REPORT

Proposed Gran Central Development

Preliminary Environmental Investigation Report

Submitted to:

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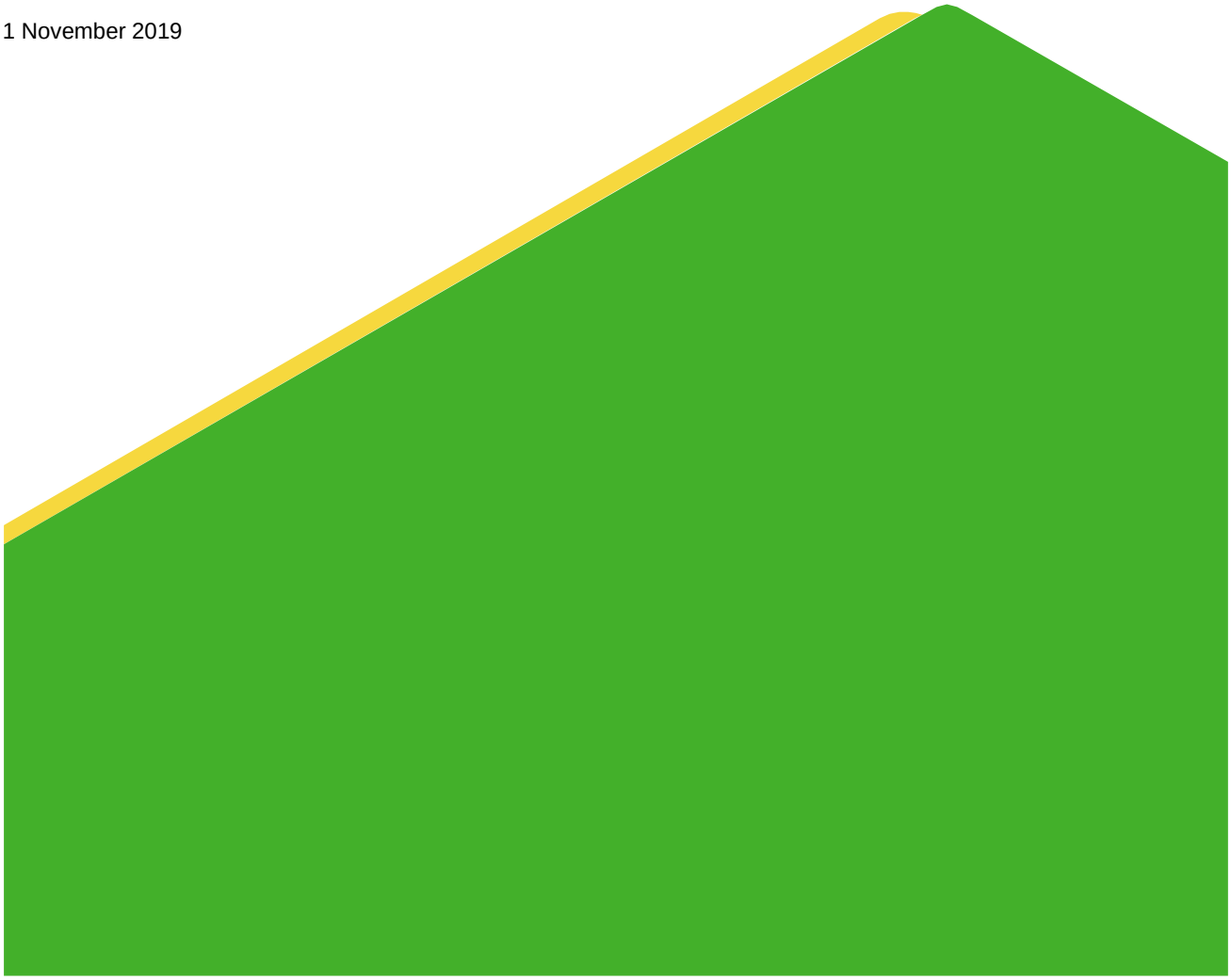
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1.0 INTRODUCTION

Property Development Solutions Pty Ltd (PDS) on behalf of Starryland NSW Pty Ltd (Starryland), engaged Golder Associates Pty Ltd (Golder) to perform geotechnical investigations of the proposed Gran Central building development located at 134-142 Parramatta Road, 26-38 Good Street and 59-61 Cowper Street, Granville (the site).

This report documents the Preliminary Environmental Investigation (PEI) which formed part of the geotechnical scope of work. The results of the geotechnical investigation of the site have been reported separately (Golder 2019).

The purpose of the PEI was to obtain information on the contamination status of the site and consider potential impacts to the proposed development of the site including a preliminary assessment of site suitability, likely waste classifications of excavation spoil, and recommendations for further investigations as necessary.

2.0 SITE DESCRIPTION

2.1 Site Identification

The site is the location of the proposed Gran Central development located on a land parcel in Granville bounded by Parramatta Road to the north, Good Street to the east and Cowper Street to the south. **Table 1** summarises the identification, location and setting of the site.

A plan showing the location of the site is attached as **Figure 1**.

Table 1: Site Identification, Location and Setting

Item	Details
Street Address	134-142 Parramatta Road, 26-38 Good Street & 59-61 Cowper Street Granville
Approximate Site Area	5,150 m^2
Current Land Use	Commercial
Legal Property Description	Lot 1 in Deposited Plan (DP) 76041 Lot 12 in DP 575064 Lot 1 in DP 604204 Lot 1 in DP 721626 Lots 1, 2 & 7 in Section A in DP 979437 Lots 1 to 6 in DP 1075357 Lots 50 & 51 in DP 1248262
Approximate Geographic Co-ordinates (GDA94-MGA56)	316000 mE 6254820 mN
Local Government Area and Land Use Zoning	City of Parramatta B4 Mixed Use

2.2 Current Site Description

The site is an irregularly shaped parcel of land bound by Parramatta Road to the north, Good Street to the east, Cowper Street to the south and a service station and multi-storey commercial and high density residential dwelling to the west. The majority of the portion of the site fronting Parramatta Road is occupied by car yards, with the remainder the location of a furniture store in a building known as the Barn. A carpark area extends from the southern side of the Barn to Cowper Street. Commercial premises were located along the Good Street frontage. The northern-most of these premises were occupied by a retailer of religious statues and related goods, while the premise located on the corner of Good Street and Cowper Street was formerly a butchers shop. A residential cottage was located on the Cowper Street frontage between the Barn's carpark and the former butchers shop. A number of vehicles, assumed to be associated with the car dealership fronting Parramatta Road, were parked on one of the lots fronting Cowper Street.

2.2.1 Surrounding Land Use

The site is located in an area of predominantly commercial land use. Commercial land use is located along Parramatta Road, Good Street, Cowper Street and Bold Street. Residential land use is present to the north of

Parramatta Road and south of Cowper Street. The surrounding land uses noted at the time of the site inspection are identified in **Table 2**.

Table 2: Surrounding Land Use

Direction	Details
North	Parramatta Road, commercial land use, then residential.
East	Good Street, commercial land use
South	Cowper Street, then commercial and high density residential land use.
West	Service station site and high density residential land use, then Bold Street, then commercial land use including another service station site.

2.3 Site Inspection

An inspection of the site was completed on 30 July 2019. The inspection was performed by Mr Shane Doyle. Meteorological conditions during the inspection were overcast, with an approximate temperature of 15°C. Observations made during the site inspection and information obtained from the site representative are summarised below. Photographs taken during the inspection are presented in **Appendix**, street addresses are identified on **Figure 2** and the location of significant features shown on **Figure 3**.

The north eastern part of the site (38-44 Good Street and 134 Parramatta Road) was in use as a car yard. The surface of the car yard was asphalt pavement in poor condition (**Photograph 1** and **2**). The sales office was located in a demountable shed below an awning at the southern end of 134 Parramatta Road. Waste materials including vehicle panels and components, tyres and solvent containers were located in the vicinity of the sales office and on the northern side of 59 Cowper Street (**Photographs 3** to **5**). Staining of parts of the asphalt was present in this part of the car yard. A car yard employee, who had knowledge of the site since the 2000s, was not aware of the presence of underground storage tanks (USTs) on the car yard site. A smaller car yard was present at the western end of the site on 142 Parramatta Road, adjacent to a Caltex service station.

Buildings used for commercial purposes, including sales of religious statues, storage purposes and a former butcher, were located along Good Street (**Photographs 6**, **7** and **12**). A pit, assumed to be a grease trap, was present in the driveway at the rear of 26-30 Good Street which had formerly been occupied by a butcher.

A furniture retailer was located at 138 Parramatta Road in the building known as the Barn. The furniture showroom was located at the front of the building fronting Parramatta Road, with storage in the rear of the building (**Photograph 8**). The rear of 138 Parramatta Road was paved with concrete. A number of shipping containers, assumed to be used for additional storage, were located along the eastern side of this part of the site. A circular metal feature, of unknown origin or use but possibly associated with an underground object, was present in the concrete pavement (**Photographs 9** and **10**).

Retail premises and offices were present opposite the site on the northern side of Parramatta Road, the eastern side of Good Street and southern side of Cowper Street. As noted above, the north western part of the site abuts a Caltex Service station. Gatic covers associated with USTs were observed on the eastern end of the service station, near to the western boundary of the site. High density residential structures were present on the southern side of Cowper Street. Mixed use structures with ground level commercial use and upper level residential use were present on the northern side of Parramatta Road and adjacent to the south western corner of the site.

3.0 SITE HISTORY

3.1 Sources of Information

Golder undertook an historical review to provide information on previous land use and activities at the site and in the surrounding area, which may have contributed to potential site contamination. The following information sources were reviewed/consulted:

- Historical aerial photographs from the period 1943 to 2019;
- Current and historical Certificates of Title for a selected lot; and
- A heritage report.

The outcomes of the site historical review are provided in the following sections.

3.2 Historical Aerial Photographs

Historical aerial photographs from 1943, 1951, 1961, 1970, 1986, 1991 and 2002 were obtained from SIX Maps and NSW Land and Property Information (LPI) for review. Aerial imagery from 2009, 2017 and 2019 was accessed via Nearmap. Copies of the aerial photographs referenced above are included in **Appendix B**.

The aerial photograph review was conducted to ascertain a general history of the development of the site and surrounding area. This review is summarised in **Table 3**, and the locations of the lots comprising the site are identified in **Figure 2**.

Table 3: Historical Aerial Photograph Review

Year	Observations
1943	**Site**: The majority of the site was covered by structures. Residential type structures were present on the 142 Parramatta Road, 59 Cowper Street and 61 Cowper Street land parcels. The shape of the structure on 59 Cowper Street is consistent with the residential dwelling observed in the latest aerial imagery and during the site inspection. Commercial type structures were present on the northern part of the 138 Parramatta Road land parcel, the northern part of 32 Good Street and on 26-30 Good Street, consistent with the commercial buildings observed in the latest aerial imagery. A commercial type structure was also visible in the north eastern portion of the southern part of the 138 Parramatta Road land parcel. The southern part of 32 Good Street was vacant, and appeared to be used as an access drive to the rear of commercial type structures on the 28-44 Good Street land parcel. Two smaller structures, possibly sheds, were located on the southern side of the larger commercial structures. The 134 Parramatta Road land parcel appeared to be vacant land. **Surrounding area**: Commercial type structures were present along Parramatta Road to the north, east and west of the site and along Good Street to the east of the site. Residential type structures were present to the west of the site and further to the north, east and south.
1951	**Site**: The site appeared similar to that shown in the 1943 aerial photograph.

Year	Observations
	Surrounding area: The surrounding area appeared similar to that shown in the 1943 aerial photograph.
1961	**Site**: A small structure, possibly a shed, was visible at the southern end of the 134 Parramatta Road lot. The site otherwise appeared similar to that shown in the 1951 aerial photograph. **Surrounding area**: The residential type buildings on the land to the immediate west had been demolished and a rectangular structure was visible on the southern part of the site with a number of smaller features, possibly motor vehicles visible on the eastern and western sides of the site, potentially indicating development of the site as a service station. Additional commercial type structures were visible along Parramatta Road to the north of the site.
1970	**Site**: The site appeared similar to that shown in the 1961 aerial photograph. **Surrounding area**: The surrounding area appeared similar to that shown in the 1961 aerial photograph.
1986	**Site**: The building on the southern part of 138 Parramatta Road appeared to have been demolished. The site otherwise appeared similar to that shown in the 1970 aerial photograph, noting that the available aerial image was of poor resolution. **Surrounding area**: Additional commercial type structures were present to the north and south of the site.
1991	**Site**: The site appeared similar to that shown in the 1986 aerial photograph, noting that the available aerial image was of poor resolution. **Surrounding area**: The surrounding area appeared similar to that shown in the 1986 aerial photograph.
2002	**Site**: A portion of the building on the 138 Parramatta Road lot had a new roof and a structure was visible on the southern part of the 32 Good Street lot. The site otherwise appeared similar to that shown in the 1991 aerial photograph, noting that the available aerial image was of poor resolution. **Surrounding area**: The surrounding area appeared generally similar to that shown in the 1986 aerial photograph.
2009	**Site**: The structures on the 142 Parramatta Road and 38-44 Good Street lots had been demolished, with the lots apparently in use as car yards. The structure on 61 Cowper Street had been demolished. The site otherwise appeared similar to that shown in the 2002 aerial photograph. **Surrounding area**: The surrounding area appeared generally similar to that shown in the 2002 aerial photograph.

Year	Observations
2017	**Site**: The site appeared similar to that shown in the 2009 aerial photograph. **Surrounding area**: The service station to the immediate west was undergoing refurbishment. An underground storage tank (UST) was exposed at the western end of the site, and features consistent with UST access points were visible at the eastern end of the site. The area to the south of the service station had been redeveloped with a large structure present, consistent with a high density residential building observed during the site inspection.
2019	**Site**: The site appeared similar to that shown in the 2017 aerial photograph. **Surrounding area**: The surrounding area appeared generally similar to that shown in the 2002 aerial photograph.

3.3 Historical Certificates of Titles

The site is understood to be owned by Starryland NSW Pty Ltd. A summary of the historical ownership of two representative lots on the site is presented in **Table 4** and **Table 5**. Copies of the available titles are included as **Appendix C**.

Table 4: Summary of Land Title Information - 138 Parramatta Road

Year	Source	Comment
2019	Auto Consol 7706-186 (edition 9)	Owner identified as Starryland NSW Pty Ltd. The title applies to Lots 1-6 in DP 1075357.
-	Vol 7706 Fol 186	Prior title to Auto Consol 7706-186. 1959: Owner identified as John Robert Colquhoun of Sydney, company director. 1971: Lease to Davey's Furniture Pty Limited. 1976: Lease to Davey's Furniture Pty Limited. 1985: Owner identified as Janet Taylor, John Colquhoun and Alexander Charles Colquhoun. 1989: Lease to Ebon Pty Limited. 1985: Owner identified as John Colquhoun. 1989: Lease to Illegible (sic) (Aust) Pty Limited. 2000: Owner identified as Stephen Edward Manning and Simone Maria Fechner.
-	Vol 6600 Fol 110	Prior title to Vol 7706 Fol 186. 1952: Owner identified as John Robert Colquhoun of Sydney, company director. Title created following primary application 37855. 1966: Transfer of Lot 8 of Section A of Granville Township (current 134 Parramatta Road) to Colin Edward Wyatt.

Table 5: Summary of Land Title Information - 32 Good Street

Year	Source	Comment
2019	1/76041 (edition 5)	Owner identified as Starryland NSW Pty Ltd.
-	Vol 3883 Fol 42	Prior title to 1/76041. 1926: Owner identified as the Board of Fire Commissioners of New South Wales. Title created following primary application 26041. 1966: Owner identified as George Avramides of Granville, baker. 1980: Owner identified as Hendrikus Antonis Lazarom and Ferdineus Theodorus Julius ter Beek, company directors. 1985: Owner identified as Hendrikus Antonis Lazarom. 2001: Owner identified as Tekinvest Pty Ltd. 2004: Owner identified as Brodieville Pty Limited.

3.4 Heritage Assessment

A heritage report prepared to accompany a planning proposal for the site (NBRS 2015) identified prior occupants of parts of the site. A summary of owners and occupants of the various lots comprising the site is presented in **Table 6** below.

Table 6: Summary of Heritage Assessment

Lot	Owner / Occupant
134 Parramatta Road	1910: Occupied by a pair of semi-detached cottages. 1976: Owned by FM Leca Pty Limited. 1987: Owned by Baxtim Pty Limited. Cottages demolished post 1976. 2015: Vacant land.
138 Parramatta Road	1913: Lots 1 to 3 in DP 1075357 occupied by John Colquhoun, bag merchant. 1927: Ownership of Lots 4 to 6 in DP 1075357 transferred to Alexander Colquhoun. 1971: Lease to Davey's Furniture, with ongoing use as a furniture store.
142 Parramatta Road	1894: Owned by Emma Lockwood. 1919: Owned by Thomas McKee. 1929: Owned by Alexander Colquhoun. 1958: Owned by Colin Edward Wyatt, car dealer. 1973: Owned by Colin D Young Pty Ltd, then George Amantides and Efotathios Amanatididis, shopkeepers 1984: Owned by Soumela Amanatididis and Galini Amanatididis 2015: Occupied by a car yard identified as Beats Walking Car Dealership.
26-30 Good Street	1905: Owned by Gideon Patten, storekeeper. Buildings constructed, part occupied by a butcher. 1970: Owned by Perpetual Trustee Company (Limited).

Lot	Owner / Occupant
	1974: Owned by Peter Weigall Walton and Valmai Edith Walton, leased to Heathrow Holdings Pty Ltd, sub leases to the National Bank of Australasia Limited, Executive Business Equipment and two other parties. 1980: Owned by Heathrow Holdings Pty Ltd, then Nicholas Roufogalis and Elizabeth Roufogalis. 1984: Lease to the National Bank of Australasia Limited.
32 Good Street	1900: Fire station building constructed, in operation until 1945. Post 1945: Used as office accommodation. 1966: Owned by George Avramides of Granville, baker. 1974: Owned by Heathrow Holdings Pty Limited. 1985: Owned by Hendrikus Antonius Lazarom. 2001: Owned by Tekinvest Pty Ltd. 2004: Owned by Brodieville Pty Ltd.
38-44 Good Street	1925: Leases to the National Bank of Australasia Limited and butchers. 1953: Owned by Ethel Jane Krust, Alma Schmesing and Charles Raymond Wilson. 1963: Owned by Ethel Jane Krust and Charles Raymond Wilson, with a lease to the National Bank of Australasia Limited. 1969: Owned by Hassall Estates Management Pty Ltd. 1979: Owned by Hendrikus Antonis Lazarom and Ferdineus Theodorus Julius ter Beek. 1985: Owned by Owned by Hendrikus Antonis Lazarom. Circa 1980s: Buildings demolished. 2015: Occupied by a car yard identified as GB Quality Cars.
61 Cowper Street	Post 1928: House constructed. 1988: Ownership transferred from Eileen Sonter to Tony Louie Takchi. Date of demolition of house unknown.
59 Cowper Street	1910: House constructed for Frederick C Gouldthorpe.

3.5 Previous Environmental Assessment Reports

Golder is not aware of previous environmental investigations at the site.

3.6 Site History Summary

The site is currently owned by Starryland NSW Pty Ltd, and has a long history of mixed residential and commercial land use. The Barn building was originally used by a bag merchant for the manufacture of jute bags, and has been in use as a furniture store since the 1970s. Residential and commercial buildings along the northern part of the site were demolished in the 2000s and appear to have been in use as car yards since then. One of the buildings along Good Street was the location of the original Girraween fire station until 1945. These buildings were used for various retail and commercial premises including a butcher, the location of a bank and business equipment retailer. Although there are some gaps in the site history, it is considered the available information was of sufficient standard to identify if potentially contaminating activities had occurred on the site.

4.0 ENVIRONMENTAL SETTING

4.1 Topography and Surface Drainage

The site is located in a gently undulating area with an elevation of approximately 10 metres Australian Height Datum (mAHD) (Nearmap 2019). Good Street appears to located along a local high, with the area of the site gently sloping to the north west. The site stormwater drainage is expected to be connected to the municipal stormwater system, and would be expected to drain to A'Becketts Creek located approximately 380 m to the north.

4.2 Surface Water

No permanent surface water features are present on the site. The nearest surface water features to the site are A'Becketts Creek located approximately 380 m to the north and Duck Creek located approximately 440 m to the east.

4.3 Geology and Hydrogeology

4.3.1 Geology

A review of the 1:100,000 scale Sydney Geological Series Sheet 9130 (DMR 1983) indicates that the site is located in an area mapped with Ashfield Shale of the Wianamatta Group as the underlying formation. Ashfield Shale comprises black to dark-grey shale and laminite.

4.3.2 Soils and Landscapes

Based on review of on-line mapping on the eSPADE[1] web site residual soil at the site would be part of the Blacktown soil landscape. Soils of the Blacktown landscape are typically shallow to moderately deep *Red* and *Brown Podzolic Soils* on crests, upper slopes and well-drained areas. Deeper *Yellow Podzolic Soils* and *Soloths* are present on lower slopes and in areas of poor drainage. Soils at the site would be expected to have moderately reactive and highly plastic subsoils and exhibit low soil fertility and poor drainage (Chapman et al 1989).

4.3.3 Lithology

Based on the site inspection (**Section 2.3**) and site history (**Section 3.0**), there is limited potential for significant filling to have occurred at the site. Observations made during preliminary geotechnical investigations relating to fill depths and types are summarised in **Section 6.0**.

4.3.4 Acid Sulfate Soils

Acid sulfate soils (ASS) planning maps were originally prepared by the NSW Department of Land and Water Conservation to indicate the potential presence of ASS, rather than the severity of ASS at a particular location. The planning maps identify five classes of ASS (Class 1 to Class 5) and identify types of work likely to present an environmental risk for each class of land (ASSMAC 1998). The ASS planning sheets associated with *Parramatta Local Environment Plan 2011* (the PLEP) (CPC 2011) indicated that the site is located in an area mapped as Class 5 ASS. Further investigations and development consent may be required for work on Class 5 land within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

On-line ASS mapping hosted by the Australian Soil Resource Information System (ASRIS) was reviewed through a Google Earth interface. The ASRIS mapping is based on existing data sets which have been converted to a national classification system (ASRIS 2011). ASRIS shows the site as having no known

[1] The data accessible through eSPADE is mainly sourced from the NSW Soil and Land Information System, including soil landscape mapping data.

occurrence of ASS. An area mapped as having a “low probability” for the occurrence of ASS is present approximately 70 m to the north and 100 m to the east of the site.

4.3.5 Hydrogeology

A search of on-line records held by the NSW Department of Primary Industry Office of Water was performed on 20 August 2019. The search indicated there were twelve licensed groundwater bores located within 500 m of the site. The monitoring wells, all of which were installed on the 7-Eleven service station on the western side of Bold Street located approximately 70 m to the north west of the site, ranged in depth between 3.0 m and 8.5 m. No information was provided on standing water levels or water quality (if encountered). The results of the search is presented in **Appendix D**.

Notwithstanding the current lack of groundwater monitoring wells on site, based on regional topography alone, it would appear that shallow groundwater would likely flow in a northerly direction.

4.3.6 Groundwater Management Zones

The site is not located within a Groundwater Management Zone managed by the NSW government.

4.4 Climate

Meteorological conditions at the site have been inferred from long term records for the Parramatta North meteorological station, which is located approximately 4.5 km to the north of the site. The mean annual rainfall would be in the order of 967 mm, the wettest month being February and the driest month being July. The mean number of days in a year with rain of 25 mm or higher would be in the order of 10 days. The mean maximum temperature would be in the order of 23 °C. The warmest month would be January, with the highest temperature recorded at Parramatta North of 45.5 °C recorded on 18 January 2013. The mean minimum temperature would be in the order of 12 °C. The coldest month would be July, with the lowest temperature recorded at Parramatta North of -1.0 °C recorded on 12 July 2002.

5.0 REGULATORY AGENCY RECORDS SEARCHES

As part of the Phase 1 ESA the following published information sources were consulted in respect of the site:

- State databases including:
  - On-line records held by the NSW Environment Protection Authority (EPA), including:
    - The record of notices issued under the *Contaminated Land Management Act 1997* (the *CLM Act*);
    - The public register maintained under Section 308 of the *Protection of the Environment Operations Act 1997* (the *POEO Act*); and
    - The list of sites notified to the EPA under Section 60 of the *CLM Act*;
    - Records relating to the storage of Dangerous Goods maintained by SafeWork NSW (formerly identified as WorkCover NSW); and
- Council documentation including a representative Section 10.7 (2) and (5) Planning Certificate and planning sheets associated with the Parramatta LEP.

5.1 NSW Environment Protection Authority

A search of on-line records held by the NSW EPA was completed. The search findings are presented below.

5.1.1 CLM Act Notices

The EPA maintains a “Record of Notices” which is a contaminated land public record. The record includes orders made under Part 3 of the *CLM Act*, notices available to the public under Section 58 of the *CLM Act*, site audit statements provided to the EPA under Section 53B of the *CLM Act*, actions taken by the EPA under Sections 25 or 36 of the *Environmentally Hazardous Chemicals Act 1985*, approved voluntary management proposals and copies of information formerly required to be part of the public record.

An on-line search for notified sites in the former Parramatta, Auburn and Holroyd LGAs was performed on 19th August 2019. The search did not identify notified sites within 500 m of the site. A copy of the results of the notice search is provided in **Appendix E**.

5.1.2 Notifications under Section 60 of the CLM Act

The NSW EPA maintains a "List of NSW contaminated sites notified to the EPA" under Section 60 of the *CLM Act*. Sites on this list indicate that the notifiers consider that the sites are contaminated and warrant reporting to the NSW EPA. The contamination at the site may or may not be significant enough to warrant regulation by the EPA and the EPA reviews relevant site information before making a determination as to whether or not the site warrants regulation. An on-line search for notified sites in Granville and the surrounding suburbs of Clyde, Harris Park and Rosehill was performed on 19th August 2019. The result of the search, limited to premises within 500 m of the site, is presented in **Table 7** below.

Table 7: Section 60 Notification Search Results

Premises	Approximate distance from site	EPA management status
Caltex Service Station 144 Parramatta Road, Granville	Adjacent site to the west	Regulation under *CLM Act* not required.

Premises	Approximate distance from site	EPA management status
7-Eleven Service Station 154-160 Parramatta Road, Granville	70 m to north west	Regulation under *CLM Act* not required.
A'Becketts Creek Albert Street, Granville	380 m to north	Under assessment.
Dalley Street Reserve 2A Dalley Street, Harris Park	370 m to north west	Regulation under *CLM Act* not required.

It is considered that activities on the Caltex service station adjacent to the site have a potential to impact upon the site. Current activities at the remaining premises identified in the above search, including the 7-Eleven service station which has 12 monitoring bores installed (see **Section 4.3.5**), would have a low potential to impact upon the site, due to their distance from the site and being either cross or downgradient from the site. A copy of the results of the notice search is provided in **Appendix E**.

5.1.3 EPLs under the POEO Act

The NSW EPA maintains a public register of premises subject to an Environment Protection Licence (EPL) under the *POEO Act*.

An on-line search for premises in Granville and the surrounding suburbs of Clyde, Harris Park and Rosehill was performed on 19th August 2019. The result of the search, limited to premises within 500 m of the site, is presented in **Table 8** below.

Table 8: EPL Search Results

Premises	Approximate distance from site	Activity type	Licence status
Boral Concrete Mort Street, Granville EPL 1178	320 m to north west	Concrete works	No longer in force
Clyde Junction Project Rail corridor between Auburn Junction and Granville EPL 20443	240 m to south east	Railway systems activities	Surrendered

It is considered that the premises identified in the above search would have a low potential to impact upon the site. A copy of the results of the notice search is provided in **Appendix E**.

5.1.4 Penalty Notices Issued under the POEO Act

The NSW EPA maintains a public register of Penalty Notices under the *POEO Act*.

