated on site	
Issue	**Risk**	**Mitigation and management measures**
• Waste generation, handling, recovery, storage and disposal	• Production of unnecessary waste • Inappropriate disposal of site generated waste	• A Waste Management Plan will be prepared by the contractor and included as part of the CEMP for the project. The plan will include procedures for the management of wastes in accordance with relevant NSW legislation and the principles of the waste management hierarchy set out in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (EPA 2014a) • Cleared vegetation will be shredded and mulched/composted and used for soil manufacture or reused on site where practicable. Care will be taken to ensure any onsite reuse would not spread weeds • General waste from site personnel will be temporarily stored in mobile skip bins or wheelie bins on the site before being collected for recycling or disposal. Recyclable waste such as containers, paper and cardboard etc would be collected separately to facilitate offsite recycling

Environmental aspect	Waste management	
Objective	To manage waste generated on site	
Issue	Risk	Mitigation and management measures
		• Wastewater and sewage from site offices/amenities will be appropriately stored and regularly transported off site for disposal at a licensed facility.

3.11 Visual

Environmental aspect	Visual	
Objective	To preserve the visual amenity of the site during construction activities	
Issue	Risk	Mitigation and management measures
• Rehabilitation activities including land clearing and reshaping	• Changes to landscape character within the proposed works areas • Damage to visual amenity of the site	• Earthworks activities will be limited to standard construction hours • Screening vegetation will be maintained where practicable • Community updates and newsletters will be provided to nearby properties • Revegetation will be undertaken consistent with the objectives of the VMP as soon as practical after earthworks have been completed.

4. Implementing the CEMP

4.1 Roles and responsibilities

The roles and responsibilities of the following key participants in the construction works are outlined below:

- Construction contractor
- Council

4.2 Construction contractor

The roles and responsibilities of the construction Contractor are as follows:

- Develop a detailed CEMP that is consistent with, and no less stringent than, the intended outcomes identified in this outline CEMP
- Carry out rehabilitation works in accordance with the requirements of the CEMP
- Review the CEMP periodically during rehabilitation works and update as necessary
- Make all staff aware of the requirements of the CEMP and provide the required Health, Safety and Environmental training to enable staff to safely undertake their work activities and ensure environmental impacts are managed
- Ensure staff comply with all relevant environmental guidelines
- Keep a register of all environmental accidents, incidents, non-conformances and complaints
- Carry out environmental audits, inspections and monitoring to verify compliance with the CEMP
- Undertake complaint investigations and report complaint investigation findings to Council
- Correct all non-conformances to the satisfaction of Council in the timeframe specified by Council
- Report on the implementation and effectiveness of corrective actions specified Council or implemented to ensure correction of non-compliances
- Provide monitoring and reporting to Council on all activities on site as required in the CEMP
- Communicate project need and objectives with the public and residents. Notify the public in advance of any activities likely to impact their amenity (e.g. high noise generating works that are likely to exceed noise criteria).

4.3 Council

The roles and responsibilities of Council are as follows:

- Review and provide commentary on the Contractor's CEMP
- Inform the Contractor of any site specific, environmental performance related requirements
- Facilitate a "continuous improvement" approach by raising any issues and opportunities for improvement of practice with the Contractor throughout the course of the project.

5. Individual plans

The following plans and procedure would be prepared by the Contractor prior to rehabilitation activities:

- Construction Traffic Management Plan
- Soil and Water Management Plan
- Flora and Fauna Management Plan
- Unexpected Finds Procedure
- Weed Management Plan
- Heritage Management Plan
- Contamination Management Procedures
- Waste Management Plan
- Refuelling Procedure
- Site Induction Procedures
- Complaints handling Procedures
- Construction Noise and Vibration Management Plan

Appendices

Appendix A – Plans and Procedures

The following management plans and procedures accompany the CEMP prepared by the Contractor:

- Construction Traffic Management Plan
- Soil and Water Management Plan
- Flora and Fauna Management Plan
- Unexpected Finds Procedure
- Weed Management Plan
- Heritage Management Plan
- Contamination Management Procedures
- Remedial Action Plan for fuel tank
- Waste Management Plan
- Refuelling Procedure
- Site Induction procedures
- Complaints handling procedures
- Construction Noise and Vibration Management Plan

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Revision	Author	Reviewer		Approved for Issue		
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