A search of the Penalty Notices register issued by the NSW EPA under the *POEO Act* was performed on 19th August 2019 for the City of Parramatta LGA. The search did not identify premises subject to a Penalty Notice within 500 m of the site. A copy of the results of the notice search is provided in **Appendix E**.

5.2 Local Council

A Section 10.7 (2) & (5) planning certificate for a representative lot on the site (138 Parramatta Road, Lots 1 to 6 In DP 1075357), issued under Section 10.7 of the *Environmental and Planning Assessment Act 1979*, was obtained from the City of Parramatta Council. The planning certificate, issued on 19 August 2019, included the following information relating to potential contamination issues:

- The site is zoned B4 Mixed Use;
- The site contains a heritage item identified in the PLEP 2011, but is not located in a heritage conservation area;
- The land is not affected by any matter listed in Clause 59(2) of the Contaminated Land Management Act 1997, i.e. the land is not significantly contaminated, is not the subject to a management order, is not the subject of an approved voluntary management proposal, is not subject to an ongoing maintenance order and Council has not received a Site Audit Statement for the site; and
- Council has adopted polices, which apply to the entire LGA, relating to restriction of development due to the likelihood of flooding or the potential presence of contaminated land.

A copy of the Section 10.7 (2) & (5) planning certificate is presented in **Appendix F**.

The heritage item identified is The Barn structure currently used as a furniture store.

5.3 Hazardous Chemicals

A search of the SafeWork NSW files for records relating to historical storage of hazardous chemicals at the site was requested by Golder. Although the search indicated there were no records relating to the site, there is the potential that storage of dangerous goods occurred prior to licensing requirements, or may have occurred without notification of the regulator.

A copy of the SafeWork NSW search results is provided in **Appendix G**.

5.4 Department of Defence

A search of the Department of Defence unexploded ordnance (UXO) mapping application was performed on 19th August 2019. The search indicated that the site was not identified as potentially impacted by UXO. A copy of the search result is presented in **Appendix H**.

6.0 PRELIMINARY INTRUSIVE INVESTIGATIONS

Four boreholes, identified as BH01 to BH04, were drilled as part of geotechnical investigations (Golder 2019) at the site between 29 July and 1 August 2019. The location of the boreholes are shown on **Figure 3**. It is recognised that the number of geotechnical investigation locations did not comply with the minimum number of investigation locations recommended in the *Sampling Design Guidelines* (EPA 1995), and that the locations were not optimally located to address potential areas of impact associated with the car yard on 38-44 Good Street and 134 Parramatta Road and associated storage area on 59 & 61 Cowper Street or the grease trap at the rear of 26-30 Good Street. However, location BH01 in the north west corner of the site was located adjacent to the Caltex service station.

Fill material comprising sandy clay, silty clay, gravel and gravelly sand was identified at depths of up to 0.3 m below ground level (mbgl). Silty clay was present below the fill, with siltstone encountered at depths of between 1.55 mbgl and 2.8 mbgl. No chemical type odours were observed during the drilling works. The maximum headspace PID reading obtained of 6.9 parts per million (ppm) indicated a low potential for the presence of volatile organic compounds at the investigation locations. Copies of borelogs from the geotechnical investigation are presented in **Appendix I**.

Selected soil samples obtained during the geotechnical investigation were submitted for chemical analysis to obtain preliminary information on the likely type and concentrations of potential contaminants of concern (PCOC) which are typically found on urban sites. The samples were collected opportunistically during the geotechnical investigation by a geotechnical engineer experienced in the collection of environmental samples. Environmental samples were collected to a maximum depth of 1.5 mbgl.

The soil samples were submitted to SGS Australia Pty Ltd (SGS) and Envirolab Services (ELS), both of which are National Association of Testing Authorities, Australia (NATA) accredited for the analyses performed[2].

The samples were analysed for PCOC comprising:

- Total recoverable hydrocarbons (TRH);
- Benzene, toluene, ethyl benzene, xylene and naphthalene (BTEXN);
- Polycyclic aromatic hydrocarbons (PAH);
- Oraganochlorine pesticides (OCP)
- Organophosphorous pesticides (OPP)
- Polychlorinated biphenyls (PCB)
- Metals[3]; and
- Asbestos.

Laboratory documentation and chain of custody records are presented in **Appendix J**, summary tables are presented in **Appendix K** and data validation records are presented in **Appendix L**.

The soil analytical results, presented in **Table K1** in **Appendix K** and in summarised in **Table 9** below, were compared to health investigation and screening levels for residential dwellings with minimal access to soil (HIL B and HSL B) documented in the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPC 2013) (the NEPM) for the proposed mixed commercial and residential land use.

[2] With the exception of analysis of asbestos to the reporting limits documented in the NEPM (NEPC 2013).

[3] Arsenic, cadmium, copper, chromium, lead, mercury, nickel and zinc.

Ecological based criteria were not considered due to the type of proposed development including basement excavations over the majority of the site and limited potential for exposed soils.

Table 9: Soil Analysis Results Summary

Analyte	Primary samples	Duplicate/triplicate samples	Maximum value reported	Adopted criteria	Number of exceedances
TRH F1	8	3	<25	45	0
TRH F2	8	3	<50	110	0
TRH F3	8	3	150	NL	0
TRH F4	8	3	<120	NL	0
Benzene	8	3	<0.2	0.5	0
Toluene	8	3	<0.5	160	0
Ethylbenzene	8	3	<1	55	0
Xylene	8	3	<3	40	0
Naphthalene	8	3	<1	3	0
BaP TEQ	8	3	2.9	4	0
Total PAH	8	3	20	400	0
OCP	8	3	<0.2	10	0
OPP	8	2	<0.5	340	0
PCB	8	3	<1	1	0
Arsenic	8	3	130	500	0
Cadmium	8	3	2.3	150	0
Chromium	8	3	26	500	0
Copper	8	3	150	30,000	0
Lead	8	3	930	1,200	0
Nickel	8	3	37	1,200	0
Zinc	8	3	1,300	60,000	0
Mercury	8	3	1.4	120	0
Asbestos - fibre detected	4	0	>0.01 %	-	-
ACM (>7 mm)	3	0	<0.01 %	0.04 %	0

Analyte	Primary samples	Duplicate/triplicate samples	Maximum value reported	Adopted criteria	Number of exceedances
AF/FA (<7 mm)	3	0	0.039 %	0.001 %	2

Notes
Maximum concentrations and adopted criteria in mg/kg unless otherwise stated
HSL A & B for sand soil, 0 to <1m depth, adopted for TRH and BTEXN
HSL B adopted for ACM (> 7 mm)
HIL B adopted for metals, BaP, total PAH, PCB, OCP & OPP.
The lowest HIL for individual OCP compounds was used in the table for screening purposes
The HIL for chlorpyrifos was used in the table for screening purposes for OPP
NL - non limiting

In summary, the results of the preliminary soil sampling performed were below the adopted criteria for medium to high density residential land use, with the exception of asbestos in near surface fill material.

Reported concentrations of BaP and metals in some samples exceeded the maximum allowable concentrations for off-site disposal as General Solid Waste (GSW) documented in the *Waste Classification Guidelines Part 1: Classifying waste* (EPA 2014) (i.e. the material could be assessed to be Restricted Solid Waste (RSW)). However, the detections of asbestos in fill material would result in a waste classification of Special Waste in the event the material was disposed off-site.

A groundwater sample was collected using a bailer from a well installed as part of the geotechnical investigations. The well was installed at location NH01m, located in the north western corner of the site adjacent to the Caltex service station. The well had a screen interval between 2.0 mbgl and 5.0 mbgl. The standing water level in the well was recorded at a depth of approximately 4.0 mbgl on 1 August 2019 and approximately 2.0 mbgl on 9 August 2019. The sample was analysed for TRH, BTEXN, PAH and metals. The analytical results for the groundwater sample collected, presented in **Table K2** in **Appendix K** and in summarised in **Table 9** below were compared to health screening levels documented in the NEPM (NEPC 2013) and to ecological guideline values for fresh water receiving bodies documented in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG 2018).

Table 10: Groundwater Analysis Results Summary

Analyte	Samples	Result	NEPM HSL	ANZG guideline value	Number of exceedances
TRH F1	1	<50	1,000	-	0
TRH F2	1	<60	1,000	-	0
TRH F3	1	<500	NL	-	0
TRH F4	1	<500	NL	-	0
Benzene	1	<0.5	800	950	0
Toluene	1	0.9	NL	180	0
Ethylbenzene	1	<0.5	NL	80	0
Xylene	1	<1.5	NL	75 [1,2]	0
Naphthalene	1	<0.1	NL	16	0

Analyte	Samples	Result	NEPM HSL	ANZG guideline value	Number of exceedances
Anthracene	1	<0.1	-	0.01 [2,3]	1 [4]
BaP	1	<0.1	-	0.1 [2,3]	0
Fluoranthene	1	<0.1	-	1.0 [2,3]	0
Phenanthrene	1	<0.1	-	0.6 [2,3]	0
Arsenic	1	<1	-	13 [5]	0
Cadmium	1	0.1	-	0.2	0
Chromium	1	<1	-	3.3 [2]	0
Copper	1	3	-	1.4	1
Lead	1	<1	-	3.4	0
Nickel	1	6	-	11	0
Zinc	1	150	-	8	1
Mercury	1	<0.1	-	0.06 [3]	1 [4]

Notes
Analytical results and adopted criteria in µg/L
NL - non limiting
1 Criterion for m-xylene adopted
2 Criterion is of unknown reliability
3 Default 99% protection of species guideline value adopted
4 Level of reporting is greater than the adopted criterion
5 Criterion for As V adopted

In summary, with the exception of toluene, organic analytes were not detected above the laboratory limits of reporting and metals, with the exception of zinc, were at low concentrations or below the laboratory limits of reporting. Exceedances of the adopted groundwater criteria were reported for copper and zinc. The reported copper concentration was marginally higher than the criterion, while the zinc concentration was an order of magnitude above the adopted criterion. Zinc is commonly found at elevated concentrations in Ashfield shale, but an on-site source of zinc cannot be discounted. The laboratory reporting limits for anthracene and mercury were higher than the adopted criterion. In instances where the limit of reporting is greater than the assessment level, *the Guidelines for the Assessment and Management of Groundwater Contamination* (DEC 2007) states that the limit of reporting should be used instead of the generic groundwater investigation level.

7.0 SUMMARY OF ASSESSMENT

7.1 Summary

Based on a review of desktop information and 'opportunistic' soil sampling during geotechnical investigations, Golder has undertaken a Preliminary Environmental Investigation of the proposed Gran Central development site at Granville.

In summary:

- The site has an area of approximately 5,150 m^2, is comprised of 11 separate lots, and is zoned B4 Mixed Use;
- The site is located in an area of the Blacktown soil landscape. Residual soils at the site would be poorly drained and have moderately reactive and highly plastic subsoils;
- The site is located in an area identified as having no known occurrence of ASS by ASRIS 2011, and is identified as Class 5 ASS Land on planning sheets of the PLEP (CPC 2011);
- The site has been principally been used for commercial purposes since the early 1900s, with some residential land use. During the 2000s commercial structures in the north east corner of the site and a residential dwelling in the north east corner of the site were demolished, and the cleared areas used as car yards;
- The site is currently owned by Starryland NSW Pty Ltd;
- The site is not the subject of a Notice issued under the *CLM Act*, and there are no premises within 500 m of the site that have been the subject of a Notice;
- The site has not been subject to an EPL under the *POEO Act*. The nearest premises subject to an EPL, or formerly subject to an EPL, is located some 240 m to the south east;
- The site has not been notified under Section 60 of the *CLM Act*. The Caltex service station which abuts the western boundary of the site, and the 7-Eleven service station located further to the west, have been notified to the EPA. The EPA considers that the service station site do not require management under the *CLM Act*;
- Identified land use activities with the potential to contaminate the site include importation of fill, demolition of site structures, vehicle repair or maintenance activities at the car dealerships, the presence of a grease trap near the south east corner of the site, a potential underground feature at the rear of the Barn, and operations at the Caltex service station adjoining the western boundary of the site;
- Opportunistic soil sampling and analysis performed during a geotechnical investigation of the site identified levels of potential contaminants which, with the exception of asbestos in fill samples, were below levels adopted as acceptance criteria for residential land use with minimal access to soil;
- Asbestos (as asbestos fines/fibrous asbestos) was identified in fill material exceeding acceptance criteria (for residential land use with minimal access to soil). It should be noted that the number of geotechnical investigation locations from which soil sampling was completed would not comply with investigation density recommendations made in EPA 1994, and that the locations were generally not optimally located to identified potential contamination sources on site; and
- Groundwater sampling and analysis from a well installed for geotechnical purposes in the north west corner of the site, near the Caltex service station, did not identify the presence of dissolved phase

hydrocarbon impact. As groundwater is inferred to flow in a northerly direction, the service station is likely to be cross-gradient from the site.

7.2 Potential Contamination Risk

The results of the desktop site history review, site inspection and limited opportunistic sampling and analysis was used to assess the potential for past and current activities on the site to have resulted in contamination which may pose a risk to the proposed end-users of the site redevelopment. The risks have been assessed with consideration of the proposed development requiring significant excavation to facilitate construction of one to two levels of basement carparking across the majority of the site.

The following contamination risks have been identified at this preliminary stage:

- Asbestos and metal contamination of fill material would impact on likely waste classification of shallow excavation spoil generated from fill materials;
- Based on the analytical results for sampling performed to date (i.e. to a maximum depth of 1.5 mbgl, see **Section 6.0**) there does not appear to be a significant impact to *in situ* soils. It is noted that the maximum depth of environmental samples at location BH01M may not identify impact from the adjoining service station site;
- Historical demolition of structures on the site may have resulted in impact to near-surface fill;
- There is the potential for hydrocarbon vapours to migrate from the adjacent Caltex service station onto the site and enter future building basements. Although the service station is likely to be hydrogeologically cross gradient, the migration of hydrocarbon vapours in the vadose zone is not influenced by hydraulic gradients;
- Potential soil and/or groundwater impact associated with vehicle repair or maintenance activities at the second hand car dealerships;
- Potential soil and/or groundwater impact from leakage from the grease trap at the rear of the former butchers shop; and
- Potential impact associated with a possible underground feature at the rear of the Barn.

8.0 CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) has been developed following the desk top assessment. The CSM aims to provide an understanding of the potential for exposure to site contaminants of potential concern and associated impacts on the proposed ongoing commercial/residential land use.

Identified historical and current land use activities that may have contributed to potential contamination sources at the site include:

- Potential importation of fill material; and
- Historical and on-going commercial activities.

Potential site contaminant sources located outside the site include:

- Fuel storage and dispensing on the adjoining service station site;
- Various commercial/industrial activities in the immediate vicinity of the site; and
- Potential uncontrolled filling of the surrounding area.

Transportation mechanisms are considered to include:

- Direct release to soil or groundwater;
- Stormwater transportation of soil particles;
- Surface run-off and rainwater infiltration (resulting in leaching of contaminated soils);
- Migration of volatile contaminants site within soil pore space;
- Migration of contaminants in groundwater; and
- Migration of contaminants to groundwater.

Exposure pathways are considered to include:

- Direct contact with soil/fill;
- Ingestion of soils or soil derived dust;
- Inhalation of soil derived dust;
- Inhalation of vapours or fibres;
- Direct contact with surface or groundwater;
- Ingestion of surface or groundwater; and
- Inhalation of aerosols of surface or groundwater.

Potential receptors based on the proposed redevelopment of the site for commercial and high density residential land use were identified as:

- Construction workers;
- Commercial workers;
- Residents;
- Occupants of adjacent sites;

- Off-site flora and fauna;
- Groundwater (particularly shallow groundwater); and
- Site infrastructure.

The potential contaminant sources and migration or exposure pathways identified have the potential to form pollutant linkages which may pose a risk to a receptor. These can be summarised as a preliminary CSM for the proposed redevelopment of the site as presented in **Table 11**.

Table 11: Preliminary Conceptual Site Model

Primary Sources	Secondary Sources	Transport Mechanisms	Exposure Pathways	Receptor
On-site sources				
• Historical importation of uncontrolled fill. • Demolition of structures. • Vehicle maintenance/ repairs. • Historical commercial activities.	• Potentially impacted site soil, soil vapour and groundwater.	• Leaching of contaminants to surface water / groundwater. • Potential vapour intrusion into construction excavations and building basements.	• Direct contact with soil/fill. • Incidental ingestion of soil/fill. • Inhalation of soil/fill derived dust. • Inhalation of volatile contaminants. • Inhalation of fibres. • Contact with ponded surface water or groundwater if encountered. • Inhalation of ponded surface water or groundwater aerosols. • Incidental ingestion of impacted surface water or groundwater.	• Site construction workers. • Future commercial occupants. • Future residents. • Future maintenance workers. • Off-site flora and fauna. • Users of abstracted groundwater. • Site infrastructure.
Off-site sources				
• Uncontrolled filling in the area. • Current and historical commercia/industrial land use in the vicinity of the site (including the Caltex	• Dissolved phase contaminant plume in groundwater. • Soil vapour in pore space.	• Groundwater transport. • Volatilisation/outgassing. • Vapour intrusion into construction excavations and building basements.	• Inhalation of volatile contaminants. • Contact with abstracted groundwater. • Inhalation of abstracted groundwater aerosols.	• Site construction workers. • Future commercial occupants. • Future residents. • Future maintenance workers.

Primary Sources	Secondary Sources	Transport Mechanisms	Exposure Pathways	Receptor
service station abutting the site).			• Incidental ingestion of abstracted groundwater.	• Off-site flora and fauna. • Users of abstracted groundwater. Site infrastructure.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

The Preliminary Environmental Investigation of the proposed Gran Central development site at Granville has identified the presence of potential contamination risks to the proposed redevelopment. Areas of environmental concern on the site were identified as follows:

- The area adjacent to the Caltex service station due to the potential for migration in the vadose zone of hydrocarbon vapours onto the site and into future building basements;
- Shallow fill across the site potentially impacted by asbestos, PAH and metals;
- The central area of the site where vehicle repair or maintenance activities have occurred;
- The vicinity of a grease trap in the south eastern corner of the site; and
- A possible underground feature at the rear of the Barn.

Asbestos and metal contamination of fill material was identified by the limited sampling program, potentially indicating poor historical demolition practices or the importation of uncontrolled fill. The identification of asbestos, PAHs and metal in fill material has implications on the disposal of excavation spoil from the site. Based on the available results, fill material would likely be classified as *Special Waste (asbestos) - Restricted Solid Waste* for the purposes of off-site disposal.

It should be noted that the likely waste classification may be able to be reduced through management of excavation of material and separation of fill and natural materials, and by performing TCLP analysis to determine the leachable concentrations of BaP and metals. A formal waste classification prepared in accordance with the requirements of EPA 2014 for material disposed from site would be required prior to off-site disposal occurring.

There is the potential that the underlying in-situ material may be able to be classified as Virgin Excavated Natural Material (VENM) for the purpose of off-site disposal.

9.2 Recommendations

Based on the findings of the Preliminary Environmental Investigation, it is recommended the following investigations be performed:

- Perform a Detailed Site Investigation (DSI) of the site in accordance with the requirements of EPA endorsed guidance including the *Sampling Design Guidelines* (EPA 1994), *Guidelines for Consultants Reporting on Contaminated Sites* (OEH 2011), *Guidelines for the Assessment and Management of Groundwater Contamination* (DEC 2007) and the *Guidelines for the NSW Site Auditor Scheme (3rd edition)* (EPA 2017). The DSI should include a grid based and targeted sampling across the site to assess the potential for impact to fill and in-situ material. Locations which should be assessed by targeted sampling or non-intrusive methodologies (e.g. ground penetrating radar) include:
  - The area of the site adjacent to the Caltex service station;
  - The areas potentially impacted by vehicle maintenance or repairs;
  - The grease trap; and
  - The potential underground feature at the rear of the Barn.

In particular, the DSI should include assessments of:

- The potential for soil vapour from the adjacent Caltex service station to enter the basement of the proposed development;
- Groundwater quality and flow direction across the site; and
- Potential waste classification of fill and in-situ materials across the site.

A Sampling Analysis Quality Plan (SAQP) should be prepared to document the scope of the proposed DSI prior to commencement of intrusive investigations.

Depending on the findings of the DSI and the type or extent of impact identified, a remedial action report (RAP) or other management document (e.g. a contamination management plan) may be required to facilitate the redevelopment of the site. Such documentation would be prepared in the context of the proposed development (i.e. the contamination issues would likely be substantially addressed through the excavation already proposed).

10.0 LIMITATIONS

Your attention is drawn to the document titled - “Important Information Relating to this Report”, which is included in **Appendix M** of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

11.0 REFERENCES

ANZG 2018 *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments, August 2018

ASRIS 2011 *ASRIS – Australian Soil Resource Information System*. http://www.asris.csiro.au. Accessed August 2018.

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EPA 1995 *Sampling Design Guidelines*, NSW Environment Protection Authority, September 1995.

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Golder 2019 *Proposed Gran Central Development Geotechnical Preliminary Investigation Report*, Golder Associates Pty Ltd, reference 19122955-001-R-Rev0 PGI, 30 August 2019.

NBRS 2015 *Heritage Assessment Report Planning Proposal 138 Parramatta Road Granville*, NBRS & Partners Pty Ltd, March 2015.

NEPC 2013 *National Environment Protection (Assessment of Site Contamination) Measure 1999*, National Environment Protection Council, 2013.

OEH 2011 *Guidelines for Consultants Reporting on Contaminated Sites*, NSW Office of Environment and Heritage, August 2011.

Signature Page

Golder Associates Pty Ltd





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Figures



LEGEND

Site boundary

0 40 80

1:1,000 METRES

NOTE(S)

1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 56

REFERENCE(S)

1. AERIAL PHOTO (C) NEARMAP
2. KEYMAP SOURCED FROM ESRI ONLINE BASEMAPS

CLIENT
STARRYLANDS

PROJECT
GRAN CENTRAL DEVELOPMENT

TITLE
SITE LOCATION

CONSULTANT
GOLDER

DD-MM-YYYY	06-09-2019
DESIGNED	EAA
PREPARED	EAA
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

25mm

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LEGEND

Property boundaries

0 15 30

1:400 METRES

NOTE(S)
1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 56

REFERENCE(S)
1. AERIAL PHOTO (C) NEARMAP
2. KEYMAP SOURCED FROM ESRI ONLINE BASEMAPS

CLIENT
STARRYLANDS

PROJECT
GRAN CENTRAL DEVELOPMENT

TITLE
STREET ADDRESSES OF SITE LOTS

CONSULTANT
GOLDER

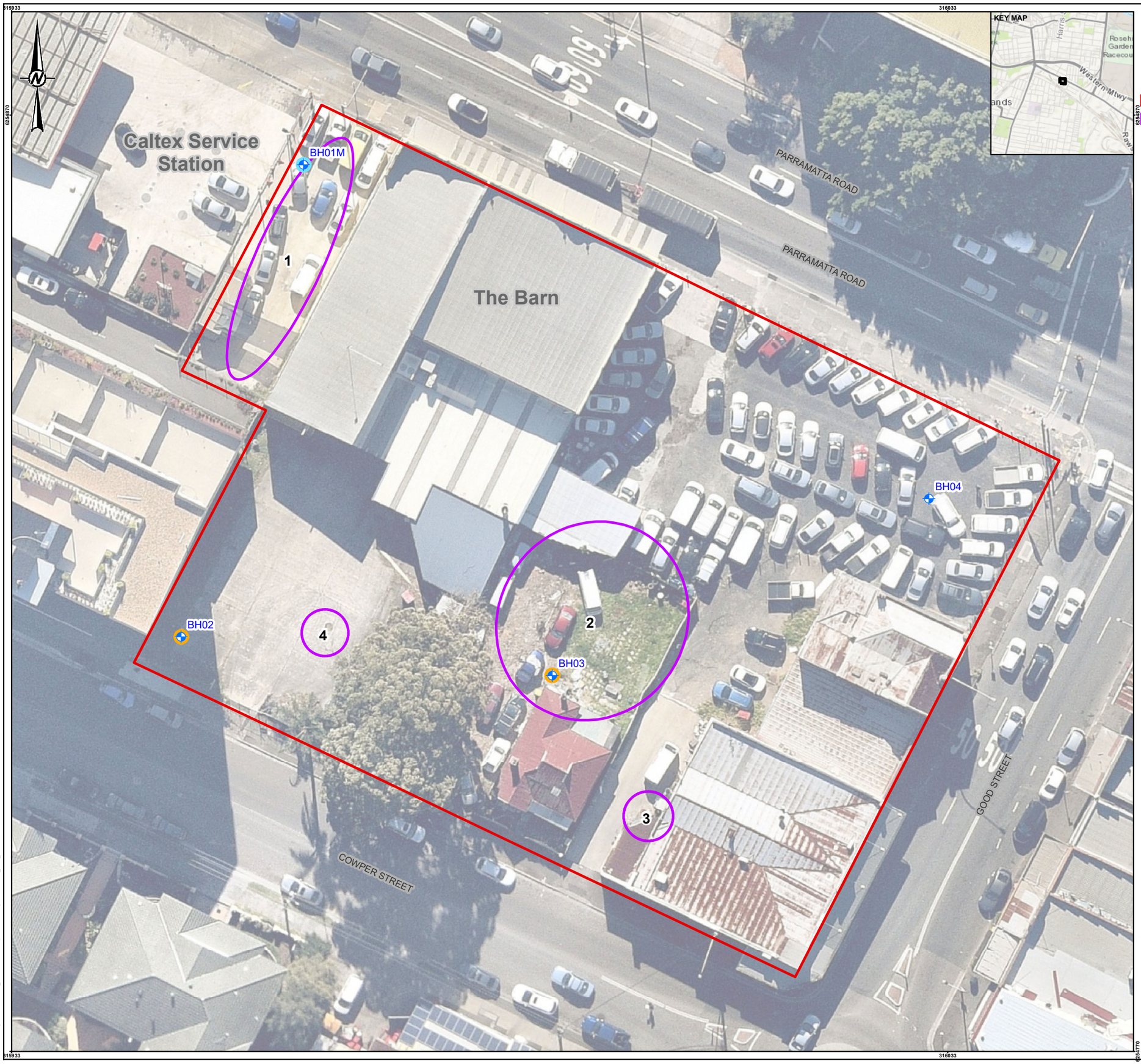
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DESIGNED	EAA
PREPARED	EAA
REVIEWED	-
APPROVED	-

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25mm



LEGEND

- Investigation location
- Monitoring well
- Asbestos in fill detection
- Site boundary
- Area of environmental concern:
  1. Area adjacent to Caltex service station
  2. Vehicle maintenace / repairs
  3. Grease trap
  4. Potential underground feature

0 15 30

1:400 METRES

NOTE(S)
1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 56

REFERENCE(S)
1. AERIAL PHOTO (C) NEARMAP
2. KEYMAP SOURCED FROM ESRI ONLINE BASEMAPS

CLIENT
STARRYLANDS

PROJECT
GRAN CENTRAL DEVELOPMENT

TITLE
AREAS OF ENVIRONMENTAL CONCERN

CONSULTANT
GOLDER

DD-MM-YYYY	06-09-2019
DESIGNED	EAA
PREPARED	EAA
REVIEWED	-
APPROVED	-

PROJECT NO.	CONTROL	REV.	FIGURE
19122955	-	-	3

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APPENDIX A

Site Photographs



1. View to east across the car yard on 38-44 Good Street. The rear of the former fire station building at 32 Good Street is visible on the right side of the image.



2. View to north west across the car yard on 38-44 Good Street. The building wall visible in the image is the eastern side of the furniture store located at 138 Parramatta Road.



3. Car sales office below awning at the southern end of 134 Parramatta Road. Evidence of car repairs taking place in this area included drums of solvent, spare tyres, vehicle parts and staining on the asphalt surface.



4. View to south west across 59 and 61 Cowper Street. Note the presence of spare tyres, a 200 L solvent drum and parked vehicles.



5. View to south across 59 and 61 Cowper Street. Note the presence of waste material on the exterior of the house, and the presence of spare automotive fittings in the foreground.



6. View to the south along Good Street with 32 Good Street in the foreground.



7. View of interior of 32 Good Street.



8. View of interior of southern part of the furniture store at 138 Parramatta Road.



9. View to south of the concrete paved area at the rear of 138 Parramatta Road.



10. View of metal feature in concrete slab at the rear of 138 Parramatta Road, visible in the image above.



11. View to north across Cowper Street of (from left to right) 61 Cowper Street, 59 Cowper Street and 26-30 Good Street.



12. View to north along driveway at the rear of 26-30 Good Street. Note the presence of a grease trap at the rear of the former butcher's shop.

APPENDIX B

Aerial Photographs



1943 (source: SIX Maps)



1951 (source: LPI)



1961 (source: LPI)



1970 (source: LPI)



1986 (source: LPI)



1991 (source: LPI)



2002 (source: LPI)



2009 (source: Nearmap)



2017 (source: Nearmap)



2019 (source: Nearmap)

APPENDIX C

Land Titles

Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/76041

SEARCH DATE	TIME	EDITION NO	DATE
19/8/2019	5:16 PM	5	13/5/2019

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO.
CONTROL OF THE RIGHT TO DEAL IS HELD BY WESTPAC BANKING CORPORATION.

LAND

LOT 1 IN DEPOSITED PLAN 76041
AT GRANVILLE
LOCAL GOVERNMENT AREA CITY OF PARRAMATTA
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP76041

FIRST SCHEDULE

STARRYLAND NSW PTY LTD (T AP237384)

SECOND SCHEDULE (5 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 R963179 RIGHT OF WAY 3 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED & SHOWN IN PLAN ANNEXED TO R963179
3 R963179 EASEMENT FOR SUPPORT 0.23 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED & SHOWN IN PLAN ANNEXED TO R963179
4 AN209793 PLANNING AGREEMENT PURSUANT TO SECTION 7.6 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979
5 AP237387 MORTGAGE TO WESTPAC BANKING CORPORATION

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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New South Wales Land Registry > Prior Title Search

NSW: Prior Title Search - 1/76041

Prior Title
3883-42

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Received: 19/08/2019 17:19:11

Req:R820430 /Doc:CT 03883-042 CT /Rev:04-Aug-2012 /NSW LRS /Prt:19-Aug-2019 17:22 /Seq:1 of 2
© Office of the Registrar-General /Src:INFOTRACK /Ref:PO21960

Appn. No. 260441

New South Wales.

74495 7-25

[CERTIFICATE OF TITLE]

REGISTER BOOK,
VOL. 3883 FOL. 42

CANCELLED W
ON ISSUE OF NEW FOLIO 1/760441

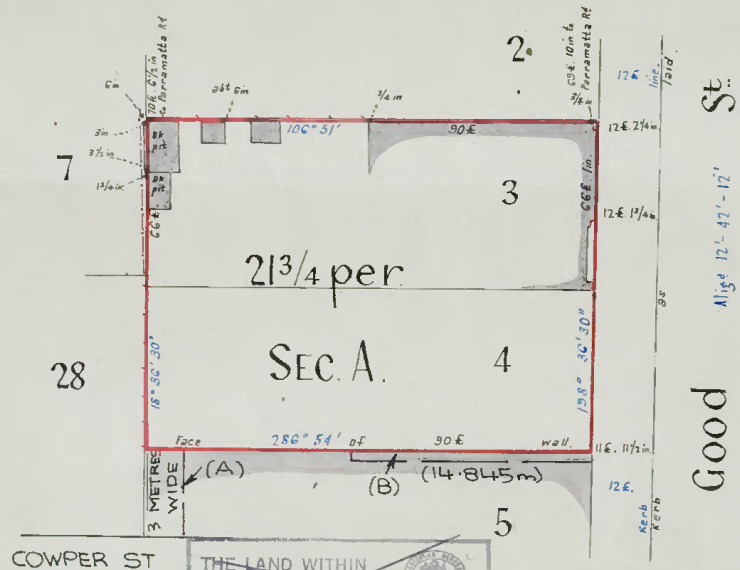
Board of Fire Commissioners of New South Wales Applicant in primary Application No. 260441 is now the proprietor of an Estate in Fee Simple subject nevertheless to the reservations and conditions if any contained in the Grant hereinafter referred to and also subject to such encumbrances liens and interests as are notified hereon in That piece of land situated in the Municipality of Granville Parish of Liberty Plains and County of Cumberland containing Twenty-one and three quarters perches or thereabouts as shown in the plan hereon and therein edged red and also shown in the plan lodged with the said Application No 260441 being Lots 3 and 4 of Section A of Sutton's Subdivision and being part of One thousand one hundred and twenty five acres (Portion 1 of Parish) delineated in the public map of the said Parish in the Department of Lands originally granted to Farnham Blaxcell by Crown Grant dated the first day of January one thousand eight hundred and six

In witness whereof I have hereunto signed my name and affixed my Seal, this first day of July 1926

Signed in the presence of R. Macay

Registrar General.

(A) RIGHT OF WAY - R963179
(B) EASEMENT FOR SUPPORT 0·23 METRES WIDE - R963179



Scale: 30ft to one inch.

THE LAND WITHIN DESCRIBED IS Lots FP 5604/3,4 Sec A IN DP 979437

THE LAND WITHIN DESCRIBED IS NOW Lot 1 in DP 76041

NOTIFICATION REFERRED TO

George Avramides of Granville Baker is now the registered proprietor of the land within described.

See TRANSFER No. K229569 dated 25th January 1966

Entered 28th January 1966

REGISTRAR GENERAL

No. N493493 CAVEAT dated 26th September 1973 Registered 16th October, 1973

Withdrawn N840960 30-5-1974

Registrar General.

Heathrow Holdings Pty Limited is now the registered proprietor of the land within described.

See TRANSFER No. N840961 dated 3rd May 1974

Entered 30th May 1974

REGISTRAR GENERAL

No. N840962 MORTGAGE dated 3rd May 1974 to Commercial and General Acceptance Limited

Entered 30th May 1974

DISCHARGED Q15785G 3-5-1977

REGISTRAR GENERAL

N493493 PtCX

N840961

N493493 PtCX
N840960 W/d (R)
& 61 TE
Bundle (R)

Req:R820430 /Doc:CT 03883-042 CT /Rev:04-Aug-2012 /NSW LRS /Prt:19-Aug-2019 17:22 /Seq:2 of 2
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MORTGAGE No. Q157857 to PERMANENT NOMINEES (AUST) LIMITED

Registered 3-5-1977

Q157857 Transferred to AB22661 23-7-2004

REGISTRAR GENERAL

822166 MORTGAGE TO HENDRIKUS ANTONIUS LAZAROM. REGISTERED 21.12.2001

AB57775 3/11/2004

AB22661 CAVEAT BY BRODIEVILLE PTY LIMITED REGISTERED 18-10-2004

AB57774 3/11/2004

REGISTERED PROPRIETORS Hendrikus Antonius Lazarom of Peregrinella in 3 shares and Ferdinandus Theodorus Ignatius ter Beek of North Rocks in 2 shares both Company Directors may in connection with Transfer R944941. Registered 23-7-1980.

REGISTRAR GENERAL

REGISTERED PROPRIETOR BRODIEVILLE PTY LIMITED BY TRANSFER AB57775 REGISTERED 3/11/2004

RP AB57775

Transfer No. R963179 Right of Way appurtenant to ~~the~~ the land above described affecting the land shown so burdened in the plan hereon Registered 1.12.1980

REGISTRAR GENERAL

AB57776 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED. REGISTERED 3-11-2004

B AB57776

COMPUTER FOLIO NO FURTHER DEALINGS TO BE REGISTERED.

Transfer No. R963179 Easement for Support appurtenant to the land above described affecting the land shown so burdened in the plan hereon Registered 1.12.1980

REGISTRAR GENERAL

T 496657 Caveat by Ferdinandus Theodorus Tatius ter Beek Registered 7-4-1983

Withdrawn V504047 5-3-1985

REGISTRAR GENERAL

REGISTERED PROPRIETOR Hendrikus Antonius Lazarom by Transfer V504049 Registered 5-3-1985.

REGISTERED PROPRIETOR TEKINVEST PTY LTD BY TRANSFER 8221065 REGISTERED 21.12.2001.

Q157857 P/W 7 M.L.
R 944940 OM/R 41 ZOR
R963179 R
T496657 W/R
V504047 W/R
V504049 WT/R 9T
8221065 T 66 M/R
AB22661 XR
AB57774 WX 75TP 76M
42

Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 7706-186

SEARCH DATE	TIME	EDITION NO	DATE
19/8/2019	5:37 PM	9	13/5/2019

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO.
CONTROL OF THE RIGHT TO DEAL IS HELD BY WESTPAC BANKING CORPORATION.

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
AT GRANVILLE
LOCAL GOVERNMENT AREA CITY OF PARRAMATTA
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1075357

FIRST SCHEDULE

STARRYLAND NSW PTY LTD (T AP237386)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AN209793 PLANNING AGREEMENT PURSUANT TO SECTION 7.6
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979
3 AP237387 MORTGAGE TO WESTPAC BANKING CORPORATION

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS

LOTS 1-6 IN DP1075357.

*** END OF SEARCH ***

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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Received: 19/08/2019 17:37:02

New South Wales Land Registry > Prior Title Search

NSW: Prior Title Search - 2/1075357

Prior Title
7706-186

This information is provided as a searching aid only. The Registrar General does not guarantee the information provided.

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Received: 19/08/2019 17:29:54

Req:R820486 /Doc:CT 07706-186 CT /Rev:11-Aug-2012 /NSW LRS /Prt:19-Aug-2019 17:31 /Seq:1 of 2
© Office of the Registrar-General /Src:INFOTRACK /Ref:PO21960

202

New South Wales

[CERTIFICATE OF TITLE.]

Primary Appn. No. 37855

Reference to Last Title

Vol. 6600 Fol. 110

Charting Map Granville Sheet 7.

EH

REGISTER BOOK.

VOL. 7706 FOL. 186

Issued on Order No. G522653

CANCELLED (W)

FOLIO CANCELLED - NEW FOLIO IS AUTO CONSOL 7706-186

JOHN ROBERT COLQUHOUN, of Sydney, Company Director, is now the proprietor of an Estate in Fee Simple, subject nevertheless to the reservations and conditions, if any, contained in the Grant hereinafter referred to, and also subject to such encumbrances, liens, and interests as are notified hereon, in That piece of land at Granville in the City of Parramatta Parish of Liberty Plains, and County of Cumberland shown in the plan hereon and therein edged red being Lots 9, 10, 11, 24, 25 and 26 of Suttor's Subdivision of Section A of Granville Township and being part of Portion 1 granted to Garnham Blaxcell on 1st January 1806.

11(2) APP 87855 NO 1 PT 1.

In witness whereof I have hereunto signed my name and affixed my Seal, this Eleventh day of June, 19 59.

Signed in the presence of S.J. Mortimer

Jan Watson
Registrar-General.

REGISTRAR GENERAL * NEW SOUTH WALES *

Area: 1rd. 38¼ per.

Scale: 30 feet to one inch.

NOTIFICATION REFERRED TO

No. F742130 Mortgage dated 1st October 1952 from John Robert Colquhoun to The Commercial Banking Company of Sydney Limited. Produced 9th October 1952 and entered 9th December 1952 at 12 o'clock noon.

Jan Watson
Registrar General.

REGISTRAR GENERAL * NEW SOUTH WALES *

Discharged V669600 22-4-1985

No. M308607 Lease dated 1st May 1971
to Dawes Furniture Pty. Limited

Entered 28th June 1971

Expired 1-9-1976

Jan Watson
REGISTRAR GENERAL

REGISTRAR GENERAL * NEW SOUTH WALES *

Lse M308607.

C.T. PRODUCED 11/12/1959
BY H. Cox NSW

CT 20-8-76

G522653

8-6-76

Persons are cautioned against altering or adding to this Certificate or any notification thereon.

50745 12.58 K 2006—I V. C. N. Blight, Government Printer

Req:R820486 /Doc:CT 07706-186 CT /Rev:11-Aug-2012 /NSW LRS /Prt:19-Aug-2019 17:31 /Seq:2 of 2
© Office of the Registrar-General /Src:INFOTRACK /Ref:PO21960

No. P866088 Lease dated 25th June 1976
to Daveys Furniture Pty Limited
Entered 1st September 1976
cancelled T745865 25-11-1983.
REGISTRAR GENERAL

T745865 lease to Pacific Outdoor Advertising Pty. Limited of the part of the roof space of the building known as No. 138 Parramatta Road, Granville shown in plan with T745865 together with option of renewal. Expiry date 3-8-1986.
Registered 25-11-1983.
Y623027
REGISTRAR GENERAL

REGISTERED PROPRIETOR Janet Taylor Johnston Colquhoun and ~~Alexander~~ Alexander Charles Colquhoun as tenants in common in equal shares by transfer V669601. Registered 22-4-1985

V669602 Mortgage to National Australia Bank Limited. Registered 22-4-1985
F226163
22.11.1991

Y623027 LEASE TO EBON PTY LIMITED EXPIRED 30-9-1991 REGISTERED 12-10-1989
CANCELLED E226163
22.11.1991

REGISTERED PROPRIETOR JOHN COLQUHOUN BY TRANSFER Y623026 REGISTERED 12-10-1989

E226164 Mortgage to National Australia BANK Limited. Registered 22.11.1991
3920268
28-4-1998

E129603 Lease to Macademy (Aust) Pty Limited. Expires 30-9-2001. Registered 9-1-1992

3920269 MORTGAGE TO WESTPAC BANKING CORPORATION REGISTERED 28-4-1998.
7073820
18-9-2000

REGISTERED PROPRIETOR STEPHEN EDWARD MANNING AND SIMONE MARIA FECHNER AS TENANTS IN COMMON IN EQUAL SHARES BY TRANSFER 7073821. REGISTERED 18-9-2000

7073822 MORTGAGE TO WESTPAC BANKING CORPORATION. REGISTERED 18-9-2000

B 7073822

C T's 30.7.93 Lease Registered 6.7.93
C T's 9.9.93 T745865 (morgaged)
V669600 BM 2 M/R
Y623027 T M/R
E226163 DM 64 M/R
E129603 Ls & R
3920268 BM 9 M/R
7073820 DM 21 T 23 M/R

Req:R820511 /Doc:CT 06600-110 CT /Rev:09-Aug-2012 /NSW LRS /Prt:19-Aug-2019 17:35 /Seq:1 of 2
© Office of the Registrar-General /Src:INFOTRACK /Ref:PO21960

166 Appn. No. 37855

New South Wales.

89817 9.51

[CERTIFICATE OF TITLE.]

CANCELLED

REGISTER BOOK.
VOL. 6600 FOL. 110

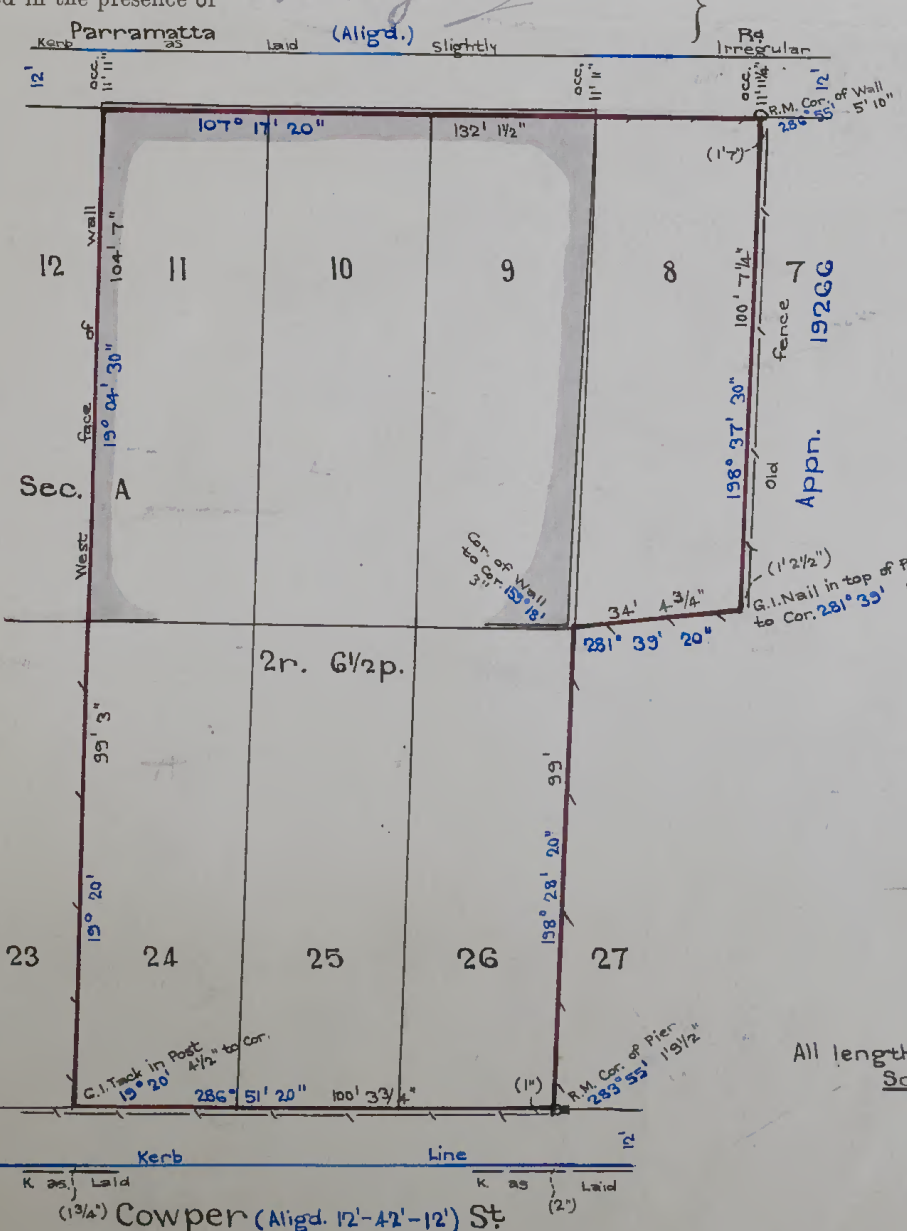
JOHN ROBERT COLQUHOUN, of Sydney, Company Director, Applicant in Primary Application No. 37855 is now the proprietor of an Estate in Fee Simple, subject nevertheless to the reservations and conditions if any contained in the Grant hereinafter referred to and also subject to such encumbrances liens and interests as are notified hereon in That piece of land situated at Granville in the City of Parramatta Parish of Liberty Plains and County of Cumberland containing Two roods six and one half perches or thereabouts as shown in the plan hereon and therein edged red and also shown in the plan lodged with the said Application No. 37855 being Lots 8 to 11 inclusive and Lots 24, 25 and 26 of Suttor's Subdivision of Section A of Granville Township and being part of 1125 acres (Portion 1 of Parish) originally granted to Garnham Blaxcell by Crown Grant dated the 1st day of January 1806.

In witness whereof I have hereunto signed my name and affixed my Seal, this Ninth day of December , 1952

Signed in the presence of R.R. FitzGerald

J. Wells
Registrar-General.

REGISTRAR GENERAL * NEW SOUTH WALES *



All lengths shown hereon are in feet & inches
Scale; 30 feet to one inch.

P.A. 37855

Req:R820511 /Doc:CT 06600-110 CT /Rev:09-Aug-2012 /NSW LRS /Prt:19-Aug-2019 17:35 /Seq:2 of 2
© Office of the Registrar-General /Src:INFOTRACK /Ref:PO21960

M

No. F 142130 MORTGAGE dated 1st October 1952
from the said John Robert Colquhoun to The Commercial Banking Company of Sydney Limited

Produced 9th October 1952 and entered 24th December 1952
at 12 o'clock ~~in the~~ noon.

J. Wells

REGISTRAR GENERAL

No. H 75104 TRANSFER dated 11th June 1956.
to Colin Edward Wyatt of Lot 8 on
plan annexed to this transfer

of the land within described.
Discharged from Mortgage F 142130
duly seel to covenant.
Entered 3rd December 1958.
As to land in this transfer this deed is cancelled and new certificate issued
Vol. 7612 Fol. 87

REGISTRAR GENERAL

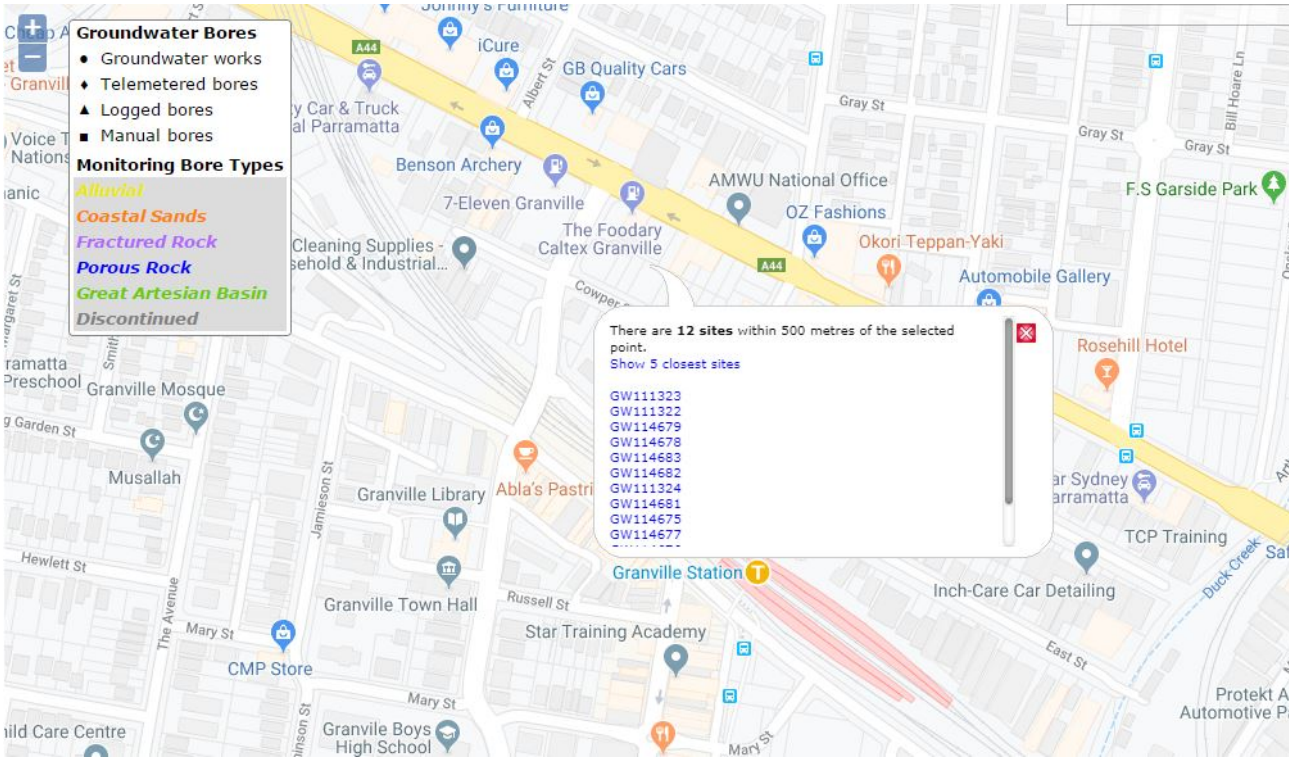
As to the residue
this Deed is cancelled and new Certificate of Title Issued
Vol 7706 Fol. 186
Vide O G 522653

Registrar General.

CT 14/6/56
G 520882 new H 75104 Lot 8
3 T.NC
new H 75105 NC
G 522653 B/D

APPENDIX D

Groundwater Bore Search Results


Groundwater Bores
Groundwater works
Telemetered bores
Logged bores
Manual bores
Monitoring Bore Types
Alluvial
Coastal Sands
Fractured Rock
Porous Rock
Great Artesian Basin
Discontinued
There are 12 sites within 500 metres of the selected point.
Show 5 closest sites
GW111323
GW111322
GW114679
GW114678
GW114683
GW114682
GW111324
GW114681
GW114675
GW114677
iCure
GB Quality Cars
Benson Archery
7-Eleven Granville
The Foodary
Caltex Granville
AMWU National Office
OZ Fashions
Okori Teppan-Yaki
Automobile Gallery
F.S Garside Park
Rosehill Hotel
Granville Mosque
Musallah
Granville Library
Granville Town Hall
Granville Station
Star Training Academy
CMP Store
Granvile Boys High School
TCP Training
Inch-Care Car Detailing
Gray St
Albert St
Bill Hoare Ln
Hewlett St
The Avenue
Jamieson St
Mary St
Russell St
East St
Duck Creek
A44

WaterNSW
Work Summary

GW111322

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:** 3.60 m
Completion Date: 25/05/2007 **Drilled Depth:** 3.60 m

Contractor Name: (None)
Driller: Unkown Unknown
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	21//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254859.000 **Latitude:** 33°49'49.7"S
Elevation Source: Unknown **Easting:** 315874.000 **Longitude:** 151°00'37.0"E

G8 Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	3.60	125			Unknown

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	TOPSOIL,GRAVELLY SILTY SAND	Topsoil	
0.30	2.20	1.90	FILL,SILTY CLAY,MEDIUM DENSITY	Fill	
2.20	3.50	1.30	SAND,MEDIUM GRAIN,GREY,SOFT	Sand	
3.50	3.60	0.10	CLAY,LOW TO MODERATE PLASTICITY,GREY,SHALE	Clay	

WaterNSW
Work Summary

GW111323

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:** 4.10 m
Completion Date: 25/05/2007 **Drilled Depth:** 4.10 m

Contractor Name: (None)
Driller: Unkown Unknown
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	21//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254883.000 **Latitude:** 33°49'49.0"S
Elevation Source: Unknown **Easting:** 315887.000 **Longitude:** 151°00'37.5"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	4.10	125			Unknown

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	TOPSOIL,SILTY SAND,FINE GRAIN	Topsoil	
0.30	2.50	2.20	FILL,SANDY CLAY,RED BROWN,GREY MOTTLING	Fill	
2.50	4.10	1.60	SHALE,WEATHERED,STIFF TO HARD,SOME CLAY	Shale	

WaterNSW
Work Summary

GW111324

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: **Final Depth:** 8.10 m
Completion Date: 25/05/2007 **Drilled Depth:** 8.10 m

Contractor Name: (None)
Driller: Unkown Unknown
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254886.000 **Latitude:** 33°49'48.9"S
Elevation Source: Unknown **Easting:** 315863.000 **Longitude:** 151°00'36.5"E

G8 Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	8.10	125			Unknown

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	TOPSOIL,SILTY SAND,FINE GRAIN,BROWN	Topsoil	
0.30	5.50	5.20	FILL,GRAVELLY CLAY,MODERATE PLASTICITY,RED BROWN	Fill	
5.50	8.10	2.60	SHALE,DARK GREY,HARD,UNIFORM,WET	Shale	

WaterNSW
Work Summary

GW114675

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 7.50 m
Completion Date: 01/04/2011 **Drilled Depth:** 7.50 m

Contractor Name: Numac
Driller: Unkown Unknown
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254887.000 **Latitude:** 33°49'48.8"S
Elevation Source: Unknown **Easting:** 315861.000 **Longitude:** 151°00'36.5"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.50	0			Auger - Solid Flight
1	1	Casing		0.00	4.50				

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	CLAYAY SAND WITH MINOR GRAVEL	Sand	
0.20	0.50	0.30	SAND FINE GRAINED,MOIST,DAR BROWN	Sand	
0.50	1.00	0.50	CLAYEY SANDY GRAVEL,DARK BROWN	Gravel	
1.00	2.80	1.80	SILTY CLAY STIFF,MOIA,LOW PLASTICITY	Silty Clay	
2.80	4.00	1.20	SILTY CLAY STIFF,MOIST GREY BROWN	Silty Clay	
4.00	7.50	3.50	SHALE WEATHERED,HARD SLIGHTLY MOIST	Shale	

WaterNSW
Work Summary

GW114676

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 01/04/2011

Final Depth: 7.50 m
Drilled Depth: 7.50 m

Contractor Name: Numac
Driller: Unkown Unknown
Assistant Driller:

Property:
GWMA:
GW Zone:

Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6254896.000
Easting: 315858.000

Latitude: 33°49'48.5"S
Longitude: 151°00'36.4"E

GS Map: -

MGA Zone: 56

Coordinate Source: Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressu
Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.50	0			Unknown
1	1	Casing		0.00	4.50				

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	CONCRETE	Fill	
0.20	0.50	0.30	GRAVELLY SANDY CLAY	Clay	
0.50	1.40	0.90	SILTY CLAY,MINOR IRONSTONE	Silty Clay	
1.40	2.40	1.00	SILTY CLAY,WEATHERED SHALE	Silty Clay	
2.40	3.00	0.60	SHALE WEATHERED,MINOR SILT AND CLAY	Shale	
3.00	4.50	1.50	SHALE WEATHERED MINOR SILT AND CLAY	Shale	
4.50	6.00	1.50	SHALE WEATHERED MINOR SILT AND CLAY FIRM	Shale	
6.00	7.50	1.50	SHALE VERY WEATHERED MINOR SILT AN CLAY	Shale	

WaterNSW
Work Summary

GW114677

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 7.50 m
Completion Date: 31/03/2011 **Drilled Depth:** 7.50 m

Contractor Name: Numac
Driller: Unkown Unknown
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254898.000 **Latitude:** 33°49'48.5"S
Elevation Source: Unknown **Easting:** 315865.000 **Longitude:** 151°00'36.6"E

G8 Map: - **MGA Zone:** 56 **Coordinate Source:** Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.50	0			Unknown
1	1	Casing		0.00	4.50				

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	CONCRETE	Fill	
0.20	0.50	0.30	SANDY GRAVEL FINE GRAINED SAND	Gravel	
0.50	1.00	0.50	SILTY CLAY WITH MINOR GRAVEL, FINE GRAINED SAND	Silty Clay	
1.00	1.20	0.20	SILTY CLAY WITH MINOR GRAVEL,RED BROWN	Silty Clay	
1.20	2.00	0.80	SILTY CLAY,MINOR IRONSTONE,RED BROWN	Silty Clay	
2.00	2.80	0.80	SHALE WEATHERED MINOR SILT HARD	Shale	
2.80	5.85	3.05	SHALE WEATHERED SHALE,MINOR SILT,DRY	Shale	
5.85	7.50	1.65	SHALE VERY WEATHERED,SOFT,MOIST,LOW PLASTICITY	Shale	

WaterNSW
Work Summary

GW114678

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 8.50 m
Completion Date: 31/03/2011 **Drilled Depth:** 8.50 m

Contractor Name: Numac
Driller: Unkown Unknown
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254894.000 **Latitude:** 33°49'48.6"S
Elevation Source: Unknown **Easting:** 315875.000 **Longitude:** 151°00'37.0"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	8.50	0			Unknown
1	1	Casing		0.00	5.50				

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	CONCRETE	Fill	
0.20	0.40	0.20	SANDY GRAVEL,FINE GRAINED	Gravel	
0.40	0.80	0.40	SILTY CLAY , MINOR IRONSTONE	Silty Clay	
0.80	1.00	0.20	SILTY CLAY , SHALE,FIRM,MOIST	Silty Clay	
1.00	2.00	1.00	SHALE WEATHERED,MINOR IRONSTONE	Shale	
2.00	2.70	0.70	SHALE WEATHERED,DRY, LOW PLASTICITY	Shale	
2.70	7.00	4.30	SHALE WEATHERED,MINOR SILT LOW PLASTICITY	Shale	
7.00	8.50	1.50	SHALE WEATHERED,MINOR SILT,HARD,MOIST TI WET	Shale	

WaterNSW
Work Summary

GW114679

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 7.50 m
Completion Date: 01/01/2011 **Drilled Depth:** 7.50 m

Contractor Name:
Driller: Dean Ryan
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:			
Licensed:	CUMBERLAND	LIBERTY PLAINS	20//1110662

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254890.000 **Latitude:** 33°49'48.7"S
Elevation Source: Unknown **Easting:** 315874.000 **Longitude:** 151°00'37.0"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.50	0			Unknown
1	1	Casing	P.V.C.	0.00	0.00	50			

WaterNSW
Work Summary

GW114680

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 7.50 m
Completion Date: 01/01/2011 **Drilled Depth:** 7.50 m

Contractor Name: Numac
Driller: Dean Ryan
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254877.000 **Latitude:** 33°49'49.1"S
Elevation Source: Unknown **Easting:** 315848.000 **Longitude:** 151°00'36.0"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.50	0			Unknown
1	1	Casing	P.V.C.	0.00	0.00	50			

WaterNSW
Work Summary

GW114681

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 01/01/2011

Final Depth: 7.50 m
Drilled Depth: 7.50 m

Contractor Name: Numac
Driller: Dean Ryan
Assistant Driller:

Property:
GWMA:
GW Zone:

Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6254868.000
Easting: 315855.000

Latitude: 33°49'49.4"S
Longitude: 151°00'36.2"E

G8 Map: -

MGA Zone: 56

Coordinate Source: Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.50	0			Unknown
1	1	Casing	P.V.C.	0.00	0.00				

WaterNSW
Work Summary

GW114682

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 8.00 m
Completion Date: 01/01/2011 **Drilled Depth:** 8.00 m

Contractor Name: Numac
Driller: Dean Ryan
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254865.000 **Latitude:** 33°49'49.5"S
Elevation Source: Unknown **Easting:** 315856.000 **Longitude:** 151°00'36.3"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	8.00	0			Unknown
1	1	Casing	P.V.C.	0.00	0.00	50			

WaterNSW
Work Summary

GW114683

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 3.00 m
Completion Date: 01/01/2011 **Drilled Depth:** 3.00 m

Contractor Name: Numac
Driller: Dean Ryan
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	LIBERTY PLAINS	20//1110662
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6254862.000 **Latitude:** 33°49'49.6"S
Elevation Source: Unknown **Easting:** 315857.000 **Longitude:** 151°00'36.3"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unidentified

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	3.00	0			Unknown
1	1	Casing	P.V.C.	0.00	0.00	50			

APPENDIX E

EPA Register Search Results

CLM ACT RECORD OF NOTICES SEARCH RESULTS

Search results

Your search for: LGA: Parramatta City Council

Matched 99 notices relating to 16 sites.

Search Again Refine Search

Suburb	Address	Site Name	Notices related to this site
CAMELLIA	12 Grand AVENUE	Bitumen Manufacturer	2 current and 9 former
CAMELLIA	6 Grand AVENUE	Former Akzo Nobel site	3 current and 13 former
CAMELLIA	39 Grand AVENUE	Former Asciano Properties	8 current and 4 former
CAMELLIA	Durham STREET	Former Shell Clyde Refinery	2 current
CAMELLIA	14 Grand AVENUE	Hymix Concrete	1 current and 2 former
CAMELLIA	1 Grand AVENUE	James Hardie Factory (former, eastern portion)	1 former
CAMELLIA	41 Grand AVENUE	Sydney Water	3 former
CAMELLIA	37 Grand AVENUE	Veolia	7 current and 3 former
CAMELLIA	13 Grand AVENUE	Wrigg	1 current
GRANVILLE	2B Factory STREET	Commercial Property	1 current and 2 former
ROSEHILL	2 Ritchie STREET	2 Ritchie Street, Rosehill	2 former
ROSEHILL	Devon STREET	James Hardie Australia and former James Hardie lands	4 current and 6 former
RYDALMERE	348 Victoria ROAD	Mitsubishi Electric	3 current and 5 former
RYDALMERE	1 Alan STREET	Rheem Australia	5 former
SYDNEY OLYMPIC PARK	Shane Gould AVENUE	Aquatic Centre Carpark Landfill	1 current and 8 former
SYDNEY OLYMPIC PARK	At Kronos Hill, Kevin Coombes AVENUE	Haslams Creek South Area 3	1 current and 3 former

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Search results

Your search for: LGA: Auburn City Council

Matched 50 notices relating to 12 sites.

Search Again Refine Search

Suburb	Address	Site Name	Notices related to this site
AUBURN	Jamieson STREET	Department of Corrective Services land adjacent to the former Auburn Landfill	1 former
AUBURN	9 Short STREET	Former Ajax chemical factory	2 former
HOMEBUSH BAY	No specific Street OTHER	Homebush Bay General Area	2 former
HOMEBUSH BAY	25 Bennelong ROAD	Timber Treatment Plant	4 former
SILVERWATER	Carnarvon ROAD	Former Silverwater Landfill	1 current
SILVERWATER	54-58 Derby STREET	Storage Facility	2 current
SYDNEY OLYMPIC PARK	Bicentennial DRIVE	Bicentennial Park	1 current and 2 former
SYDNEY OLYMPIC PARK	Jamieson STREET	Blaxland Common Landfill	1 current and 3 former
SYDNEY OLYMPIC PARK	Sarah Durack AVENUE	Former Golf Driving Range Landfill	1 current and 6 former
SYDNEY OLYMPIC PARK	Kevin Coombes AVENUE	Kronos Hill Landfill	1 current and 13 former
SYDNEY OLYMPIC PARK	Newington ROAD	Wilson Park (Former oil gas plant site)	1 current and 9 former
SYDNEY OLYMPIC PARK	Hill ROAD	Woo-la-ra Landfill	1 current and 4 former

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Search results

Your search for: LGA: Holroyd City Council

Matched 14 notices relating to 3 sites.

Search Again Refine Search

Suburb	Address	Site Name	Notices related to this site
MERRYLANDS	Corner Walpole and Peel STREET	Merrylands Substation PCB Storage	3 former
YENNORA	Pine ROAD	19 Pine Road, Yennora	2 current
YENNORA	6 Foray STREET	TetraPak Site	9 former

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NOTIFICATIONS UNDER SECTION 60 OF THE CLM ACT SEARCH RESULTS

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
CLYDE	7-Eleven Clyde	3 Parramatta (Cnr Harbord Street) ROAD	Service Station	Regulation under CLM Act not required	-33.83494433	151.0222628
GRANVILLE	Caltex Service Station	144 Parramatta ROAD	Service Station	Regulation under CLM Act not required	-33.83039605	151.0109216
GRANVILLE	Australand	15-17 Berry STREET	Other Industry	Contamination being managed via the planning process (EP&A Act)	-33.83600073	151.0211988
GRANVILLE	Woolworths Service Station Granville	158 Clyde STREET	Service Station	Regulation under CLM Act not required	-33.84623338	151.0124885
GRANVILLE	Commercial Property	2B Factory STREET	Other Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.84173556	151.0165687
GRANVILLE	Old Granville Depot	23 Elizabeth STREET	Unclassified	Regulation under CLM Act not required	-33.83765925	151.008528
GRANVILLE	7-Eleven Service Station	154-160 Parramatta ROAD	Service Station	Regulation under CLM Act not required	-33.83022685	151.0101322
GRANVILLE	A'Becketts Creek	Albert STREET	Unclassified	Under assessment	-33.82735397	151.0113643
HARRIS PARK	Dalley Street Reserve	2A Dalley STREET	Other Industry	Regulation under CLM Act not required	-33.82749118	151.0097545
ROSEHILL	James Hardie Australia and former James Hardie lands	Devon STREET	Landfill	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.82539019	151.0339466
ROSEHILL	2 Ritchie Street, Rosehill	2 Ritchie STREET	Unclassified	Contamination formerly regulated under the CLM Act	-33.82691192	151.0154948
ROSEHILL	James Hardie Factory (former, western portion)	181 James Ruse DRIVE	Other Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	-33.81605834	151.0238145

POEO ACT ENVIRONMENT PROTECTION LICENCE SEARCH RESULTS

Your search for: **POEO Licences** with the following criteria

Suburb - Granville
returned 10 results

Export to excel 1 of 1 Pages Search Again

Number	Name	Location	Type	Status	Issued date
499	EMOLEUM ROAD SERVICES PTY LTD	GATE 1, UNWIN STREET, GRANVILLE, NSW 2142	POEO licence	No longer in force	16 May 2000
1074	BRITISH AMERICAN TOBACCO AUSTRALIA LIMITED	26 FERNDELL STREET, GRANVILLE, NSW 2142	POEO licence	Surrendered	09 May 2000
1178	BORAL RESOURCES (NSW) PTY LTD	MORT STREET, GRANVILLE, NSW 2142	POEO licence	No longer in force	22 Aug 2000
1553	HANDYMIX AUSTRALIA PTY LTD	1 TENNYSON STREET, GRANVILLE, NSW 2142	POEO licence	Surrendered	19 Jan 2001
2000	SIBELCO AUSTRALIA LIMITED	CNR UNWIN & SHIRLEY STREETS, GRANVILLE, NSW 2142	POEO licence	Surrendered	11 Aug 2000
2020	CAPRAL LIMITED	UNWIN STREET, GRANVILLE, NSW 2142	POEO licence	Surrendered	04 Apr 2000
2170	MERCK SHARP & DOHME (AUSTRALIA) PTY LTD	54-68 FERNDELL STREET (SOUTH GRANVILLE), GRANVILLE, NSW 2142	POEO licence	Surrendered	21 Jun 2000
3906	HELIPORT DEVELOPERS PTY LIMITED	25 WENTWORTH STREET, GRANVILLE, NSW 2142	POEO licence	Issued	19 Jun 2000
12013	VIP STEEL PACKAGING PTY LTD	11A Ferndell Street, GRANVILLE, NSW 2142	POEO licence	No longer in force	16 Dec 2003
20443	Laing O'Rourke Australia Construction Pty Ltd	Within the rail corridor of the Western Rail Line between Auburn Junction and Granville, GRANVILLE, NSW 2142	POEO licence	Surrendered	20 May 2014

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Your search for: **POEO Licences** with the following criteria

Suburb - Clyde
returned 3 results

Export to excel 1 of 1 Pages Search Again

Number	Name	Location	Type	Status	Issued date
947	BORAL CEMENT LIMITED	322 PARRAMATTA ROAD , CLYDE, NSW 2142	POEO licence	Issued	08 Mar 2000
10718	PACIFIC NATIONAL (NSW) PTY LTD	322 PARRAMATTA ROAD, CLYDE, NSW 2142	POEO licence	Surrendered	02 May 2000
11763	VEOLIA ENVIRONMENTAL SERVICES (AUSTRALIA) PTY LTD	PARRAMATTA ROAD, CLYDE, NSW 2142	POEO licence	Issued	15 Jan 2004

19 August 2019

Your search for: **POEO Licences** with the following criteria

Suburb - Harris Park

returned 0 results

Search Again

Your search for: **POEO Licences** with the following criteria

Suburb - Rosehill

returned 8 results

Export to excel 1 of 1 Pages Search Again

Number	Name	Location	Type	Status	Issued date
602	JAMES HARDIE AUSTRALIA PTY LTD	10 COLQUHOUN STREET, ROSEHILL, NSW 2142	POEO licence	Issued	31 Aug 2000
660	VIVA ENERGY AUSTRALIA PTY LTD	GATE 4 DURHAM STREET, ROSEHILL, NSW 2142	POEO licence	Issued	21 Sep 2000
2007	CSR BUILDING PRODUCTS LIMITED	10 GRAND AVE, ROSEHILL, NSW 2142	POEO licence	Issued	12 Nov 1999
3804	IPLEX PIPELINES AUSTRALIA PTY LIMITED	1 DEVON STREET, ROSEHILL, NSW 2142	POEO licence	Surrendered	02 Feb 2000
5104	LYONDELLBASELL AUSTRALIA PTY LTD	DURHAM STREET, ROSEHILL, NSW 2142	POEO licence	Surrendered	14 Feb 2000
5610	ATOFINA (AUSTRALIA) PTY. LTD.	5 COLQUHOUN STREET, ROSEHILL, NSW 2142	POEO licence	Surrendered	10 Dec 1999
12242	SUEZ RECYCLING & RECOVERY PTY LTD	9 Devon Street, ROSEHILL, NSW 2142	POEO licence	Issued	24 Dec 2004
20896	DOWNER EDI WORKS PTY LTD	1A Unwin Street, ROSEHILL, NSW 2142	POEO licence	Issued	19 Jun 2018

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PENALTY NOTICE SEARCH RESULTS

Your search for: **Notices** with the following criteria

Notice type - Penalty Notice
LGA - CITY OF PARRAMATTA
returned 34 results

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Number	Name	Location	Type	Status	Issued date
3085777036	ALLEN REID	8 Anka Avenue , TOONGABBIE, NSW 2146	Penalty Notice	Court Elected	16 Sep 2015
3085777631	ALLEN REID	8 Anka Avenue , TOONGABBIE, NSW 2146	Penalty Notice	Court Elected	16 Sep 2015
3085775770	AUSTRALIAN PHARMACEUTICALS INDUSTRIES LTD	11 GRAND AVENUE, CAMELLIA, NSW 2142	Penalty Notice	Issued	15 Dec 2014
3173524788	BERNIE FUSSELL	19 Grand Avenue , CAMELLIA, NSW 2142	Penalty Notice	Issued	12 Feb 2018
3173524760	CLAYTON FUSSELL	19 Grand Avenue , CAMELLIA, NSW 2142	Penalty Notice	Issued	12 Feb 2018
3051702015	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	02 Feb 2012
3085773929	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	29 Apr 2014
3085773910	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	29 Apr 2014
3085775193	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Withdrawn	10 Oct 2014
3085775202	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Withdrawn	10 Oct 2014
3085775211	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	13 Oct 2014
3085775220	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	13 Oct 2014
3085779905	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	05 Aug 2016
3173526126	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	18 Dec 2018
3173527913	CLEANAWAY OPERATIONS PTY LTD	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	01 Jul 2019
3085779620	EARTHPOWER TECHNOLOGIES SYDNEY PTY. LTD.	35 GRAND AVENUE, CAMELLIA, NSW 2142	Penalty Notice	Issued	26 Aug 2016
3085780024	EARTHPOWER TECHNOLOGIES SYDNEY PTY. LTD.	35 GRAND AVENUE, CAMELLIA, NSW 2142	Penalty Notice	Issued	26 Aug 2016
3085765311	HOMEBUSH BAY RECYCLING CENTRE PTY LTD	3 Burroway Road, HOMEBUSH BAY, NSW 2127	Penalty Notice	Issued	24 Aug 2012
3085774010	KLF HOLDINGS PTY LTD	16 Grand Avenue , CAMELLIA, NSW 2142	Penalty Notice	Issued	11 Jun 2014
3085778347	KLF HOLDINGS PTY LTD	16 Grand Avenue , CAMELLIA, NSW 2142	Penalty Notice	Issued	15 Feb 2016

1 2

19 August 2019

Your search for: **Notices** with the following criteria

Notice type - Penalty Notice
LGA - CITY OF PARRAMATTA
returned 34 results

Export to excel 2 of 2 Pages Search Again

Number	Name	Location	Type	Status	Issued date
3173525612	MET Recycling Pty Ltd	Corner of Newton Street North and Carnarvon Street, SILVERWATER, NSW 2128	Penalty Notice	Issued	22 Jun 2018
3173525603	MET Recycling Pty Ltd	Corner of Newton Street North and Carnarvon Street, SILVERWATER, NSW 2128	Penalty Notice	Issued	22 Jun 2018
3173527693	MET Recycling Pty Ltd	Corner of Newton Street North and Carnarvon Street, SILVERWATER, NSW 2128	Penalty Notice	Issued	29 Apr 2019
3173527702	MET Recycling Pty Ltd	Corner of Newton Street North and Carnarvon Street, SILVERWATER, NSW 2128	Penalty Notice	Issued	29 Apr 2019
3173523944	NASSIF CIVIL PTY LTD	2 Kay Street, CLYDE, NSW 2142	Penalty Notice	Issued	08 Dec 2017
3085776632	POLYTRADE PTY LTD	32 South Street, RYDALMERE, NSW 2116	Penalty Notice	Issued	07 May 2015
3085776852	SAMI BITUMEN TECHNOLOGIES PTY LTD	12 Grand Avenue, CAMELLIA, NSW 2142	Penalty Notice	Issued	03 Jun 2015
3085765477	SHELL REFINING (AUSTRALIA) PROPRIETARY LIMITED	DURHAM STREET, CAMELLIA, NSW 2142	Penalty Notice	Issued	05 Sep 2012
3085764175	UNILEVER AUSTRALIA TRADING LIMITED	219 NORTH ROCKS ROAD, NORTH ROCKS, NSW 2151	Penalty Notice	Issued	08 Jun 2012
3085779355	UNILEVER AUSTRALIA TRADING LIMITED	219 NORTH ROCKS ROAD, NORTH ROCKS, NSW 2151	Penalty Notice	Issued	02 May 2016
3085779923	UNILEVER AUSTRALIA TRADING LIMITED	219 NORTH ROCKS ROAD, NORTH ROCKS, NSW 2151	Penalty Notice	Issued	10 Aug 2016
3085772544	USG BORAL BUILDING PRODUCTS PTY LIMITED	3 THACKERAY STREET, CAMELLIA, NSW 2142	Penalty Notice	Issued	05 Nov 2013
3085772214	VIVA ENERGY AUSTRALIA PTY LTD	DURHAM STREET, CAMELLIA, NSW 2142	Penalty Notice	Issued	12 Sep 2013
3085782600	VIVA ENERGY AUSTRALIA PTY LTD	DURHAM STREET, CAMELLIA, NSW 2142	Penalty Notice	Issued	19 Jun 2017

1 2

19 August 2019

APPENDIX F

Section 10.7 Planning Certificate

PLANNING CERTIFICATE

CERTIFICATE UNDER SECTION 10.7

Environmental Planning and Assessment Act, 1979 as amended

Certificate No: 2019/3685

Fee: $133.00

Issue Date: 19 August 2019

Receipt No: 5708027

Applicant Ref: 19122955:108960

DESCRIPTION OF LAND

Address: 138 Parramatta Road
GRANVILLE NSW 2142

Lot Details: Lot 1 DP 1075357 Lot 2 DP 1075357 Lot 3 DP 1075357 Lot 4 DP 1075357 Lot 5 DP 1075357 Lot 6 DP 1075357

SECTION A

The following Environmental Planning Instrument to which this certificate relates applies to the land:

Parramatta Local Environmental Plan 2011

For the purpose of **Section 10.7(2)** it is advised that as the date of this certificate the abovementioned land is affected by the matters referred to as follows:

The land is zoned: B4 Mixed Use PLEP2011

Zone B4 - Mixed Use (Parramatta Local Environmental Plan 2011)

Issued pursuant to Section 10.7 of the Environmental Planning and Assessment Act, 1979.
NOTE: This table is an excerpt from Parramatta Local Environmental Plan 2011 and must be read in conjunction with and subject to the other provisions of that instrument, and in force at that date.

Zone B4 Mixed Use

1 Objectives of zone

- To provide a mixture of compatible land uses.
- To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.
- To encourage development that contributes to an active, vibrant and sustainable neighbourhood.
- To create opportunities to improve the public domain and pedestrian links.
- To support the higher order Zone B3 Commercial Core while providing for the daily commercial needs of the locality.
- To protect and enhance the unique qualities and character of special areas within the Parramatta City Centre.

2 Permitted without consent

Home occupations

3 Permitted with consent

Boarding houses; Building identification signs; Business identification signs; Centre-based child care facilities; Commercial premises; Community facilities; Educational establishments; Entertainment facilities; Function centres; Hotel or motel accommodation; Information and education facilities; Light industries; Medical centres; Oyster aquaculture; Passenger transport facilities; Recreation facilities (indoor); Registered clubs; Respite day care centres; Restricted premises; Roads; Seniors housing; Shop top housing; Tank-based aquaculture; Water recycling facilities; Any other development not specified in item 2 or 4

4 Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Crematoria; Depots; Dual occupancies; Dwelling houses; Eco-tourist facilities; Electricity generating works; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Heavy industrial storage establishments; Helipads; Highway service centres; Home industries; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Jetties; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Pond-based aquaculture; Port facilities; Recreation facilities (major); Research stations; Rural industries; Rural workers' dwellings; Secondary dwellings; Semi-detached dwellings; Sewerage systems; Sex services premises;

Signage; Storage premises; Transport depots; Truck depots; Vehicle body repair workshops; Warehouse or distribution centres; Waste or resource management facilities; Water recreation structures; Water supply systems; Wharf or boating facilities; Wholesale supplies

SECTION B

State Policies and Regional Environmental Plans

The land is affected by State Environmental Planning Policies and Regional Environmental Plans as detailed in Annexure "B1".

Draft Local Environmental Plan

The land is affected by a Draft Local Environmental Plan which has been placed on Public Exhibition and has not yet been published. The Draft Local Environmental Plan is described below.

Planning Proposal - Housekeeping Amendment No. 3 – Parramatta LEP 2011

This land is affected by a planning proposal seeking to amend Parramatta Local Environmental Plan 2011. The planning proposal seeks to amend heritage listings, correct zoning and land reservation acquisition map anomalies. In addition, the planning proposal proposes to amend Clause 6.12(5) and Clause 7.3 of the Parramatta Local Environmental Plan 2011.

Development Control Plan

The land is affected by Parramatta Development Control Plan 2011.

The Minister for Planning has issued directions that provisions of an EPI do not apply to certain Part 4 development where a concept plan has been approved under Part 3A.

Development Standards

The land is located within State Environmental Planning Policy (Urban Renewal) 2010.

Development Contribution Plan

The Parramatta Section 94A Development Contributions Plan (Amendment No. 5) applies to the land.

Heritage Item/Heritage Conservation Area

The land is identified as containing a Heritage Item in Parramatta Local Environmental Plan 2011

The land is not located in a heritage conservation area.

Road Widening

The land IS AFFECTED by road widening or road realignment under:

(1) Roads Act, 1993.
(2) Any Environmental Planning Instrument.
(3) Any Resolution of Council.

Land Reservation Acquisition
The land is identified as being reserved for Local Road Widening purposes on the Land Reservation Acquisition map in Parramatta Local Environmental Plan 2011.

Site Compatibility Certificate (Seniors Housing, Infrastructure and Affordable Rental Housing)At the date of issue of this certificate Council is not aware of any

a. Site compatibility certificate (affordable rental housing),
a. Site compatibility certificate (infrastructure) or site compatibility certificate (schools or TAFE establishments),
b. Site compatibility certificate (seniors housing)

in respect to the land issued pursuant to the Environmental Planning & Assessment Amendment (Site Compatibility Certificates) Regulation 2009 (NSW).

Contamination
Matters contained in Clause 59(2) as amended in the Contaminated Land Management Act 1997 – as listed:

Clause 59(2)(a) - is the land to which the certificate relates is significantly contaminated land?
NO

Clause 59(2)(b) - is the land to which the certificate relates is subject to a management order?
NO

Clause 59(2)(c) - is the land to which the certificate relates is the subject of an approved voluntary management proposal?
NO

Clause 59(2)(d) - is the land to which the certificate relates is subject to an ongoing maintenance order?
NO

Clause 59(2)(e) - is the land to which the certificate relates is the subject of a site audit statement?
NO

Tree Preservation
The land is subject to Section 5.4 Preservation of Trees or Vegetation in Parramatta Development Control Plan 2011.

Council has not been notified of an order under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

Coastal Protection
Has the owner (or any previous owner) of the land been consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act)?
NO

Council Policy
Council has not adopted a policy to restrict the development of the land by reason of the likelihood of projected sea level rise (coastal protection), tidal inundation, subsidence or any other risk.

Council has adopted a policy covering the entire City of Parramatta to restrict development of any land by reason of the likelihood of flooding.

Council has adopted by resolution a policy on contaminated land that applies to all land within the City of Parramatta. The Policy will restrict the development of the land if the circumstances set out in the policy prevail. A copy of the policy is available on Councils website at www.cityofparramatta.nsw.gov.au or from the Customer Service Centre.

Mine Subsidence
The land is not affected by the Coal Mine Subsidence Compensation Act 2017 proclaiming land to be a Mine Subsidence District.

Bushfire Land
The land is not bushfire prone land.

Threatened Species
The Environment Agency Head with responsibility for the Biodiversity Conservation Act 2016 has not advised Council that the land includes or comprises an area of outstanding biodiversity value.

Biodiversity certified land
The land is not biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016.

Note. *Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.*

Biodiversity stewardship sites
The Chief Executive of the Office of Environment and Heritage has not notified the Council if the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016.

Note: Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.

Native vegetation clearing set asides
Council has not been notified of the land containing a set aside area under section 60ZC of the Local Land Services Act 2013.

Property vegetation plans
Council has not been notified of the existence of the property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 on the land.

Paper Subdivision information
The land is not subject to any development plan adopted by a relevant authority or that is proposed to be subject to a consent ballot. A subdivision order does not apply to the land.

Note: Words and expressions used in this clause have the same meaning as they have in Part 16C of the Environmental Planning and Assessment Regulation 2000.

Loose-Fill Asbestos Register
Council has not been notified by NSW Fair Trading of the property being listed on the loose-fill asbestos insulation register maintained by the Secretary of NSW Fair Trading.

Site verification certificates
Council is not aware of whether there is a current site verification certificate in respect of the land.

Affected Building Notices and Building Product Rectification Orders
Council is not aware of whether there is any affected building notice, building product rectification order or notice of intention to make a building product rectification order that is in force in respect of the land.

Note: ***affected building notice*** has the same meaning as in the *Building Products (Safety) Act 2017.* ***building product rectification order*** has the same meaning as in the *Building Products (Safety) Act 2017.*

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

Note: This does not constitute a Complying Development Certificate under section 4.27 of the Environmental Planning and Assessment Act 1979

The following information only addresses whether or not the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of **Clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1)(c3) and 1.19** of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. It is not a statement that complying development is permissible on the land.

Other land exemptions within of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 may also apply. Furthermore, other provisions within the relevant Local Environmental Plan or a State Environmental Planning Policy which restrict complying development on the land may also apply.

It is your responsibility to ensure that you comply with the relevant complying development provisions for the land. Failure to comply with these provisions may mean that a Complying Development Certificate is invalid.

Note: Low Rise Medium Density Housing Code
The land is in a deferred area under Clause 3B.63 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Complying Development pursuant to the Low Rise Medium Density Housing Code **may not** be carried out on the land.

Housing Code; Rural Housing Code
Complying Development pursuant to the Housing Code and Rural Housing Code **may not** be carried out on the land or part of the land. The land is affected by specific land exemptions under **Clause 1.17A or Clause 1.18 (1) (c3) or Clause 1.19** of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. The land exemptions are:

- All of the land comprises, or contains an item of environmental heritage (that is listed on the State Heritage Register **or** that is subject to an interim heritage order under the Heritage Act 1977 **or** is identified as an item of environmental heritage in an environmental planning instrument),
  (Land Exemption Clause 1.17A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008)

- Part of the land is reserved for a public purpose in an environmental planning instrument,
  (Land Exemption Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008)

Commercial and Industrial (New Buildings and Additions) Code
Complying Development pursuant to Commercial and Industrial (New Buildings and Additions) Code **may not** be carried out on the land or part of the land. The land is affected by specific land exemptions under **Clause 1.17A or Clause 1.18 (1) (c3) or Clause 1.19** of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. The land exemptions are:

- All of the land comprises, or contains an item of environmental heritage (that is listed on the State Heritage Register **or** that is subject to an interim heritage order under the Heritage Act 1977 **or** is identified as an item of environmental heritage in an environmental planning instrument),
  (Land Exemption Clause 1.17A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008)

- Part of the land is reserved for a public purpose in an environmental planning instrument,

(Land Exemption Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008)

Housing Alterations Code; General Development Code; General Commercial and Industrial (Alterations) Code; Container Recycling Facilities Code; Subdivision Code; Demolition Code; Fire Safety Code

Complying Development pursuant to the Housing Alterations Code, General Development Code, General Commercial and Industrial (Alterations) Code, Container Recycling Facilities Code, Subdivision Code, Demolition Code and Fire Safety Code **may not** be carried out on the land or part of the land. The land is affected by specific land exemptions under **Clause 1.17A or Clause 1.18 (1) (c3) or Clause 1.19** of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. The land exemptions are:

- All of the land comprises, or contains an item of environmental heritage (that is listed on the State Heritage Register **or** that is subject to an interim heritage order under the Heritage Act 1977 **or** is identified as an item of environmental heritage in an environmental planning instrument),
  (Land Exemption Clause 1.17A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008)

SPECIAL NOTES

The land is identified as Class 5 on the Acid Sulfate Soils map. Refer to Clause 6.1 of Parramatta Local Environmental Plan 2011.

Applicants for Sections 10.7 Certificates are advised that Council does not hold sufficient information to fully detail the effect of any encumbrances on the title of the subject land. The information available to Council is provided on the basis that neither Council nor its servants hold out advice or warrant to you in any way its accuracy, nor shall Council or its servants, be liable for any negligence in the preparation of that information. Further information should be sought from relevant Statutory Departments.

SECTION C

The following additional information is issued under Section 10.7(5)

Pursuant to S10.7(5) the Council supplies information as set out below on the basis that the Council takes no responsibility for the accuracy of the information. The information if material should be independently checked by the applicant.

Design Excellence

This land is identified as as "A" on the Design Excellence Map of the Parramatta Local Environmental Plan 2011.

Clause 6.13 of the Parramatta Local Environmental Plan 2011 applies to the land.

Development on certain land at Granville

Clause 6.14 of the Parramatta Local Environmental Plan 2011 applies to the land.

Aboriginal Sensitivity Map - Parramatta Development Control Plan (DCP) 2011

Aboriginal Heritage – low sensitivity – limited potential to contain items of Aboriginal heritage. Contact Council's Customer Service/Duty Planner (02) 9806 5050 for more information.

Flood Information

The land is considered by Council TO BE ABOVE the 1 in 100 year mainstream flood level.

This information is based on data available to the Council. It is provided on the basis that neither Council nor its servants hold out advice or warrant to you in any way its accuracy, nor shall the Council or its servants, be liable for any negligence in the preparation of that information.

Note: Advisory Information regarding Combustible Cladding

External combustible cladding on multi-storey buildings has been identified in local government areas including the City of Parramatta. Combustible cladding is a material that is capable of readily burning.

You should make your own enquiries as to the type of materials that have been used to construct the building. It is recommended that the purchaser obtain a building report from an appropriately qualified person to determine if any cladding type material may pose a risk to the building's occupants. Council may issue orders to rectify a building where combustible cladding is found.

Properties that have combustible cladding on buildings are listed in the NSW Government Combustible Cladding Register. Please refer to https://www.claddingregistration.nsw.gov.au/ or call 1300 305 695 for further information regarding the NSW Government Combustible Cladding Register.

There is potential for combustible cladding to be present on buildings that are not listed on the Register.

Note: Advisory Information regarding Loose-Fill asbestos Insulation
Research undertaken by the Loose-Fill Asbestos Insulation Taskforce has determined that there is a potential for loose-fill asbestos insulation to be found in residential dwellings constructed prior to 1980 in 28 local government areas including the City of Parramatta.

Some residential homes located in the City of Parramatta may contain loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Please Contact NSW Fair Trading for further information.

This information has been provided pursuant to section 10.7(5) of the Environmental Planning and Assessment Act, 1979 as amended.

ANNEXURE "B1"

Issued pursuant to Section 10.7 of the Environmental Planning and Assessment Act 1979. Note:The following information is supplied in respect of Section 10.7 and embodies the requirements of Department of Planning Circular No. A2 dated 17 March 1989 and the Ministerial Notification dated 15 December 1986.

STATE ENVIRONMENTAL PLANNING POLICY NO.1 - Development Standards

STATE ENVIRONMENTAL PLANNING POLICY NO.19 - Bushland in Urban Areas

STATE ENVIRONMENTAL PLANNING POLICY NO.21 – Caravan Parks

STATE ENVIRONMENTAL PLANNING POLICY NO.33 - Hazardous and Offensive Development

STATE ENVIRONMENTAL PLANNING POLICY NO.55 - Remediation of Land

STATE ENVIRONMENTAL PLANNING POLICY NO.64 - Advertising and Signage

STATE ENVIRONMENTAL PLANNING POLICY NO.65 – Design Quality of Residential Flat Development.

STATE ENVIRONMENTAL PLANNING POLICY NO.70 – Affordable Housing (Revised Schemes)

STATE ENVIRONMENTAL PLANNING POLICY – (Housing for Seniors or People with a Disability) 2004

STATE ENVIRONMENTAL PLANNING POLICY – (Building Sustainability Index: BASIX) 2004

STATE ENVIRONMENTAL PLANNING POLICY – (State Significant Precincts) 2005

STATE ENVIRONMENTAL PLANNING POLICY – (Mining, Petroleum Production and Extractive Industries) 2007

STATE ENVIRONMENTAL PLANNING POLICY – (Miscellaneous Consent Provisions) 2007

STATE ENVIRONMENTAL PLANNING POLICY (Infrastructure) 2007

STATE ENVIRONMENTAL PLANNING POLICY (Exempt and Complying Development Codes) 2008

STATE ENVIRONMENTAL PLANNING POLICY (Affordable Rental Housing) 2009

STATE ENVIRONMENTAL PLANNING POLICY (Vegetation in Non-Rural Areas) 2017

STATE ENVIRONMENTAL PLANNING POLICY (Educational Establishments and Child Care Facilities) 2017

STATE ENVIRONMENTAL PLANNING POLICY (Concurrences) 2018

STATE ENVIRONMENTAL PLANNING POLICY (Primary Production and Rural Development) 2019

SYDNEY REGIONAL ENVIRONMENTAL PLAN NO.9 (No.2) - Extractive Industries

SYDNEY REGIONAL ENVIRONMENTAL PLAN NO.24 - Homebush Bay Area

SYDNEY REGIONAL ENVIRONMENTAL PLAN – (Sydney Harbour Catchment) 2005

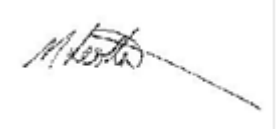
DRAFT STATE ENVIRONMENTAL PLANNING POLICY TO AMEND STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006 – Amendment to include the Greater Parramatta Priority Growth Area as a Growth Centre

DRAFT STATE ENVIRONMENTAL PLANNING POLICY– Environment

N.B. All enquiries as to the application of Draft, State and Regional Environmental Planning Policies should be directed to The Department of Planning and Infrastructure – 23-33 Bridge Street Sydney NSW 2000

Rik Hart
Acting Chief Executive Officer

per



dated 19 August 2019

APPENDIX G

SafeWork NSW Records Search Results

19122955

NSW GOVERNMENT | SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252
Customer Experience 13 10 50
ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D19/168224

1 August 2019

Golder Associates Pty Ltd
Ms Shane Doyle
PO Box 1302
CROWS NEST NSW 1585

Dear Ms Doyle

RE SITE: 134-142 Parramatta Rd

Granville NSW 2142

I refer to your site search request received by SafeWork NSW on 16 July 2019 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

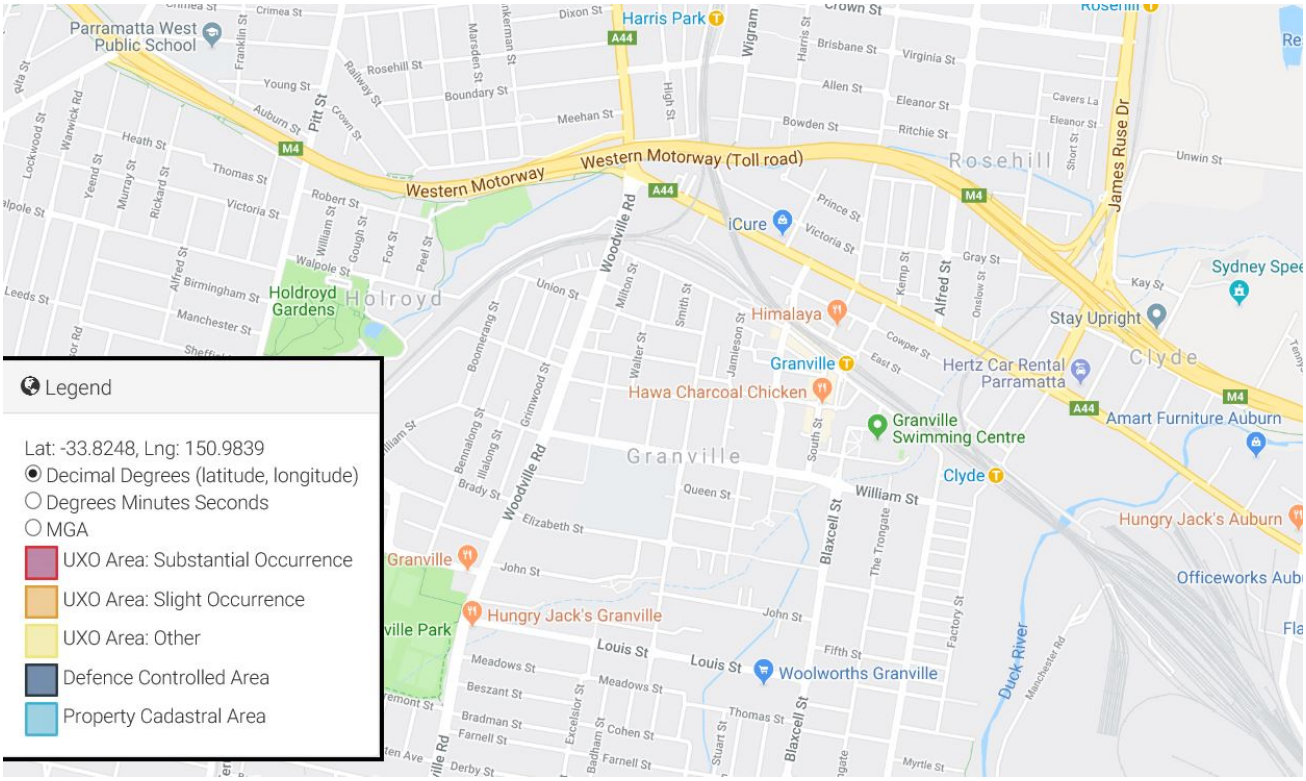
For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

APPENDIX H

Defence UXO Records Search Results


Legend
Lat: -33.8248, Lng: 150.9839
Decimal Degrees (latitude, longitude)
Degrees Minutes Seconds
MGA
UXO Area: Substantial Occurrence
UXO Area: Slight Occurrence
UXO Area: Other
Defence Controlled Area
Property Cadastral Area
Parramatta West Public School
Harris Park
Western Motorway
Western Motorway (Toll road)
Rosehill
iCure
Holroyd Gardens
Holroyd
Himalaya
Granville
Hawa Charcoal Chicken
Granville Swimming Centre
Hertz Car Rental Parramatta
Stay Upright
Clyde
Amart Furniture Auburn
Hungry Jack's Auburn
Officeworks
Hungry Jack's Granville
Woolworths Granville
Sydney Spee
James Ruse Dr
Woodville Rd
Blaxcell St
William St
Queen St
John St
Louis St
Meadows St
Duck River

APPENDIX I

Borelogs

DRAFT REPORT OF BOREHOLE: BH01M

SHEET: 1 OF 3

CLIENT:	PDS and Starrylands	COORDS: 315964 m E 6254865 m N MGA94 56 (hhGPS)	DRILL RIG: Komatsu 05
PROJECT:	Proposed Gran Central	SURFACE RL: 10.8 m DATUM: AHD (MAP)	CONTRACTOR: Nealings
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	LOGGED: FY DATE: 31/7/19
JOB NO:	19122955	HOLE DEPTH: 10.10 m	CHECKED: BJF DATE: 20/8/19

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DTC	-		0	0.14				-	CONCRETE average 140mm thick	-	-	ROAD SURFACE
				10.62	DS 0.14-0.18 m PID = 0.1 ppm			-	igneous aggregate			FILL
	M				DS 0.35-0.45 m PID = 0.1 ppm			CI-CH	FILL: Sandy CLAY low plasticity, dark grey, find to medium grained sand, with fine to coarse, sub angular to sub rounded gravel			RESIDUAL SOIL
				0.70 10.10	DS 0.53-0.60 m PID = 0 ppm				Silty CLAY medium - high plasticity, brown mottled orange brown, trace fine to coarse, sub angular to sub rounded gravel	w > PL	-	
HA	H		1	1.10 9.70	DS 0.80-0.90 m PID = 1 ppm DS 1.10-1.20 m PID = 2.1 ppm				red-brown mottled pale grey, with fine to coarse, sub angular to sub rounded gravel			
					DS 1.30-1.40 m PID = 0.5 ppm				pale grey mottled pale brown, trace fine to coarse, sub angular to sub rounded gravel, with iron indurate band		H	@ 1.45 m, Hand Auger refusal
	L	09/08/19		1.70 9.10	SPT 1.45-1.90 m 5, 15, 25 N=40 PID = 0.3 ppm			-	SILTSTONE pale grey, inferred low strength, with medium strength layer, extremely weathered, with clay seams, trace iron staining	-	-	
	M		2									
ADT				3.00 7.80	SPT 3.00-3.45 m 10, 16, 22 N=38 PID = 0.1 ppm			CI-CH	Silty CLAY medium - high plasticity, pale grey mottled red-brown, with iron indurate bands			
	M-H	01/08/19	3		DS 3.40-3.50 m PID = 0.4 ppm					w > PL	H	
		RETURN			DS 3.90-4.00 m PID = 0.1 ppm							
			4		DS 4.40-4.50 m PID = 0.2 ppm							
WB	-	Water		4.65	SPT 4.50-4.75 m 6, 21/100mm HB N>21			-	SILTSTONE grey to dark grey and grey brown, very low to low strength	-	-	BEDROCK
		90-100%	5						For Continuation Refer to Sheet 2			
			6									
			7									
			8									
			9									
			10									

GAP 8_16.8 LIB.GLB Log GAP NON-CORED FULL PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

DRAFT REPORT OF BOREHOLE: BH01M

SHEET: 2 OF 3

CLIENT: PDS and Starrylands
PROJECT: Proposed Gran Central
LOCATION: Cnr Parramatta Rd and Good Street, Granville
JOB NO: 19122955

COORDS: 315964 m E 6254865 m N MGA94 56 (hhGPS)
SURFACE RL: 10.8 m DATUM: AHD (MAP)
INCLINATION: -90°
HOLE DEPTH: 10.10 m

DRILL RIG: Komatsu 05
CONTRACTOR: Nealings
LOGGED: FY DATE: 31/7/19
CHECKED: BJF DATE: 20/8/19

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa (VL 0.6, L 2.0, M 6.0, H 20, VH 60, EH 200)	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
				0								
				1								
				2								
				3								
				4								
					4.83		Continuation of Sheet 1					
NMLC	90-100% Water RETURN	100	60 (95)	5	5.97		SILTSTONE grey to dark grey and grey brown, with pale grey lamination, bedded at 0-5°, with iron staining	HW MW		PLI(A)=0.09 PLI(A)=0.11 PLI(D)=0.04	4.88 m: EWS, 0°, 5 mm, clay 4.95 m: P, 0-5°, Pl, Sm, Fe Sn 5.11 m: P, 0-5°, Pl, Sm, Fe Sn 5.23 m: EWS, 0°, Fe Sn, 5 mm, clay 5.30 m: P, 0-5°, Pl, Sm, Fe Sn 5.36 m: EWS, 0°, Fe Sn, 5 mm, weathered siltstone 5.48 m: EWS, 0°, Fe Sn, 5 mm, weathered siltstone	
					5.60 5.20		no ironstaining	FR			5.60 m: P, 0°, Pl, Sm, Fe Sn 5.93 m: P, 0-5°, Pl, Sm, Cn 5.93-6.04 m: J, 80°, Pl, Sm, Cn, 110 mm 6.04 m: P, 0-5°, Pl, Sm, Cn	
		100	80 (90)	6						PLI(D)=0.43 PLI(A)=0.49	6.47 m: P, 0°, Pl, Sm, Cn	
				7						PLI(D)=0.46 PLI(A)=0.45	6.95 m: EWS, 0°, 5 mm, clay	
		100	90 (95)	8						PLI(D)=0.23 PLI(A)=0.62	7.38 m: EWS, 0°, 5 mm, clay 7.39-7.51 m: Px 5, 0°, sp = 20-30 mm, Pl, Sm, Ve, clay 8.05 m: EWS, 0°, 6 mm, clay	
											8.35 m: J, 5-15°, Cv, Sm, Cn	
		100	85 (100)	9						PLI(D)=0.37 PLI(A)=0.72	8.65-9.91 m: Px 3, 0°, sp = 590-670 mm, Pl, Sm, Cn	
				10						PLI(D)=0.14 PLI(A)=0.89		

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3

GAP 8_16.8 LIB.GLB Log GAP CORED BOREHOLE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH01M

SHEET: 3 OF 3

CLIENT: PDS and Starrylands
COORDS: 315964 m E 6254865 m N MGA94 56 (hhGPS)
DRILL RIG: Komatsu 05

PROJECT: Proposed Gran Central
SURFACE RL: 10.8 m DATUM: AHD (MAP)
CONTRACTOR: Nealings

LOCATION: Cnr Parramatta Rd and Good Street, Granville
INCLINATION: -90°
LOGGED: FY DATE: 31/7/19

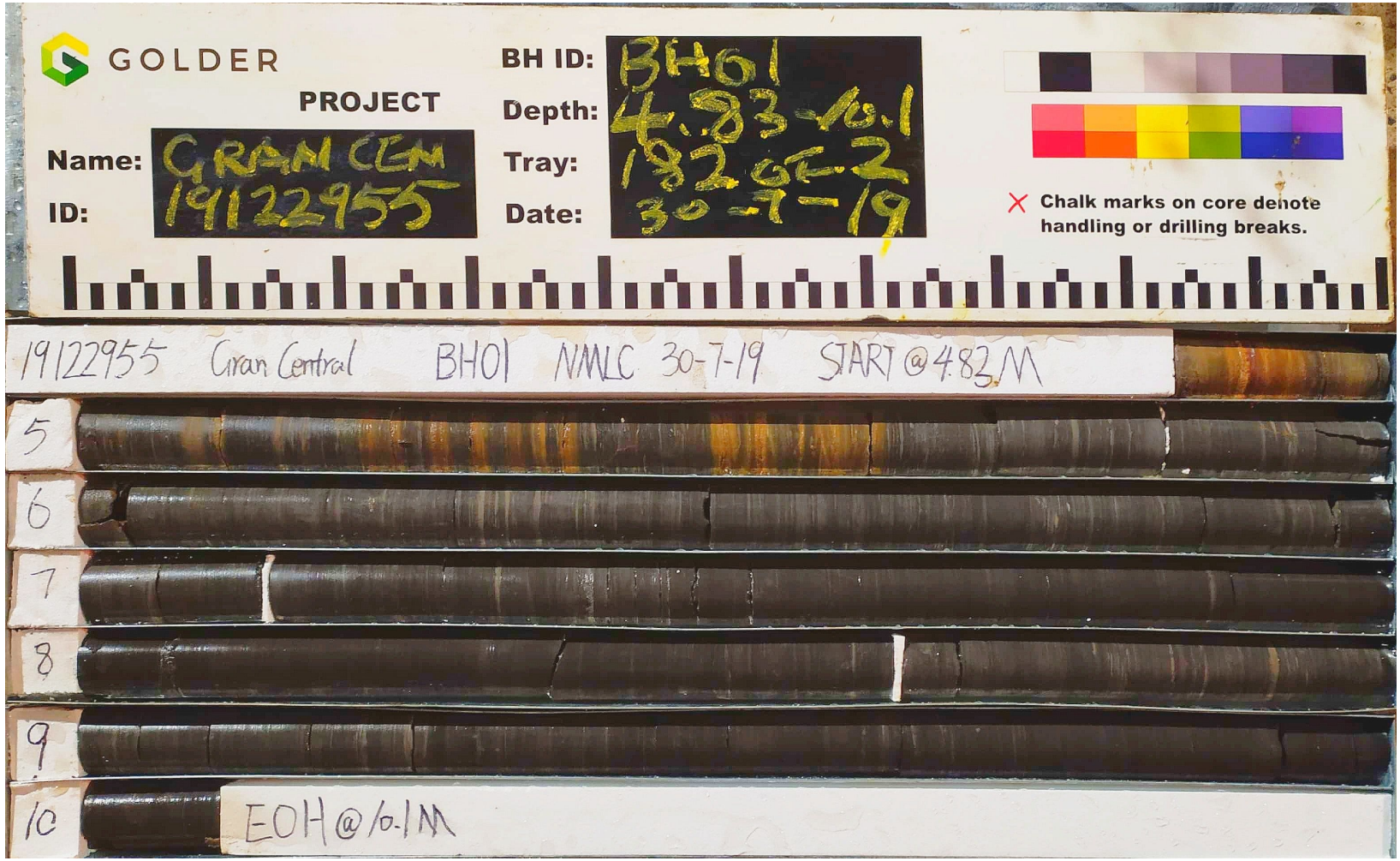
JOB NO: 19122955
HOLE DEPTH: 10.10 m
CHECKED: BJF DATE: 20/8/19

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa (VL 0.6, L 2.0, M 6.0, H 20, VH 60, EH 200)	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
				10	10.10 0.70		END OF BOREHOLE @ 10.10 m TARGET DEPTH PIEZOMETER INSTALLED BH01M was redrilled on 2-8-19 using HQ size shoe, to install monitoring well			PLI(D)=0.74 PLI(A)=0.77		
				11								
				12								
				13								
				14								
				15								
				16								
				17								
				18								
				19								
				20								

GAP 8_16.8 LIB.GLB Log GAP CORED BOREHOLE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF CORE PHOTOGRAPHS: BH01M

CLIENT:	PDS and Starrylands	COORDS: 315964 m E 6254865 m N MGA94 56 (hhGPS)	DRILL RIG: Komatsu 05
PROJECT:	Proposed Gran Central	SURFACE RL: 10.8 m DATUM: AHD (MAP)	CONTRACTOR: Nealings
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	LOGGED: FY DATE: 31/7/19
JOB NO:	19122955	HOLE DEPTH: 10.10 m	CHECKED: BJF DATE: 20/8/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP 8_16.8 LIB.GLB GrfcTbl GAP CORE PHOTO 1 PER PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH01M

SHEET: 1 OF 2

CLIENT:	PDS and Starrylands	COORDS: 315964 m E 6254865 m N MGA94 56 (hhGPS)	DRILL RIG: Komatsu 05
PROJECT:	Proposed Gran Central	SURFACE RL: 10.8 m DATUM: AHD (MAP)	CONTRACTOR: Nealings
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	LOGGED: FY DATE: 31/7/19
JOB NO:	19122955	HOLE DEPTH: 10.10 m	CHECKED: BJF DATE: 20/8/19

Drilling				Sampling		Field Material Description and Instrumentation		
METHOD	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	AIRLIFT YIELD (L/s)
DTC		0	0.14				CONCRETE average 140mm thick igneous aggregate	
			10.62	DS 0.14-0.18 m PID = 0.1 ppm DS 0.35-0.45 m PID = 0.1 ppm			FILL: Sandy CLAY low plasticity, dark grey, find to medium grained sand, with fine to coarse, sub angular to sub rounded gravel, Moist, wet of plastic limit.	
HA			0.70 10.10	DS 0.53-0.60 m PID = 0 ppm DS 0.80-0.90 m PID = 1 ppm			Silty CLAY medium - high plasticity, brown mottled orange brown, trace fine to coarse, sub angular to sub rounded gravel, Moist, wet of plastic limit., hard	
		1	1.10 9.70	DS 1.10-1.20 m PID = 2.1 ppm DS 1.30-1.40 m PID = 0.5 ppm			red-brown mottled pale grey, with fine to coarse, sub angular to sub rounded gravel	
	09/08/19		1.70 9.10	SPT 1.45-1.90 m 5, 15, 25 N=40 PID = 0.3 ppm			pale grey mottled pale brown, trace fine to coarse, sub angular to sub rounded gravel, with iron indurate band	
		2					SILTSTONE pale grey, inferred low strength, with medium strength layer, extremely weathered, with clay seams, trace iron staining	
ADT			3.00 7.80	SPT 3.00-3.45 m 10, 16, 22 N=38 PID = 0.1 ppm			Silty CLAY medium - high plasticity, pale grey mottled red-brown, with iron indurate bands, Moist, wet of plastic limit., hard	
	01/08/19	3		DS 3.40-3.50 m PID = 0.4 ppm				
	RETURN	4		DS 3.90-4.00 m PID = 0.1 ppm				
				DS 4.40-4.50 m				
WB	Water		4.65	PID = 0.2 ppm SPT 4.50-4.75 m				
			4.83	6, 21/100mm HB N>21			SILTSTONE grey to dark grey and grey brown, very low to low strength	
	90-100%	5	5.97	C 4.83-5.82 m			SILTSTONE grey to dark grey and grey brown, with pale grey sandstone lamination, bedded at 0-5°, with iron staining, very low to medium strength, highly weathered to fresh	
			5.60 5.20				no iron staining	
NMLC		6		C 5.82-7.13 m				
	90-100% Water RETURN	7		C 7.13-8.61 m				
		8						
		9		C 8.61-10.10 m				
		10						

CONSTRUCTION

ID Static Water Level BH01M — Reference Point gl 10.73 m AHD

BH01M

Grout

Bentonite

Sand

50mm Casing

50mm Screen

Bentonite

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F05
RL3

GAP 8_16.8 LIB.GLB Log GAP WELL 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:17 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH01M

SHEET: 2 OF 2

CLIENT: PDS and Starrylands
COORDS: 315964 m E 6254865 m N MGA94 56 (hhGPS)
DRILL RIG: Komatsu 05

PROJECT: Proposed Gran Central
SURFACE RL: 10.8 m DATUM: AHD (MAP)
CONTRACTOR: Nealings

LOCATION: Cnr Parramatta Rd and Good Street, Granville
INCLINATION: -90°
LOGGED: FY DATE: 31/7/19

JOB NO: 19122955
HOLE DEPTH: 10.10 m
CHECKED: BJF DATE: 20/8/19

Drilling				Sampling		Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level BH01M Reference Point gl 10.73 m AHD
		10	*10.10* 0.70				END OF BOREHOLE @ 10.10 m TARGET DEPTH PIEZOMETER INSTALLED BH01M was redrilled on 2-8-19 using HQ size shoe, to install monitoring well		
		11							
		12							
		13							
		14							
		15							
		16							
		17							
		18							
		19							
		20							

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP 8_16.8 LIB.GLB Log GAP WELL 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:17 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH02

SHEET: 1 OF 2

CLIENT:	PDS and Starrylands	COORDS: 315954 m E 6254814 m N MGA94 56 (hhGPS)	DRILL RIG: Komatsu 05
PROJECT:	Proposed Gran Central	SURFACE RL: 12.5 m DATUM: AHD (MAP)	CONTRACTOR: Nealings
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	LOGGED: FY DATE: 1/8/19
JOB NO:	19122955	HOLE DEPTH: 8.75 m	CHECKED: BJF DATE: 20/8/19

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DTC	-		0	0.12	PID = 0 ppm			-	CONCRETE average 120mm thick	-	-	ROAD SURFACE
				0.30	DS 0.15-0.20 m			-	igneous aggregate		-	FILL
				12.20	DS 0.20-0.30 m				FILL: Silty CLAY			RESIDUAL SOIL
					PID = 0 ppm			CI-CH	medium - high plasticity, dark grey to dark brown, with fine to coarse, sub rounded to sub angular gravel, trace fine to medium grained sand			
				0.60	DS 0.30-0.40 m							
				11.90	PID = 0 ppm							
HA	H	GWNE			DS 0.60-0.70 m					w > PL	H	
					PID = 0 ppm				brown			
			1	1.00								
				11.50					Silty CLAY			
					DS 1.10-1.20 m				medium - high plasticity, brown to pale brown, trace gravel			
					PID = 0 ppm							
									mottled red-brown			
				1.55	DS 1.40-1.50 m				pale grey mottled red-brown and pale brown, fine to coarse, sub rounded Ironstone			@ 1.50 m, NDD Target Reached
ADT	H			10.95	SPT 1.50-1.65 m			-				
					23/150mm, 8/0mm HB				SILTSTONE	-	-	
					N>8				pale grey, very low to low strength, extremely weathered, trace iron staining			
					PID = 0 ppm							
			2		DS 1.80-1.85 m				For Continuation Refer to Sheet 2			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3

GAP 8_16.8 LIB.GLB Log GAP NON-CORED FULL PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH02

SHEET: 2 OF 2

CLIENT: PDS and Starrylands
PROJECT: Proposed Gran Central
LOCATION: Cnr Parramatta Rd and Good Street, Granville
JOB NO: 19122955

COORDS: 315954 m E 6254814 m N MGA94 56 (hhGPS)
SURFACE RL: 12.5 m DATUM: AHD (MAP)
INCLINATION: -90°
HOLE DEPTH: 8.75 m

DRILL RIG: Komatsu 05
CONTRACTOR: Nealings
LOGGED: FY DATE: 1/8/19
CHECKED: BJF DATE: 20/8/19

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa (VL 0.6, L 2.0, M 6.0, H 20, VH 60, EH 200)	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
				0								
				1								
					1.86		Continuation of Sheet 1					
NMLC	90-100% Water RETURN	100	0 (20)	2	10.64		SILTSTONE pale grey, with ironstone band, bedded at 0-20°, trace iron staining	XW			1.86-1.99 m: EWS, 0°, 130 mm, Recovered as fractured core 2.06-2.09 m: EWS, 0°, 30 mm, weathered siltstone 2.16-2.23 m: J, 80-90°, 70 mm, Healed 2.16 m: P, 0°, Pl, Sm, Cn 2.16-2.23 m: J, 80-90°, 70 mm, Healed 2.29-2.36 m: JX2, 70-90°, sp = 5 mm, Pl, Sm, Cn, 70 mm 2.30 m: P, 0°, Pl, Sm, Cn 2.35-2.40 m: PX2, 0-5°, sp = 5-40 mm, St, Sm, Cn 2.46 m: PX3, 0°, sp = 10 mm, Pl, Sm, Cn 2.51 m: PX2, 0°, sp = 3 mm, Pl, Sm, Cn 2.53 m: Px2, 0°, sp = 20 mm, Pl, Sm, Cn 2.62 m: P, 0°, Pl, Sm, Fe Sn 2.77 m: P, 0°, Pl, Sm, Cn 2.85 m: EWS, 0°, 30 mm 3.00-3.02 m: J, 90°, Pl, Sm, Fe Sn, 20 mm 3.02 m: P, 0°, Pl, Sm, Fe Sn 3.05 m: P, 0°, Pl, Sm, Fe Sn	
					2.92							
		100	0 (0)	3	9.58		Silty CLAY (CI-CH) medium - high plasticity, pale grey, with ironstone gravel/layers, inferred to be at least very stiff	RS				
				4								
					4.92							
		100	0 (40)	5	7.58		SILTSTONE dark grey and orange brown, with pale grey lamination, bedded at 0-5°, trace iron staining	MW		PLI(A)=0.16	4.94 m: P, 0-45°, Cv, Sm, Fe Sn 5.05-5.51 m: Px6, 0-5°, sp = 60-200 mm, Pl-St, Sm, Fe Sn 5.10 m: J, 0-45°, Ir, Sm, Fe Sn 5.18 m: J, 0-20°, Ir, Sm, Fe Sn 5.23-5.26 m: J, 70°, Pl, Sm, Fe Sn, 30 mm 5.26 m: EWS, 0°, Fe Sn, 15 mm, weathered siltstone 5.37 m: EWS, 0°, clay, 5 mm	
				6				SW		PLI(A)=0.19	5.57-5.84 m: Jx 14, 5-10°, sp = 10-30 mm, Pl, Sm, Fe Sn 5.72-5.86 m: J, 70°, Pl, Sm, Fe Sn, 140 mm 5.85 m: EWS, 0°, clay Sn, 15 mm	
					6.45							
		100	75 (90)		6.05		no iron staining	FR		PLI(D)=0.03 PLI(A)=0.21 PLI(D)=0.17 PLI(A)=0.28 PLI(A)=0.59 PLI(A)=0.61	5.91-6.00 m: Px4, 0°, sp = 20-30 mm, Pl, Sm, Fe Sn 6.11-6.47 m: EWSx2, 0°, sp = 30-200 mm, Fe Sn, 60 mm 6.71-8.56 m: Px13, 0°, sp = 30-250 mm, Pl, Sm, Cn 7.03 m: EWS, 0°, 15 mm, weathered siltstone	
				7								
		100	85 (100)	8						PLI(D)=0.73 PLI(A)=0.75	8.13 m: P, 0°, Pl, Sm, clay Ve	
					8.75					PLI(D)=0.55		
					3.75		END OF BOREHOLE @ 8.75 m TARGET DEPTH GROUTED			PLI(A)=0.59		
				9								
				10								

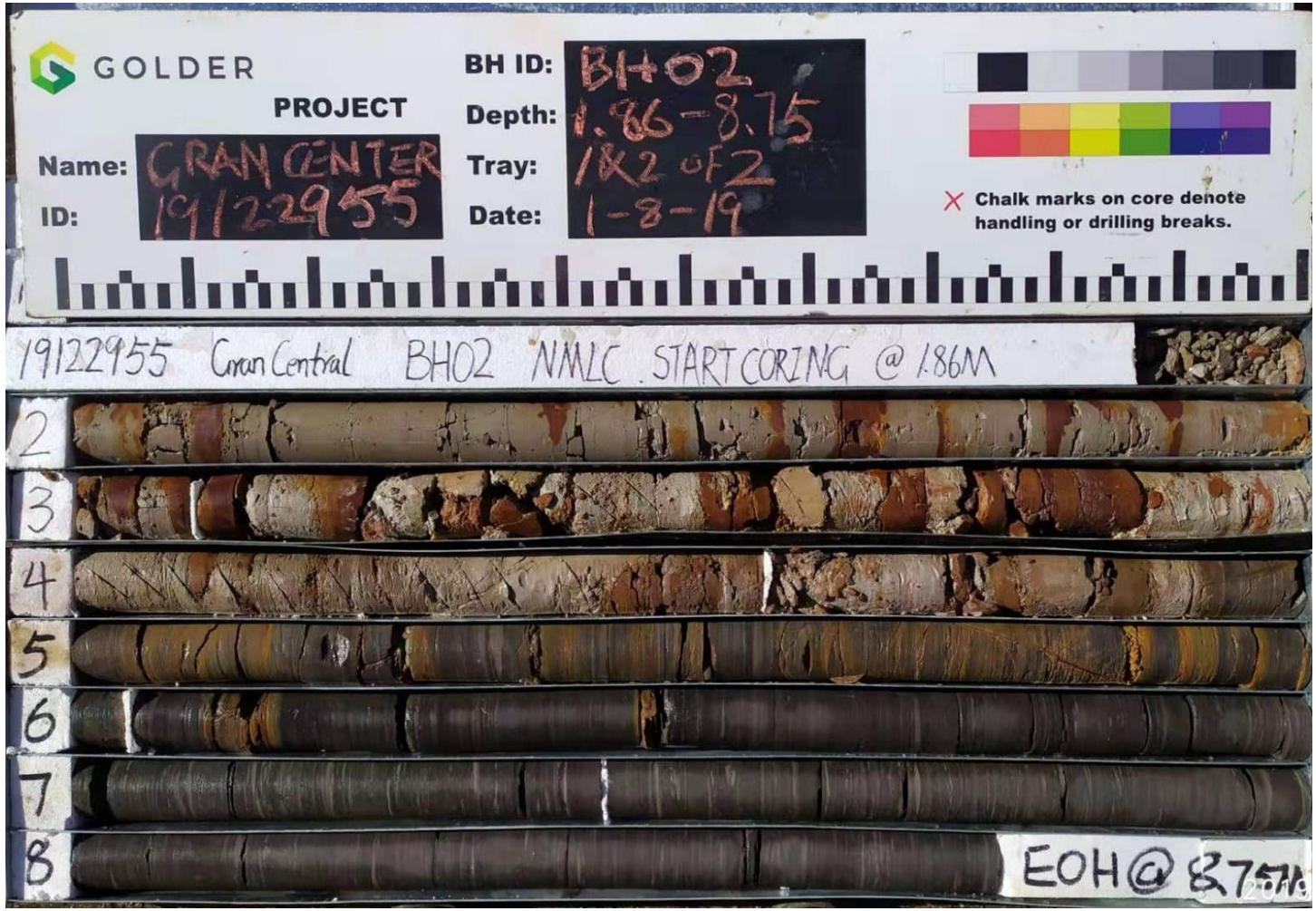
This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3

GAP 8_16.8 LIB.GLB Log GAP CORED BOREHOLE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF CORE PHOTOGRAPHS: BH02

CLIENT:	PDS and Starrylands	COORDS: 315954 m E 6254814 m N MGA94 56 (hhGPS)	SHEET: 1 OF 1
PROJECT:	Proposed Gran Central	SURFACE RL: 12.5 m DATUM: AHD (MAP)	DRILL RIG: Komatsu 05
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	CONTRACTOR: Nealings
JOB NO:	19122955	HOLE DEPTH: 8.75 m	LOGGED: FY DATE: 1/8/19
			CHECKED: BJF DATE: 20/8/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP 8_16.8 LIB.GLB GrfcTbl GAP CORE PHOTO 1 PER PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH03

SHEET: 1 OF 2

CLIENT: PDS and Starrylands
PROJECT: Proposed Gran Central
LOCATION: Cnr Parramatta Rd and Good Street, Granville
JOB NO: 19122955

COORDS: 315991 m E 6254810 m N MGA94 56 (hhGPS)
SURFACE RL: 12.3 m DATUM: AHD (MAP)
INCLINATION: -90°
HOLE DEPTH: 8.34 m

DRILL RIG: Komatsu 05
CONTRACTOR: Nealings
LOGGED: FY DATE: 1/8/19
CHECKED: BJF DATE: 20/8/19

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	M	GWNE	0	12.30 *0.23* 12.07	PID = 0 ppm DS 0.10-0.20 m PID = 0.1 ppm			-	TOPSOIL: Silty CLAY medium to high plasticity, dark brown, trace rootlets and wood fibre	w > PL	-	TOPSOIL
					DS 0.40-0.50 m PID = 0 ppm			CI-CH	Silty CLAY medium to high plasticity, pale brown to brown mottled red-brown			RESIDUAL SOIL
				0.75 ~~11.55~~ *0.90*	DS 0.50-0.60 m				pale grey and red-brown			
	H		1	11.40	DS 0.80-0.90 m PID = 0 ppm				pale grey mottled red-brown	w > PL	-	
					DS 1.30-1.40 m PID = 0 ppm							
ADT	M	RETURN		*1.80*	DS 1.40-1.50 m PID = 0 ppm						H	@ 1.50 m, NDD Target Reached
				10.50	SPT 1.50-1.95 m 7, 16, 36 N=52 PID = 0 ppm			-	SILTSTONE pale grey, low to medium strength, extremely weathered	-	-	
WB	-	90-100% Water	2		SPT 2.00-2.12 m 21/120mm HB N=R PID = 0 ppm				For Continuation Refer to Sheet 2			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3

GAP 8_16.8 LIB.GLB Log GAP NON-CORED FULL PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH03

SHEET: 2 OF 2

CLIENT: PDS and Starrylands
PROJECT: Proposed Gran Central
LOCATION: Cnr Parramatta Rd and Good Street, Granville
JOB NO: 19122955

COORDS: 315991 m E 6254810 m N MGA94 56 (hhGPS)
SURFACE RL: 12.3 m DATUM: AHD (MAP)
INCLINATION: -90°
HOLE DEPTH: 8.34 m

DRILL RIG: Komatsu 05
CONTRACTOR: Nealings
LOGGED: FY DATE: 1/8/19
CHECKED: BJF DATE: 20/8/19

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa (VL 0.6, L 2.0, M 6.0, H 20, VH 60, EH 200)	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
				0								
				1								
				2	2.25		Continuation of Sheet 1					
NMLC	90-100% Water RETURN	100	45 (55)	3	10.05			XW			2.29-2.59 m: EWS, 0°, sp = 10-20 mm, Ir, Sm, Fe Sn, 100 mm, Recovered as fractured core 2.61 m: P, 0°, Pl, Sm, Fe Sn 2.69-2.77 m: EWS, 0°, Fe Sn, 80 mm 2.91 m: P, 0°, Pl, Sm, Fe Sn 3.12 m: P, 0-15°, Ir, Sm, Fe Sn	
		100	0 (0)	4	4.05 8.25		Silty CLAY (CI-CH) medium - high plasticity, pale grey, with brown, iron indurate shale band.	RS				
		100	40 (10)	5	5.60							
				6	6.70 6.06 6.21		SILTSTONE red-brown to brown and dark grey, with iron staining dark grey	HW SW		PLI(D)=0.06 PLI(A)=0.16	5.85-5.94 m: EWS, 0-5°, clay, 90 mm 5.95-6.11 m: J, 90°, Ir, Sm, Fe Sn, 160 mm 6.11-6.13 m: EWS, 0°, clay, 20 mm	
		100	65 (40)	7	6.01 7.56		Core Loss: 80 mm SILTSTONE dark grey, with pale grey lamination, bedded at 0-5°, with iron staining	FR		PLI(A)=0.07 PLI(A)=0.07 PLI(D)=0.14 PLI(A)=0.26	6.31 m: Px3, 0°, sp = 10 mm, Pl, Sm, Fe Sn, 3 mm 6.59-6.71 m: EWS, 0°, Fe Sn, 90 mm, weathered siltstone and clay 6.72 m: P, 0-10°, St, Sm, Fe Sn 6.79 m: P, 0-5°, Pl, Sm, Fe Sn 6.84 m: P, 0°, Pl, Sm, Fe Sn 6.86-6.87 m: EWS, 0°, Fe Sn, 10 mm 6.98 m: P, 0°, Pl, Sm, Fe Sn 7.09 m: P, 0-5°, Pl, Sm, Cn 7.19-7.25 m: Px5, 0-5°, sp = 5-15 mm, Pl, Sm, Fe Sn, 80 mm	
		100	95 (90)	8	4.74 8.34		no staining			PLI(D)=0.28 PLI(A)=0.54	7.21-7.23 m: J, 70°, Pl, Sm, Fe Sn, 20 mm 7.42-7.45 m: Px2, 0-5°, sp = 10-20 mm, Pl, Sm, Fe Sn 7.60-7.64 m: Px3, 0-5°, sp = 10-30 mm, Pl, Sm, Cn	
				9	3.96		END OF BOREHOLE @ 8.34 m TARGET DEPTH GROUTED			PLI(D)=0.42 PLI(A)=0.79	8.27 m: Px2, 0°, sp = 5 mm, Pl, Sm, Cn 8.28-8.29 m: J, 90°, Pl, Sm, Cn, 10 mm	
				10								

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3

GAP 8_16.8 LIB.GLB Log GAP CORED BOREHOLE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF CORE PHOTOGRAPHS: BH03

CLIENT:	PDS and Starrylands	COORDS: 315991 m E 6254810 m N MGA94 56 (hhGPS)	DRILL RIG: Komatsu 05
PROJECT:	Proposed Gran Central	SURFACE RL: 12.3 m DATUM: AHD (MAP)	CONTRACTOR: Nealings
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	LOGGED: FY DATE: 1/8/19
JOB NO:	19122955	HOLE DEPTH: 8.34 m	CHECKED: BJF DATE: 20/8/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP 8_16.8 LIB.GLB GrfcTbl GAP CORE PHOTO 1 PER PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH04

SHEET: 1 OF 2

CLIENT:	PDS and Starrylands	COORDS: 316031 m E 6254831 m N MGA94 56 (hhGPS)	DRILL RIG: Komatsu 05
PROJECT:	Proposed Gran Central	SURFACE RL: 11.0 m DATUM: AHD (MAP)	CONTRACTOR: Nealings
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	LOGGED: FY DATE: 29/7/19
JOB NO:	19122955	HOLE DIA: 90 mm HOLE DEPTH: 7.80 m	CHECKED: BJF DATE: 20/8/19

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	10.98				-	FILL: GRAVEL medium to coarse grained, poorly graded, sub-angular, blue metal	-	-	FILL
				0.25				-				
				10.75	DS 0.10-0.20 m PID = 0.8 ppm DS 0.25-0.35 m PID = 0.7 ppm DS 0.55-0.65 m PID = 1.8 ppm			CI-CH	FILL: Gravelly SAND fine to medium grained, fine to coarse, sub rounded to sub angular gravel, trace glass.			RESIDUAL SOIL
HA	H								Silty CLAY medium to high plasticity, brown mottled red-brown		-	
			1		DS 1.05-1.15 m PID = 6.9 ppm DS 1.30-1.35 m PID = 2.4 ppm DS 1.40-1.50 m PID = 3.7 ppm SPT 1.50-1.95 m 6, 12, 17 N=29 U75 2.00-2.35 m					w > PL		@ 1.50 m, NDD Target Reached
ADT	M	GWNE	2								VSt - H	
				2.80								
	H		3	8.20	DS 2.80-3.00 m SPT 3.00-3.15 m 13 HB N>30			-	SILTSTONE pale grey, low to medium strength, extremely weathered, trace iron staining	w < PL	H	
									For Continuation Refer to Sheet 2			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3

GAP 8_16.8 LIB.GLB Log GAP NON-CORED FULL PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF BOREHOLE: BH04

SHEET: 2 OF 2

CLIENT: PDS and Starrylands
PROJECT: Proposed Gran Central
LOCATION: Cnr Parramatta Rd and Good Street, Granville
JOB NO: 19122955

COORDS: 316031 m E 6254831 m N MGA94 56 (hhGPS)
SURFACE RL: 11.0 m DATUM: AHD (MAP)
INCLINATION: -90°
HOLE DIA: 90 mm HOLE DEPTH: 7.80 m

DRILL RIG: Komatsu 05
CONTRACTOR: Nealings
LOGGED: FY DATE: 29/7/19
CHECKED: BJF DATE: 20/8/19

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa (VL 0.6, L 2.0, M 6.0, H 20, VH 60, EH 200)	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
				0								
				1								
				2								
				3	3.10		Continuation of Sheet 1					
NMLC	90-100% Water RETURN	40	0 (0)		3.28		SILTSTONE pale grey, trace iron staining	XW			3.10-3.95 m: Recovered as fine to medium, sub rounded to sub angular shale gravel	
					7.72		Core Loss: 490 mm					
				4	3.77							
					7.23		SILTSTONE pale grey, trace iron staining					
		100	35 (80)		4.15						4.05 m: P, 5-10°, St, Sm, clay Ct, 3 mm	
					6.85		Silty CLAY (CI-CH) medium to high plasticity, pale grey					
		100	10 (15)	5	5.45							
					5.55		SILTSTONE brown and dark grey, with iron staining	HW			5.49-5.50 m: Px 2, 0°, sp = 5 mm, Pl, Sm, Fe Sn	
					5.84			MW			5.49-5.50 m: J, 90°, Ir, Sm, Fe Sn, 10 mm	
				6	5.16		with pale grey lamination, bedded @ 0-5°, no staining	SW - FR		PLI(D)=0.12 PLI(A)=0.30	5.57 m: Px2, 0-5°, sp = 10 mm, Ir, Sm-Ro, Fe Sn, 5 mm, weathered siltstone	
		100	70 (85)							PLI(D)=0.00 PLI(A)=0.17	5.58-5.60 m: J, 80°, Pl, Sm, Fe Sn, 20 mm 5.60-5.68 m: EWS, 5°, Fe Sn, 80 mm, clay and weathered siltstone 5.90 m: P, 0°, Pl, Sm, clay Ve 6.20-6.27 m: EWSx3, 0°, sp = 60 mm, Fe Sn, 20 mm 6.63 m: P, 0°, Pl, Sm-Ro, Fe Sn 6.66-6.69 m: EWS, 0°, Fe Sn, weathered siltstone 6.83 m: EWS, 0°, 15 mm, clay	
				7							7.13 m: Px 2, 0°, sp = 3 mm, Pl, Sm, Cn	
		100	80 (95)		7.80					PLI(D)=0.28 PLI(A)=0.40 PLI(D)=0.23 PLI(A)=0.36	7.55 m: P, 0°, Pl, Sm, Cn	
					3.20		END OF BOREHOLE @ 7.80 m TARGET DEPTH GROUTED			PLI(D)=0.25 PLI(A)=0.43		
				8								
				9								
				10								

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3

GAP 8_16.8 LIB.GLB Log GAP CORED BOREHOLE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

DRAFT REPORT OF CORE PHOTOGRAPHS: BH04

CLIENT:	PDS and Starrylands	COORDS: 316031 m E 6254831 m N MGA94 56 (hhGPS)	SHEET: 1 OF 1
PROJECT:	Proposed Gran Central	SURFACE RL: 11.0 m DATUM: AHD (MAP)	DRILL RIG: Komatsu 05
LOCATION:	Cnr Parramatta Rd and Good Street, Granville	INCLINATION: -90°	CONTRACTOR: Nealings
JOB NO:	19122955	HOLE DIA: 90 mm HOLE DEPTH: 7.80 m	LOGGED: FY DATE: 29/7/19
			CHECKED: BJF DATE: 20/8/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F31
RL1

GAP 8_16.8 LIB.GLB GrfcTbl GAP CORE PHOTO 1 PER PAGE 19122955-BC_BJF.GPJ <<DrawingFile>> 20/08/2019 13:00 8.30.004 Datgel Tools

EXPLANATION OF NOTES, ABBREVIATIONS & TERMS USED ON BOREHOLE AND TEST PIT REPORTS

DRILLING/EXCAVATION METHOD

ADH	Hollow auger drilling	EX	Excavator	PQ3	Diamond core - 83 mm
ADT	Auger drilling with tc-bit	HA	Hand auger	PT	Push tube sampling
ADV	Auger drilling with v-bit	HAND	Excavated by hand methods	RAB	Rotary air blast
AIRCORE	Aircore	HMLC	Diamond core - 63 mm	RC	Reverse circulation
AT	Air track	HQ3	Diamond core - 61 mm	RT	Rock roller
BH	Backhoe bucket	JET	Jetting	SONIC	Sonic drilling
CT	Cable tool rig	MZ	Mazier tube sampling	SPT	Standard penetration testing
DTC	Diatube coring	NDD	Non-destructive digging	U	Undisturbed tube sampling
EE	Existing excavation	NMLC	Diamond core - 52 mm	WB	Washbore drilling
EPT	Extruded push tube	NQ3	Diamond core - 45 mm		

PENETRATION/EXCAVATION RESISTANCE

L **Low resistance.** Rapid penetration possible with little effort from the equipment used.

M **Medium resistance.** Excavation/possible at an acceptable rate with moderate effort from the equipment used.

H **High resistance** to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.

R **Refusal or Practical Refusal.** No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.

These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.

WATER

	Water level at date shown		Partial water loss
	Water inflow		Complete water loss
GROUNDWATER NOT OBSERVED	The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.		
GROUNDWATER NOT ENCOUNTERED	The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.		

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating
30/80 mm	Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (sv = peak value, sr = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure test
DCP	Dynamic cone penetration test
CPT	Cone penetration test
CPTu	Cone penetration test with pore pressure (u) measurement

RANKING OF VISUALLY OBSERVABLE CONTAMINATION AND ODOUR (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)	RQD = Rock Quality Designation (%)	SCR = Solid Core Recovery (%)	F = Fracture Frequency
$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Axial lengths of core} > 100\text{ mm}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Length of cyclindrical core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\text{No. of defects}}{\text{Length of zone (m)}}$

METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT REPORTS

SYMBOLS


FILL


GRAVEL (GW, GP, GM or GC)


SAND (SW, SP, SM or SC)


SILT (ML or MH)


CLAY (CL, CI or CH)


ORGANIC SOILS (OL, OH or Pt)


COBBLES or BOULDERS

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

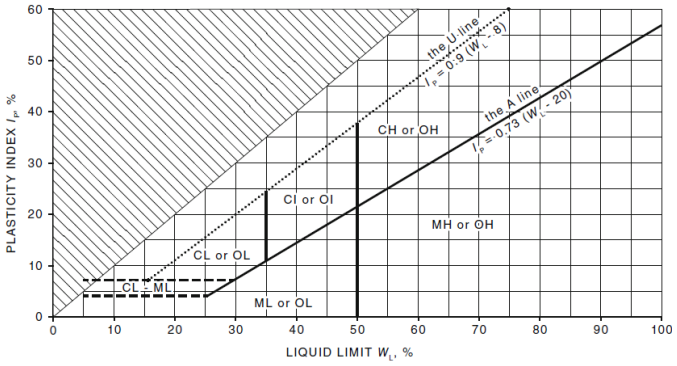
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726-2017. The material properties are assessed in the field by visual/tactile methods.

Particle Size

Soil Group	Sub Division	Particle Size
BOULDERS		> 200 mm
COBBLES		63 to 200 mm
GRAVEL	Coarse	19 to 63 mm
	Medium	6.7 to 19 mm
	Fine	2.36 to 6.7 mm
SAND	Coarse	0.6 to 2.36 mm
	Medium	0.21 to 0.6 mm
	Fine	0.075 to 0.21 mm
SILT		0.002 to 0.075 mm
CLAY		< 0.002 mm

Plasticity Properties



MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays and silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in dry condition and may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sand and gravels tend to cohere.

Moisture condition for fine grained soils is described relative to the plastic limit or liquid limit as specified in AS1726-2017.

CONSISTENCY AND DENSITY

Fine Grained Soils

Symbol	Term	Undrained Shear Strength
VS	Very Soft	0 to 12 kPa
S	Soft	12 to 25 kPa
F	Firm	25 to 50 kPa
St	Stiff	50 to 100 kPa
VSt	Very Stiff	100 to 200 kPa
H	Hard	Above 200 kPa
Fr	Friable	-

Coarse Grained Soils

Symbol	Term	Density Index (%)	SPN "N" *
VL	Very Loose	Less than 15	0 to 4
L	Loose	15 to 35	4 to 10
MD	Medium Dense	35 to 65	10 to 30
D	Dense	65 to 85	30 to 50
VD	Very Dense	Above 85	Above 50

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

* SPT correlations are not stated in AS1726-2017, and may be subject to corrections for overburden pressure and equipment type.

CEMENTATION

Weakly Cemented	The soil may be easily disaggregated by hand in air or water.
Moderately Cemented	Effort is required to disaggregate the soil by hand in air or water.

TERMS FOR ROCK MATERIAL STRENGTH & WEATHERING AND ABBREVIATIONS FOR DEFECT DESCRIPTIONS

STRENGTH

Symbol	Term	UCS (MPa)	Field Guide
VL	Very Low	0.6 to 2	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm can be broken by finger pressure.
L	Low	2 to 6	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	6 to 20	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	20 to 60	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow; rock rings under hammer.
VH	Very High	60 to 200	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	>200	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Material with strength less than 'Very Low' shall be described using soil characteristics. The presence of an original rock structure, fabric or texture should be noted, if relevant.

ROCK MATERIAL WEATHERING

Symbol		Term	Field Guide
RS		Residual Soil	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
XW		Extremely Weathered	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
DW	HW	Highly Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
	MW	Moderately Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable, but shows little or no change of strength from fresh rock.
SW		Slightly Weathered	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
FR		Fresh	Rock shows no sign of decomposition of individual minerals or colour changes.

ABBREVIATIONS FOR DEFECT TYPES AND DESCRIPTIONS

Defect Type	
P	Parting
X	Foliation
L	Cleavage
C	Contact
J	Joint
SSu	Sheared Surface
SS	Sheared Seam
SZ	Sheared Zone
CS	Crushed Seam
IS	Infilled Seam
EWS	Extremely Weathered Seam
V	Vein

Coating or Infilling	
Cn	Clean
Sn	Stain
Ve	Veneer
Ct	Coating
In	Infill

Planarity	
Pl	Planar
Cv	Curved
Un	Undulating
St	Stepped
Ir	Irregular

Roughness	
VRo	Very Rough
Ro	Rough
Sm	Smooth
Po	Polished
Sl	Slickensided

Vertical Boreholes – The dip (inclination from horizontal) of the defect is given.
Inclined Boreholes – The inclination is measured as the acute angle between the core axis and the vertical direction.

APPENDIX J

Laboratory Certificates

source: [Untitled].pdf page: 1 SGS Ref: SE196065_COC

E-MAILED

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS

SGS Environmental Services Sydney
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Lab ID Number: *(please quote on correspondence)*

Site: Gran Central, Granville

Company Name:	Golder Associates Pty Ltd	Project Name/No:	Gran Central - 19122955
Address:	Level 8, 40 Mount Street	Purchase Order No:	PO21564
	North Sydney NSW	Results Required Date:	5 day TAT
		Telephone:	0431 063 254
		Fax:	
Contact Name:	Frank Yu	Email Results to:	FYu@golder.com.au; sdoyle@golder.com.au
Quotation No:			

SGS ID	Client Sample ID	Sampling Date/ Time	Matrix (Tick as appropriate) Soil Sample	Water Sample	Other	NO. OF CONTAINERS	HOLD	HOLD (Freeze)	CL17 SUITE	ASBESTOS WA DOH NEPM	TRH/BTEX/PAH/HM*8	Notes/Guidelines/LOR/ Special instructions
1	BH01_0.14-0.18	30/7/2019	X			2			X	X		
	BH01_0.35-0.45	30/7/2019	X			2	X					
	BH01_0.80-0.90	30/7/2019	X			2	X					
	BH01_1.10-1.20	30/7/2019	X			1	X					
2	BH01_1.30-1.40	30/7/2019	X			2			X			
	BH01_1.45-1.90	30/7/2019	X			1	X					
	BH01_3.00-3.45	30/7/2019	X			1	X					
	BH01_3.40-3.50	30/7/2019	X			1	X					
	BH01_3.90-4.00	30/7/2019	X			1	X					
	BH01_4.40-4.50	30/7/2019	X			1	X					
	BH01_4.50-4.65	30/7/2019	X			1	X					
	BH01_4.65-4.75	30/7/2019	X			1	X					
	Rinsate water	30/7/2019		X		4	X					

ANALYSIS REQUESTED

Additional Report Formats

- ☐ NEPM
- ☐ CSV
- ☐ ESDAT
- ☐ DQO
- ☐ GO, Guidelines ---------
- ☐ Others _____

SGS EHS Alexandria Laboratory

SE196065 COC

Received: 02 – Aug – 2019

Relinquished By: Frank Yu	Date/Time: 1/8/2019	Received By:	Date/Time: 2/8/19 2:35
Relinquished By:	Date/Time:	Received By:	Date/Time:
Samples Intact: (Yes) / No	Temperature: 4.8 °C	Sample Security Sealed: Yes / (No)	Hazards: *e.g. may contain Asbestos*

Comments / Subcontracting details: COC Golder review: SPD 2/8/2019

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services Sydney
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Lab ID Number: *(please quote on correspondence)*

Site: Gran Central, Granville

Company Name:	Golder Associates Pty Ltd	Project Name/No:	Gran Central - 19122955		
Address:	Level 8, 40 Mount Street	Purchase Order No:	PO21564		
	North Sydney NSW	Results Required Date:	5 day TAT		
		Telephone:	0431 063 254	Fax:	
Contact Name:	Frank Yu	Email Results to:	FYu@golder.com.au; sdoyle@golder.com.au		
Quotation No:					

SGS ID	Client Sample ID	Sampling Date/ Time	Matrix (Tick as appropriate)			NO. OF CONTAINERS	ANALYSIS REQUESTED											
			Soil Sample	Water Sample	Other____		HOLD	HOLD (Freeze)	CL17 SUITE	ASBESTOS WA DOH NEPM	TRH/BTEX/PAH/HM*8							
	Rinsate water	30/7/2019		X		1	X											

Additional Report Formats

- ☐ NEPM
- ☐ CSV
- ☐ ESDAT
- ☐ DQO
- ☐ GO, Guidelines --------
- ☐ Others _____

Notes/Guidelines/LOR/ Special instructions

Relinquished By: Frank Yu	Date/Time: 30/7/2019	Received By:	Date/Time: 2/8/19 2:35
Relinquished By:	Date/Time:	Received By:	Date/Time:
Samples Intact: Yes / No	Temperature: 4.2 °C	Sample Security Sealed: Yes / No	Hazards: *e.g. may contain Asbestos*

Comments / Subcontracting details: COC Golder review: SPD 2/8/2019

SAMPLE RECEIPT ADVICE

SE196065

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 1/8/2019
Report Due	Fri 9/8/2019
SGS Reference	**SE196065**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Thursday 1/8/2019. Results are expected to be ready by COB Friday 9/8/2019. Please quote SGS reference SE196065 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	2 Soil
Date documentation received	2/8/2019@10:20am	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

10 Soil and 2 Water samples have been placed on hold as no tests have been assigned for them by the client . These samples will not be processed.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE196065

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH01_0.14-0.18	29	14	26	11	7	10	11	7
002	BH01_1.30-1.40	29	14	26	11	7	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE196065

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Gravimetric Determination of Asbestos in Soil	Mercury in Soil	Moisture Content
001	BH01_0.14-0.18	2	9	1	1
002	BH01_1.30-1.40	-	-	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196065 R0**
Date Received	1/8/2019
Date Reported	9/8/2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
Benzene	mg/kg	0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
TRH C6-C9	mg/kg	20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45
TRH C29-C36	mg/kg	45	**60**	<45
TRH C37-C40	mg/kg	100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
Naphthalene	mg/kg	0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	**0.2**	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**0.3**	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.3**	<0.1
Pyrene	mg/kg	0.1	**0.5**	<0.1
Benzo(a)anthracene	mg/kg	0.1	**0.2**	<0.1
Chrysene	mg/kg	0.1	**0.2**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.3**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	**0.1**	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.3**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.2**	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.3**	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**0.4**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**0.5**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.4**	<0.2
Total PAH (18)	mg/kg	0.8	**2.9**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**2.9**	<0.8

OC Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1

OP Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
Dichlorvos	mg/kg	0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
Arochlor 1016	mg/kg	0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
Arsenic, As	mg/kg	1	**6**	**3**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**22**	**2.1**
Copper, Cu	mg/kg	0.5	**37**	**5.6**
Lead, Pb	mg/kg	1	**20**	**5**
Nickel, Ni	mg/kg	0.5	**37**	**0.5**
Zinc, Zn	mg/kg	2	**65**	**3.4**

Mercury in Soil [AN312] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
Mercury	mg/kg	0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001	BH01_1.30-1.40 SOIL - 30/7/2019 SE196065.002
% Moisture	%w/w	0.5	**15**	**16**

Fibre Identification in soil [AN602] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001
Asbestos Detected	No unit	-	No
Estimated Fibres*	%w/w	0.01	<0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001
Total Sample Weight*	g	1	**378**
ACM in >7mm Sample*	g	0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001
Fibre Type*	No unit	-	-

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.

AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	1

LABORATORY DETAILS

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SGS Reference	**SE196065 R0**
Date Received	01 Aug 2019
Date Reported	09 Aug 2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

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Senior Organic Chemist/Metals Chemis

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE196065.001	BH01_0.14-0.18	Soil	378g Clay,Sand,Soil, Rocks	30 Jul 2019	No Asbestos Found	<0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH01_0.14-0.18 SOIL - 30/7/2019 SE196065.001
Total Sample Weight*	g	1	**378**
ACM in >7mm Sample*	g	0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001
Fibre Type*	No unit	-	-

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service.
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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STATEMENT OF QA/QC PERFORMANCE

SE196065 R0

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196065 R0**
Date Received	01 Aug 2019
Date Reported	14 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	4 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	2 Soil
Date documentation received	2/8/2019@10:20am	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE196065 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180495	30 Jul 2019	01 Aug 2019	29 Jul 2020	08 Aug 2019	29 Jul 2020	09 Aug 2019

Gravimetric Determination of Asbestos in Soil

Method: ME-(AU)-[ENV]AN605

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180495	30 Jul 2019	01 Aug 2019	26 Jan 2020	08 Aug 2019	26 Jan 2020	09 Aug 2019

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180332	30 Jul 2019	01 Aug 2019	27 Aug 2019	06 Aug 2019	27 Aug 2019	09 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180332	30 Jul 2019	01 Aug 2019	27 Aug 2019	06 Aug 2019	27 Aug 2019	09 Aug 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180273	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180273	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180327	30 Jul 2019	01 Aug 2019	26 Jan 2020	06 Aug 2019	26 Jan 2020	09 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180327	30 Jul 2019	01 Aug 2019	26 Jan 2020	06 Aug 2019	26 Jan 2020	09 Aug 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180272	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180271	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180271	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH01_0.14-0.18	SE196065.001	LB180271	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH01_1.30-1.40	SE196065.002	LB180271	30 Jul 2019	01 Aug 2019	13 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	123
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	121

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	94
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	94
d14-p-terphenyl (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	92
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH01_0.14-0.18	SE196065.001	%	70 - 130%	94
	BH01_1.30-1.40	SE196065.002	%	70 - 130%	94
d14-p-terphenyl (Surrogate)	BH01_0.14-0.18	SE196065.001	%	70 - 130%	92
	BH01_1.30-1.40	SE196065.002	%	70 - 130%	92
d5-nitrobenzene (Surrogate)	BH01_0.14-0.18	SE196065.001	%	70 - 130%	90
	BH01_1.30-1.40	SE196065.002	%	70 - 130%	92

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	123
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	121

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	95
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	90
d4-1,2-dichloroethane (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	117
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	110
d8-toluene (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	108
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	93

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	95
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	90
d4-1,2-dichloroethane (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	117
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	110
d8-toluene (Surrogate)	BH01_0.14-0.18	SE196065.001	%	60 - 130%	108
	BH01_1.30-1.40	SE196065.002	%	60 - 130%	93

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB180332.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB180272.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	100
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result
LB180327.001		Arsenic, As	mg/kg	1	1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result
LB180272.001		TRH C10-C14	mg/kg	20	<20
		TRH C15-C28	mg/kg	45	<45
		TRH C29-C36	mg/kg	45	<45
		TRH C37-C40	mg/kg	100	<100
		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118
		d8-toluene (Surrogate)	%	-	94
		Bromofluorobenzene (Surrogate)	%	-	98
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180332.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180273.022	% Moisture	%w/w	0.5	22	18	35	16
SE196071.004	LB180273.026	% Moisture	%w/w	0.5	21	20	35	5
SE196092.004	LB180273.011	% Moisture	%w/w	0.5	0	0	200	0

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.17	30	1

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180327.014		Arsenic, As	mg/kg	1	7	10	42	34
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	22	30	32	32
			Copper, Cu	mg/kg	0.5	3.4	3.3	45	1
			Nickel, Ni	mg/kg	0.5	<0.5	0.6	135	12
			Lead, Pb	mg/kg	1	14	18	36	25
			Zinc, Zn	mg/kg	2	5.4	6.4	64	17

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.9	5.9	50	1
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.3	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	50	3
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE196071.004	LB180271.020	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	50	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.9	5.9	30	1
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.3	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE196071.004	LB180271.020		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	30	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180332.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	113

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	108
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	112
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	98
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	116
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	80
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Dichlorvos	mg/kg	0.5	2.4	2	60 - 140	119
		Diazinon (Dimpylate)	mg/kg	0.5	2.1	2	60 - 140	103
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.1	2	60 - 140	107
		Ethion	mg/kg	0.2	2.2	2	60 - 140	112
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Naphthalene	mg/kg	0.1	4.6	4	60 - 140	115
		Acenaphthylene	mg/kg	0.1	4.7	4	60 - 140	119
		Acenaphthene	mg/kg	0.1	4.4	4	60 - 140	110
		Phenanthrene	mg/kg	0.1	5.0	4	60 - 140	124
		Anthracene	mg/kg	0.1	4.9	4	60 - 140	122
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	112
		Pyrene	mg/kg	0.1	4.8	4	60 - 140	121
		Benzo(a)pyrene	mg/kg	0.1	4.9	4	60 - 140	122
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	114

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180327.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	103
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	104
	Chromium, Cr	mg/kg	0.5	36	35.2	80 - 120	103
	Copper, Cu	mg/kg	0.5	330	370.46	80 - 120	88
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	91
	Lead, Pb	mg/kg	1	95	107.87	79 - 120	88
	Zinc, Zn	mg/kg	2	290	301.27	80 - 121	95

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		TRH C10-C14	mg/kg	20	38	40	60 - 140	95
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	83
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	TRH F Bands	TRH >C10-C16	mg/kg	25	36	40	60 - 140	90
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	80
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002	Monocyclic	Benzene	mg/kg	0.1	2.1	2.9	60 - 140	72
	Aromatic	Toluene	mg/kg	0.1	2.0	2.9	60 - 140	70
		Ethylbenzene	mg/kg	0.1	2.4	2.9	60 - 140	81
		m/p-xylene	mg/kg	0.2	4.8	5.8	60 - 140	83
		o-xylene	mg/kg	0.1	2.3	2.9	60 - 140	79
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140	89
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	123

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180332.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	102

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	78
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	86
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	86
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	94
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	80
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	81
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.13	-	94

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Dichlorvos	mg/kg	0.5	2.2	<0.5	2	112
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	101
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	<0.2	2	108
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	2.4	<0.2	2	118
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	8.7	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019	Naphthalene	mg/kg	0.1	4.6	<0.1	4	114
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.8	0.2	4	116
		Acenaphthene	mg/kg	0.1	4.3	<0.1	4	108
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	6.1	1.7	4	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Anthracene	mg/kg	0.1	5.1	0.3	4	120
			Fluoranthene	mg/kg	0.1	6.8	2.7	4	104
			Pyrene	mg/kg	0.1	7.1	2.5	4	115
			Benzo(a)anthracene	mg/kg	0.1	1.2	1.0	-	-
			Chrysene	mg/kg	0.1	1.2	1.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	1.6	1.6	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	0.5	0.5	-	-
			Benzo(a)pyrene	mg/kg	0.1	6.2	1.3	4	121
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.7	0.7	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	0.1	0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	0.7	0.7	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Total PAH (18)	mg/kg	0.8	51	14	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	-	88
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	106
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	89

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180327.004		Arsenic, As	mg/kg	1	46	6	50	80
			Cadmium, Cd	mg/kg	0.3	45	<0.3	50	91
			Chromium, Cr	mg/kg	0.5	60	22	50	77
			Copper, Cu	mg/kg	0.5	71	37	50	67 ④
			Nickel, Ni	mg/kg	0.5	70	37	50	65 ④
			Lead, Pb	mg/kg	1	54	20	50	68 ④
			Zinc, Zn	mg/kg	2	79	65	50	29 ④

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		TRH C10-C14	mg/kg	20	46	<20	40	115
			TRH C15-C28	mg/kg	45	90	54	40	90
			TRH C29-C36	mg/kg	45	60	<45	40	83
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	200	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	48	<25	40	120
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	48	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	110	<90	40	83
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Monocyclic	Benzene	mg/kg	0.1	1.9	<0.1	2.9	63
		Aromatic	Toluene	mg/kg	0.1	1.8	<0.1	2.9	60
			Ethylbenzene	mg/kg	0.1	2.0	<0.1	2.9	66
			m/p-xylene	mg/kg	0.2	4.2	<0.2	5.8	71
			o-xylene	mg/kg	0.1	2.1	<0.1	2.9	72

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		Totals	Total Xylenes	mg/kg	0.3	6.3	<0.3	-	-
			Total BTEX	mg/kg	0.6	12	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	72
			TRH C6-C9	mg/kg	20	<20	<20	23.2	68
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		VPH F	Benzene (F0)	mg/kg	0.1	1.9	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	74

MATRIX SPIKE DUPLICATES

SE196065 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

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source: [Untitled].pdf page: 4 SGS Ref: SE196066_COC

E-MAILED 2/8/19 10:25

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services Sydney
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Lab ID Number: *(please quote on correspondence)*

Site: Gran Central, Granville

Company Name:	Golder Associates Pty Ltd	Project Name/No:	Gran Central - 19122955
Address:	Level 8, 40 Mount Street	Purchase Order No:	PO21564
	North Sydney NSW	Results Required Date:	5 day TAT
		Telephone:	0431 063 254
		Fax:	
Contact Name:	Frank Yu	Email Results to:	FYu@golder.com.au; sdoyle@golder.com.au
Quotation No:			

SGS ID	Client Sample ID	Sampling Date/ Time	Matrix (Tick as appropriate) Soil Sample	Water Sample	Other	NO. OF CONTAINERS	HOLD	HOLD (Freeze)	CL17 SUITE	ASBESTOS WA DOH NEPM	TRH/BTEX/PAH/HM*8	
1	BH02_0.15-0.20	31/7/2019	X			2			X	X		
	BH02_0.20-0.30	31/7/2019	X			2	X					
	BH02_0.30-0.40	31/7/2019	X			2	X					
	BH02_0.60-0.70	31/7/2019	X			2	X					
	BH02_1.10-1.20	31/7/2019	X			2	X					
2	BH02_1.40-1.50	31/7/2019	X			2			X			
	BH02_1.50-1.55	31/7/2019	X			1	X					
	BH02_1.55-1.65	31/7/2019	X			1	X					
	BH02_1.80-1.85	31/7/2019	X			1	X					

ANALYSIS REQUESTED

Additional Report Formats
- ☐ NEPM
- ☐ CSV
- ☐ ESDAT
- ☐ DQO
- ☐ GO, Guidelines ---------
- ☐ Others _____

Notes/Guidelines/LOR/ Special instructions

SGS EHS Alexandria Laboratory
SE196066 COC
Received: 02 – Aug – 2019

Relinquished By: Frank Yu	Date/Time: 1/8/2019	Received By:	Date/Time: 2/8/19 2:35
Relinquished By:	Date/Time:	Received By:	Date/Time:
Samples Intact: Yes / No	Temperature: 4.1 °C	Sample Security Sealed: Yes / No	Hazards: *e.g. may contain Asbestos*

Comments / Subcontracting details: COC Golder review: SPD 2/8/2019

SAMPLE RECEIPT ADVICE

SE196066

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 1/8/2019
Report Due	Fri 9/8/2019
SGS Reference	**SE196066**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Thursday 1/8/2019. Results are expected to be ready by COB Friday 9/8/2019. Please quote SGS reference SE196066 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	2 Soil
Date documentation received	2/8/2019@10:20	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

7 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.

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SAMPLE RECEIPT ADVICE

SE196066

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH02_0.15-0.20	29	14	26	11	7	10	11	7
002	BH02_1.40-1.50	29	14	26	11	7	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE196066

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Gravimetric Determination of Asbestos in Soil	Mercury in Soil	Moisture Content
001	BH02_0.15-0.20	2	9	1	1
002	BH02_1.40-1.50	-	-	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196066 R0**
Date Received	1/8/2019
Date Reported	9/8/2019

COMMENTS

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

Sample # 1:Approx 10x2mm fibre bundles x2 found loose in sample.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
Benzene	mg/kg	0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
TRH C6-C9	mg/kg	20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	**91**	<45
TRH C29-C36	mg/kg	45	**71**	<45
TRH C37-C40	mg/kg	100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**150**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120
TRH C10-C36 Total	mg/kg	110	**160**	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
Naphthalene	mg/kg	0.1	**0.2**	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	**0.2**	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**1.5**	<0.1
Anthracene	mg/kg	0.1	**0.3**	<0.1
Fluoranthene	mg/kg	0.1	**3.1**	<0.1
Pyrene	mg/kg	0.1	**3.3**	<0.1
Benzo(a)anthracene	mg/kg	0.1	**1.4**	<0.1
Chrysene	mg/kg	0.1	**1.7**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**2.2**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	**1.1**	<0.1
Benzo(a)pyrene	mg/kg	0.1	**2.1**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**1.2**	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	**0.2**	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**1.2**	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**2.9**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**2.9**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**2.9**	<0.2
Total PAH (18)	mg/kg	0.8	**20**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**20**	<0.8

OC Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1

OP Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
Dichlorvos	mg/kg	0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
Arochlor 1016	mg/kg	0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
Arsenic, As	mg/kg	1	**130**	**2**
Cadmium, Cd	mg/kg	0.3	**2.3**	<0.3
Chromium, Cr	mg/kg	0.5	**26**	**2.5**
Copper, Cu	mg/kg	0.5	**150**	**4.3**
Lead, Pb	mg/kg	1	**930**	**9**
Nickel, Ni	mg/kg	0.5	**22**	<0.5
Zinc, Zn	mg/kg	2	**1300**	**3.2**

Mercury in Soil [AN312] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
Mercury	mg/kg	0.05	**1.4**	<0.05

Moisture Content [AN002] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001	BH02_1.40-1.50 SOIL - 31/7/2019 SE196066.002
% Moisture	%w/w	0.5	**20**	**18**

Fibre Identification in soil [AN602] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001
Asbestos Detected	No unit	-	Yes
Estimated Fibres*	%w/w	0.01	**>0.01**

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001
Total Sample Weight*	g	1	**291**
ACM in >7mm Sample*	g	0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	**0.0360**
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	**0.012**
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	**0.012**
Fibre Type*	No unit	-	-

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.

AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196066 R0**
Date Received	01 Aug 2019
Date Reported	09 Aug 2019

COMMENTS

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

Sample # 1:Approx 10x2mm fibre bundles x2 found loose in sample.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemis

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE196066.001	BH02_0.15-0.20	Soil	291g Clay, Soil, Rocks	31 Jul 2019	Chrysotile Asbestos Found	>0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH02_0.15-0.20 SOIL - 31/7/2019 SE196066.001
Total Sample Weight*	g	1	**291**
ACM in >7mm Sample*	g	0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	**0.0360**
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	**0.012**
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	**0.012**
Fibre Type*	No unit	-	-

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service.
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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STATEMENT OF QA/QC PERFORMANCE

SE196066 R0

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196066 R0**
Date Received	01 Aug 2019
Date Reported	14 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	4 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	2 Soil
Date documentation received	2/8/2019@10:20	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE196066 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180495	31 Jul 2019	01 Aug 2019	30 Jul 2020	08 Aug 2019	30 Jul 2020	09 Aug 2019

Gravimetric Determination of Asbestos in Soil

Method: ME-(AU)-[ENV]AN605

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180495	31 Jul 2019	01 Aug 2019	27 Jan 2020	08 Aug 2019	27 Jan 2020	09 Aug 2019

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180332	31 Jul 2019	01 Aug 2019	28 Aug 2019	06 Aug 2019	28 Aug 2019	09 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180332	31 Jul 2019	01 Aug 2019	28 Aug 2019	06 Aug 2019	28 Aug 2019	09 Aug 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180273	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180273	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180327	31 Jul 2019	01 Aug 2019	27 Jan 2020	06 Aug 2019	27 Jan 2020	09 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180327	31 Jul 2019	01 Aug 2019	27 Jan 2020	06 Aug 2019	27 Jan 2020	09 Aug 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180272	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180271	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180271	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH02_0.15-0.20	SE196066.001	LB180271	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH02_1.40-1.50	SE196066.002	LB180271	31 Jul 2019	01 Aug 2019	14 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	123
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	124

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	88
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	90
d14-p-terphenyl (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	84
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH02_0.15-0.20	SE196066.001	%	70 - 130%	88
	BH02_1.40-1.50	SE196066.002	%	70 - 130%	90
d14-p-terphenyl (Surrogate)	BH02_0.15-0.20	SE196066.001	%	70 - 130%	84
	BH02_1.40-1.50	SE196066.002	%	70 - 130%	90
d5-nitrobenzene (Surrogate)	BH02_0.15-0.20	SE196066.001	%	70 - 130%	88
	BH02_1.40-1.50	SE196066.002	%	70 - 130%	88

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	123
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	124

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	86
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	93
d4-1,2-dichloroethane (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	102
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	112
d8-toluene (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	94
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	100

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	86
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	93
d4-1,2-dichloroethane (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	102
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	112
d8-toluene (Surrogate)	BH02_0.15-0.20	SE196066.001	%	60 - 130%	94
	BH02_1.40-1.50	SE196066.002	%	60 - 130%	100

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB180332.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB180272.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	100
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result
LB180327.001		Arsenic, As	mg/kg	1	1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result
LB180272.001		TRH C10-C14	mg/kg	20	<20
		TRH C15-C28	mg/kg	45	<45
		TRH C29-C36	mg/kg	45	<45
		TRH C37-C40	mg/kg	100	<100
		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118
		d8-toluene (Surrogate)	%	-	94
		Bromofluorobenzene (Surrogate)	%	-	98
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180332.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180273.022	% Moisture	%w/w	0.5	22	18	35	16
SE196071.004	LB180273.026	% Moisture	%w/w	0.5	21	20	35	5
SE196092.004	LB180273.011	% Moisture	%w/w	0.5	0	0	200	0

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.17	30	1

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180327.014		Arsenic, As	mg/kg	1	7	10	42	34
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	22	30	32	32
			Copper, Cu	mg/kg	0.5	3.4	3.3	45	1
			Nickel, Ni	mg/kg	0.5	<0.5	0.6	135	12
			Lead, Pb	mg/kg	1	14	18	36	25
			Zinc, Zn	mg/kg	2	5.4	6.4	64	17

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.9	5.9	50	1
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.3	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	50	3
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE196071.004	LB180271.020	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	50	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.9	5.9	30	1
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.3	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE196071.004	LB180271.020		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	30	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180332.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	113

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	108
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	112
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	98
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	116
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	80
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Dichlorvos	mg/kg	0.5	2.4	2	60 - 140	119
		Diazinon (Dimpylate)	mg/kg	0.5	2.1	2	60 - 140	103
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.1	2	60 - 140	107
		Ethion	mg/kg	0.2	2.2	2	60 - 140	112
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Naphthalene	mg/kg	0.1	4.6	4	60 - 140	115
		Acenaphthylene	mg/kg	0.1	4.7	4	60 - 140	119
		Acenaphthene	mg/kg	0.1	4.4	4	60 - 140	110
		Phenanthrene	mg/kg	0.1	5.0	4	60 - 140	124
		Anthracene	mg/kg	0.1	4.9	4	60 - 140	122
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	112
		Pyrene	mg/kg	0.1	4.8	4	60 - 140	121
		Benzo(a)pyrene	mg/kg	0.1	4.9	4	60 - 140	122
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	114

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180327.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	103
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	104
	Chromium, Cr	mg/kg	0.5	36	35.2	80 - 120	103
	Copper, Cu	mg/kg	0.5	330	370.46	80 - 120	88
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	91
	Lead, Pb	mg/kg	1	95	107.87	79 - 120	88
	Zinc, Zn	mg/kg	2	290	301.27	80 - 121	95

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		TRH C10-C14	mg/kg	20	38	40	60 - 140	95
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	83
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	TRH F Bands	TRH >C10-C16	mg/kg	25	36	40	60 - 140	90
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	80
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002	Monocyclic	Benzene	mg/kg	0.1	2.1	2.9	60 - 140	72
	Aromatic	Toluene	mg/kg	0.1	2.0	2.9	60 - 140	70
		Ethylbenzene	mg/kg	0.1	2.4	2.9	60 - 140	81
		m/p-xylene	mg/kg	0.2	4.8	5.8	60 - 140	83
		o-xylene	mg/kg	0.1	2.3	2.9	60 - 140	79
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140	89
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	123

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180332.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	102

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	78
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	86
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	86
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	94
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	80
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	81
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.13	-	94

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Dichlorvos	mg/kg	0.5	2.2	<0.5	2	112
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	101
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	<0.2	2	108
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	2.4	<0.2	2	118
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	8.7	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019	Naphthalene	mg/kg	0.1	4.6	<0.1	4	114
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.8	0.2	4	116
		Acenaphthene	mg/kg	0.1	4.3	<0.1	4	108
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	6.1	1.7	4	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Anthracene	mg/kg	0.1	5.1	0.3	4	120
			Fluoranthene	mg/kg	0.1	6.8	2.7	4	104
			Pyrene	mg/kg	0.1	7.1	2.5	4	115
			Benzo(a)anthracene	mg/kg	0.1	1.2	1.0	-	-
			Chrysene	mg/kg	0.1	1.2	1.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	1.6	1.6	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	0.5	0.5	-	-
			Benzo(a)pyrene	mg/kg	0.1	6.2	1.3	4	121
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.7	0.7	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	0.1	0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	0.7	0.7	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Total PAH (18)	mg/kg	0.8	51	14	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	-	88
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	106
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	89

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180327.004		Arsenic, As	mg/kg	1	46	6	50	80
			Cadmium, Cd	mg/kg	0.3	45	<0.3	50	91
			Chromium, Cr	mg/kg	0.5	60	22	50	77
			Copper, Cu	mg/kg	0.5	71	37	50	67 ④
			Nickel, Ni	mg/kg	0.5	70	37	50	65 ④
			Lead, Pb	mg/kg	1	54	20	50	68 ④
			Zinc, Zn	mg/kg	2	79	65	50	29 ④

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		TRH C10-C14	mg/kg	20	46	<20	40	115
			TRH C15-C28	mg/kg	45	90	54	40	90
			TRH C29-C36	mg/kg	45	60	<45	40	83
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	200	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	48	<25	40	120
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	48	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	110	<90	40	83
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Monocyclic	Benzene	mg/kg	0.1	1.9	<0.1	2.9	63
		Aromatic	Toluene	mg/kg	0.1	1.8	<0.1	2.9	60
			Ethylbenzene	mg/kg	0.1	2.0	<0.1	2.9	66
			m/p-xylene	mg/kg	0.2	4.2	<0.2	5.8	71
			o-xylene	mg/kg	0.1	2.1	<0.1	2.9	72

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		Totals	Total Xylenes	mg/kg	0.3	6.3	<0.3	-	-
			Total BTEX	mg/kg	0.6	12	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	72
			TRH C6-C9	mg/kg	20	<20	<20	23.2	68
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		VPH F	Benzene (F0)	mg/kg	0.1	1.9	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	74

MATRIX SPIKE DUPLICATES

SE196066 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

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source: [Untitled].pdf page: 6 SGS Ref: SE196067_COC

E-MA... 2/8/19 eic .vp

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS

SGS Environmental Services Sydney
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Lab ID Number: *(please quote on correspondence)*

Site: Gran Central, Granville

Company Name:	Golder Associates Pty Ltd	Project Name/No:	Gran Central - 19122955
Address:	Level 8, 40 Mount Street	Purchase Order No:	PO21564
	North Sydney NSW	Results Required Date:	5 day TAT
		Telephone:	0431 063 254 Fax:
Contact Name:	Frank Yu	Email Results to:	FYu@golder.com.au; sdoyle@golder.com.au
Quotation No:			

SGS ID	Client Sample ID	Sampling Date/ Time	Matrix (Tick as appropriate) Soil Sample	Water Sample	Other	NO. OF CONTAINERS	HOLD	HOLD (Freeze)	CL17 SUITE	ASBESTOS WA DOH NEPM	TRH/BTEX/PAH/HM*8	Notes/Guidelines/LOR/ Special instructions
1	BH03_0.10-0.20	1/8/2019	X			2				X		
	BH03_0.40-0.50	1/8/2019	X			2						
	BH03_0.50-0.60	1/8/2019	X			1						
2	BH03_0.80-0.90	1/8/2019	X			2			X			
	BH03_1.30-1.40	1/8/2019	X			2						
3	BH03_1.40-1.50	1/8/2019	X			2			X			
	BH03_1.50-1.80	1/8/2019	X			1						
	BH03_1.80-1.95	1/8/2019	X			1						
	BH03_2.00-2.13	1/8/2019	X			1						
4	DU2	1/8/2019				2			X			

ANALYSIS REQUESTED

Additional Report Formats

- ☐ NEPM
- ☐ CSV
- ☐ ESDAT
- ☐ DQO
- ☐ GO, Guidelines ---------
- ☐ Others _____

SGS EHS Alexandria Laboratory
SE196067 COC
Received: 02 – Aug – 2019

Relinquished By: Frank Yu	Date/Time: 1/8/2019	Received By:	Date/Time: 2/8/19 2:35
Relinquished By:	Date/Time:	Received By:	Date/Time:
Samples Intact: *Yes / No*	Temperature: 4.8 °C	Sample Security Sealed: *Yes / No*	Hazards: *e.g. may contain Asbestos*

Comments / Subcontracting details: COC Golder review: SPD 2/8/2019

Yin, Emily (Sydney)

From: Yu, Frank <FYu@golder.com.au>
Sent: Monday, 5 August 2019 12:51 PM
To: AU.SampleReceipt.Sydney (Sydney)
Subject: [EXTERNAL] RE: SE196067 - Gran Central 19122955

Good afternoon Emily,

Thank you for confirming with me.

BH03_0.5-0.6 is a geotechnical sample. It was list on the table by some mistake.

The sample shown on the photo is not for any test at current stage. Could you please put is on hold?

Regards
Frank

Frank Yu (BEng, MEng)
Geotechnical Engineer

Golder Associates Pty Ltd
Level 8, 40 Mount Street, North Sydney, New South Wales 2060, Australia (PO Box 1302, Crows Nest NSW 1585)
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CLIENT CHOICE AWARDS 2019
WINNER beaton

Best Professional Services Firm (revenue > A$200m)
Best Consulting Engineering Firm (revenue > A$200m)

Winner of 29 Financial Review Client Choice Awards

limitations

From: AU.SampleReceipt.Sydney (Sydney) <AU.SampleReceipt.Sydney@sgs.com>
Sent: Monday, 5 August 2019 12:33 PM
To: Yu, Frank <FYu@golder.com.au>
Subject: SE196067 - Gran Central 19122955

EXTERNAL EMAIL

Dear Frank,

BH03_0.50-0.60 not received.
Extra samples on the attached photo received.

Yin, Emily (Sydney)

From: Yu, Frank <FYu@golder.com.au>
Sent: Thursday, 1 August 2019 1:52 PM
To: AU.SampleReceipt.Sydney (Sydney)
Subject: [EXTERNAL] 19122955 - Granville

Hi Emily,

Following our conversation just now.

I think I forget lable a bag of sample (in the sandwich bag). It should be put at the bottom of the blue esky, close to other BH03's samples, the sample number will be BH03_0.1-0.2

The sample is silty clay, dark brown, medium to high plasticity, trace rootlets and wood fibre.

Could you please label it for me?

Please let me know if you cannot find it.

Thank you for your help.

Regards
Frank

Frank Yu (BEng, MEng)
Geotechnical Engineer

Golder Associates Pty Ltd
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WINNER beaton

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Best Consulting Engineering Firm (revenue > A$200m)

Winner of 29 Financial Review Client Choice Awards

limitations

SAMPLE RECEIPT ADVICE

SE196067

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	4

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 1/8/2019
Report Due	Fri 9/8/2019
SGS Reference	**SE196067**

SUBMISSION DETAILS

This is to confirm that 4 samples were received on Thursday 1/8/2019. Results are expected to be ready by COB Friday 9/8/2019. Please quote SGS reference SE196067 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	4 Soil
Date documentation received	2/8/2019@10:20am	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

5 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.

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SAMPLE RECEIPT ADVICE

SE196067

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
002	BH03_0.80-0.90	29	14	26	11	7	10	11	7
003	BH03_1.40-1.50	29	14	26	11	7	10	11	7
004	DU2	29	14	26	11	7	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE196067

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Gravimetric Determination of Asbestos in Soil	Mercury in Soil	Moisture Content
001	BH03_0.10-0.20	2	9	-	-
002	BH03_0.80-0.90	-	-	1	1
003	BH03_1.40-1.50	-	-	1	1
004	DU2	-	-	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	4

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196067 R0**
Date Received	1/8/2019
Date Reported	9/8/2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Sample #1: Asbestos found in approx 15x5x2mm cement sheet fragments x2.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
TRH C6-C9	mg/kg	20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
Arsenic, As	mg/kg	1	**8**	**8**	**5**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**21**	**11**	**17**
Copper, Cu	mg/kg	0.5	**3.4**	**4.6**	**3.7**
Lead, Pb	mg/kg	1	**27**	**28**	**15**
Nickel, Ni	mg/kg	0.5	**0.6**	<0.5	**0.6**
Zinc, Zn	mg/kg	2	**27**	**19**	**21**

Mercury in Soil [AN312] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH03_0.80-0.90 SOIL - 1/8/2019 SE196067.002	BH03_1.40-1.50 SOIL - 1/8/2019 SE196067.003	DU2 SOIL - 1/8/2019 SE196067.004
% Moisture	%w/w	0.5	**19**	**18**	**22**

Fibre Identification in soil [AN602] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH03_0.10-0.20 SOIL - 1/8/2019 SE196067.001
Asbestos Detected	No unit	-	Yes
Estimated Fibres*	%w/w	0.01	**>0.01**

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH03_0.10-0.20 SOIL - 1/8/2019 SE196067.001
Total Sample Weight*	g	1	**280**
ACM in >7mm Sample*	g	0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	**0.108**
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	**0.039**
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	**0.039**
Fibre Type*	No unit	-	-

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.

AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196067 R0**
Date Received	01 Aug 2019
Date Reported	09 Aug 2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Sample #1: Asbestos found in approx 15x5x2mm cement sheet fragments x2.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemis

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE196067.001	BH03_0.10-0.20	Soil	280g Clay,Soil,Rocks	01 Aug 2019	Chrysotile Asbestos Found	>0.01

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH03_0.10-0.20 SOIL - 1/8/2019 SE196067.001
Total Sample Weight*	g	1	**280**
ACM in >7mm Sample*	g	0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	**0.108**
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	**0.039**
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	**0.039**
Fibre Type*	No unit	-	-

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service.
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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STATEMENT OF QA/QC PERFORMANCE

SE196067 R0

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 - Gran Central**
Order Number	**PO21564**
Samples	4

LABORATORY DETAILS

Manager	Huong Crawford
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Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196067 R0**
Date Received	01 Aug 2019
Date Reported	14 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	4 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	4 Soil
Date documentation received	2/8/2019@10:20am	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE196067 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.10-0.20	SE196067.001	LB180495	01 Aug 2019	01 Aug 2019	31 Jul 2020	08 Aug 2019	31 Jul 2020	09 Aug 2019

Gravimetric Determination of Asbestos in Soil

Method: ME-(AU)-[ENV]AN605

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.10-0.20	SE196067.001	LB180495	01 Aug 2019	01 Aug 2019	28 Jan 2020	08 Aug 2019	28 Jan 2020	09 Aug 2019

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180332	01 Aug 2019	01 Aug 2019	29 Aug 2019	06 Aug 2019	29 Aug 2019	09 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180332	01 Aug 2019	01 Aug 2019	29 Aug 2019	06 Aug 2019	29 Aug 2019	09 Aug 2019
DU2	SE196067.004	LB180332	01 Aug 2019	01 Aug 2019	29 Aug 2019	06 Aug 2019	29 Aug 2019	09 Aug 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180273	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180273	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019
DU2	SE196067.004	LB180273	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
DU2	SE196067.004	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
DU2	SE196067.004	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
DU2	SE196067.004	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
DU2	SE196067.004	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180327	01 Aug 2019	01 Aug 2019	28 Jan 2020	06 Aug 2019	28 Jan 2020	09 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180327	01 Aug 2019	01 Aug 2019	28 Jan 2020	06 Aug 2019	28 Jan 2020	09 Aug 2019
DU2	SE196067.004	LB180327	01 Aug 2019	01 Aug 2019	28 Jan 2020	06 Aug 2019	28 Jan 2020	09 Aug 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019
DU2	SE196067.004	LB180272	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180271	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180271	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
DU2	SE196067.004	LB180271	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE196067 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH03_0.80-0.90	SE196067.002	LB180271	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH03_1.40-1.50	SE196067.003	LB180271	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
DU2	SE196067.004	LB180271	01 Aug 2019	01 Aug 2019	15 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	95
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	92
	DU2	SE196067.004	%	60 - 130%	85

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	94
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	94
	DU2	SE196067.004	%	60 - 130%	92
d14-p-terphenyl (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	94
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	92
	DU2	SE196067.004	%	60 - 130%	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH03_0.80-0.90	SE196067.002	%	70 - 130%	94
	BH03_1.40-1.50	SE196067.003	%	70 - 130%	94
	DU2	SE196067.004	%	70 - 130%	92
d14-p-terphenyl (Surrogate)	BH03_0.80-0.90	SE196067.002	%	70 - 130%	94
	BH03_1.40-1.50	SE196067.003	%	70 - 130%	92
	DU2	SE196067.004	%	70 - 130%	92
d5-nitrobenzene (Surrogate)	BH03_0.80-0.90	SE196067.002	%	70 - 130%	90
	BH03_1.40-1.50	SE196067.003	%	70 - 130%	92
	DU2	SE196067.004	%	70 - 130%	90

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	95
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	92
	DU2	SE196067.004	%	60 - 130%	85

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	95
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	90
	DU2	SE196067.004	%	60 - 130%	91
d4-1,2-dichloroethane (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	117
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	108
	DU2	SE196067.004	%	60 - 130%	111
d8-toluene (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	104
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	90
	DU2	SE196067.004	%	60 - 130%	97

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	95
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	90
	DU2	SE196067.004	%	60 - 130%	91
d4-1,2-dichloroethane (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	117
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	108
	DU2	SE196067.004	%	60 - 130%	111
d8-toluene (Surrogate)	BH03_0.80-0.90	SE196067.002	%	60 - 130%	104
	BH03_1.40-1.50	SE196067.003	%	60 - 130%	90
	DU2	SE196067.004	%	60 - 130%	97

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB180332.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB180272.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	100
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result
LB180327.001		Arsenic, As	mg/kg	1	1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result
LB180272.001		TRH C10-C14	mg/kg	20	<20
		TRH C15-C28	mg/kg	45	<45
		TRH C29-C36	mg/kg	45	<45
		TRH C37-C40	mg/kg	100	<100
		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118
		d8-toluene (Surrogate)	%	-	94
		Bromofluorobenzene (Surrogate)	%	-	98
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180332.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180273.022	% Moisture	%w/w	0.5	22	18	35	16
SE196071.004	LB180273.026	% Moisture	%w/w	0.5	21	20	35	5
SE196092.004	LB180273.011	% Moisture	%w/w	0.5	0	0	200	0

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.17	30	1

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180327.014		Arsenic, As	mg/kg	1	7	10	42	34
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	22	30	32	32
			Copper, Cu	mg/kg	0.5	3.4	3.3	45	1
			Nickel, Ni	mg/kg	0.5	<0.5	0.6	135	12
			Lead, Pb	mg/kg	1	14	18	36	25
			Zinc, Zn	mg/kg	2	5.4	6.4	64	17

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.7	11.9	50	1
			d8-toluene (Surrogate)	mg/kg	-	10.4	10.6	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	9.8	50	3
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE196071.004	LB180271.020	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	50	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.7	11.9	30	1
			d8-toluene (Surrogate)	mg/kg	-	10.4	10.6	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	9.8	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE196071.004	LB180271.020		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	30	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180332.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	113

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	108
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	112
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	98
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	116
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	80
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Dichlorvos	mg/kg	0.5	2.4	2	60 - 140	119
		Diazinon (Dimpylate)	mg/kg	0.5	2.1	2	60 - 140	103
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.1	2	60 - 140	107
		Ethion	mg/kg	0.2	2.2	2	60 - 140	112
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Naphthalene	mg/kg	0.1	4.6	4	60 - 140	115
		Acenaphthylene	mg/kg	0.1	4.7	4	60 - 140	119
		Acenaphthene	mg/kg	0.1	4.4	4	60 - 140	110
		Phenanthrene	mg/kg	0.1	5.0	4	60 - 140	124
		Anthracene	mg/kg	0.1	4.9	4	60 - 140	122
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	112
		Pyrene	mg/kg	0.1	4.8	4	60 - 140	121
		Benzo(a)pyrene	mg/kg	0.1	4.9	4	60 - 140	122
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	114

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180327.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	103
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	104
	Chromium, Cr	mg/kg	0.5	36	35.2	80 - 120	103
	Copper, Cu	mg/kg	0.5	330	370.46	80 - 120	88
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	91
	Lead, Pb	mg/kg	1	95	107.87	79 - 120	88
	Zinc, Zn	mg/kg	2	290	301.27	80 - 121	95

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		TRH C10-C14	mg/kg	20	38	40	60 - 140	95
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	83
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	TRH F Bands	TRH >C10-C16	mg/kg	25	36	40	60 - 140	90
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	80
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002	Monocyclic	Benzene	mg/kg	0.1	2.1	2.9	60 - 140	72
	Aromatic	Toluene	mg/kg	0.1	2.0	2.9	60 - 140	70
		Ethylbenzene	mg/kg	0.1	2.4	2.9	60 - 140	81
		m/p-xylene	mg/kg	0.2	4.8	5.8	60 - 140	83
		o-xylene	mg/kg	0.1	2.3	2.9	60 - 140	79
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140	89
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	123

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180332.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	102

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	78
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	86
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	86
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	94
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	80
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	81
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.13	-	94

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Dichlorvos	mg/kg	0.5	2.2	<0.5	2	112
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	101
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	<0.2	2	108
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	2.4	<0.2	2	118
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	8.7	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019	Naphthalene	mg/kg	0.1	4.6	<0.1	4	114
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.8	0.2	4	116
		Acenaphthene	mg/kg	0.1	4.3	<0.1	4	108
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	6.1	1.7	4	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Anthracene	mg/kg	0.1	5.1	0.3	4	120
			Fluoranthene	mg/kg	0.1	6.8	2.7	4	104
			Pyrene	mg/kg	0.1	7.1	2.5	4	115
			Benzo(a)anthracene	mg/kg	0.1	1.2	1.0	-	-
			Chrysene	mg/kg	0.1	1.2	1.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	1.6	1.6	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	0.5	0.5	-	-
			Benzo(a)pyrene	mg/kg	0.1	6.2	1.3	4	121
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.7	0.7	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	0.1	0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	0.7	0.7	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Total PAH (18)	mg/kg	0.8	51	14	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	-	88
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	106
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	89

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180327.004		Arsenic, As	mg/kg	1	46	6	50	80
			Cadmium, Cd	mg/kg	0.3	45	<0.3	50	91
			Chromium, Cr	mg/kg	0.5	60	22	50	77
			Copper, Cu	mg/kg	0.5	71	37	50	67 ④
			Nickel, Ni	mg/kg	0.5	70	37	50	65 ④
			Lead, Pb	mg/kg	1	54	20	50	68 ④
			Zinc, Zn	mg/kg	2	79	65	50	29 ④

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		TRH C10-C14	mg/kg	20	46	<20	40	115
			TRH C15-C28	mg/kg	45	90	54	40	90
			TRH C29-C36	mg/kg	45	60	<45	40	83
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	200	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	48	<25	40	120
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	48	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	110	<90	40	83
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Monocyclic	Benzene	mg/kg	0.1	1.9	<0.1	2.9	63
		Aromatic	Toluene	mg/kg	0.1	1.8	<0.1	2.9	60
			Ethylbenzene	mg/kg	0.1	2.0	<0.1	2.9	66
			m/p-xylene	mg/kg	0.2	4.2	<0.2	5.8	71
			o-xylene	mg/kg	0.1	2.1	<0.1	2.9	72

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		Totals	Total Xylenes	mg/kg	0.3	6.3	<0.3	-	-
			Total BTEX	mg/kg	0.6	12	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	72
			TRH C6-C9	mg/kg	20	<20	<20	23.2	68
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		VPH F	Benzene (F0)	mg/kg	0.1	1.9	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	74

MATRIX SPIKE DUPLICATES

SE196067 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

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source: [Untitled].pdf page: 11 SGS Ref: SE196071_COC

E-MAILED 2/8/19

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page _1__ of _1___

SGS

SGS Environmental Services Sydney
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Lab ID Number: *(please quote on correspondence)*

Site: Gran Central, Granville

Company Name:	Golder Associates Pty Ltd	Project Name/No:	Gran Central - 19122955
Address:	Level 8, 40 Mount Street	Purchase Order No:	PO21564
	North Sydney NSW	Results Required Date:	5 day TAT
		Telephone:	0431 063 254
			Fax:
Contact Name:	Frank Yu	Email Results to:	FYu@golder.com.au; sdoyle@golder.com.au
Quotation No:			

Matrix *(Tick as appropriate)*

ANALYSIS REQUESTED

Additional Report Formats

- ☐ NEPM
- ☐ CSV
- ☐ ESDAT
- ☐ DQO
- ☐ GO, Guidelines ---------
- ☐ Others _____

SGS ID	Client Sample ID	Sampling Date/ Time	Soil Sample	Water Sample	Other	NO. OF CONTAINERS	HOLD	HOLD (Freeze)	CL17 SUITE	ASBESTOS WA DOH NEPM	TRH/BTEXN/PAH/HM*8	Notes/Guidelines/LOR/ Special instructions
1	BH04_0.10-0.20	29/7/2019	X			2				X		
	BH04_0.25-0.35	29/7/2019	X			2	X					
	BH04_0.55-0.65	29/7/2019	X			2	X					
2	BH04_1.05-1.15	29/7/2019	X			2			X			
	BH04_1.30-1.35	29/7/2019	X			1	X					
3	BH04_1.40-1.50	29/7/2019	X			2			X			
	BH04_1.50-1.95	29/7/2019	X			1	X					
	BH04_2.80-3.00	29/7/2019	X			1	X					
	BH04_3.00-3.15	29/7/2019	X			1	X					
4	DU1	29/7/2019	X			2			X			
5	Rinsate water	29/7/2019		X		4					X	

SGS EHS Alexandria Laboratory

SE196071 COC

Received: 29 – Jul – 2019

Relinquished By: Frank Yu	Date/Time: 29/7/2019	Received By:	Date/Time: 4/8/19 29/7/19 5:50
Relinquished By:	Date/Time:	Received By:	Date/Time:
Samples Intact: (Yes) / No	Temperature: 1-8 °C	Sample Security Sealed: Yes / (No)	Hazards: *e.g. may contain Asbestos*

Comments / Subcontracting details: COC Golder review: SPD 2/8/2019

SAMPLE RECEIPT ADVICE

SE196071

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 Gran Central**
Order Number	**PO21564**
Samples	5

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Mon 29/7/2019
Report Due	Fri 9/8/2019
SGS Reference	**SE196071**

SUBMISSION DETAILS

This is to confirm that 5 samples were received on Monday 29/7/2019. Results are expected to be ready by COB Friday 9/8/2019. Please quote SGS reference SE196071 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	4 Soil, 1 Water
Date documentation received	2/8/18@10:20am	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

6 samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.

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SAMPLE RECEIPT ADVICE

SE196071

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
002	BH04_1.05-1.15	29	14	26	11	7	10	11	7
003	BH04_1.40-1.50	29	14	26	11	7	10	11	7
004	DU1	29	14	26	11	7	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE196071

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Gravimetric Determination of Asbestos in Soil	Mercury in Soil	Moisture Content	VOCs in Water
001	BH04_0.10-0.20	2	9	-	-	-
002	BH04_1.05-1.15	-	-	1	1	-
003	BH04_1.40-1.50	-	-	1	1	-
004	DU1	-	-	1	1	-
005	Rinsate Water	-	-	-	-	11

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE196071

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 Gran Central

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	Volatile Petroleum Hydrocarbons in Water
005	Rinsate Water	1	22	7	10	7

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 Gran Central**
Order Number	**PO21564**
Samples	5

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196071 R0**
Date Received	29/7/2019
Date Reported	12/8/2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
TRH C6-C9	mg/kg	20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	**69**	<45	<45
TRH C29-C36	mg/kg	45	**87**	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**140**	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	**160**	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
Naphthalene	mg/kg	0.1	**0.1**	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**0.4**	<0.1	<0.1
Anthracene	mg/kg	0.1	**0.1**	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**1.2**	<0.1	<0.1
Pyrene	mg/kg	0.1	**1.3**	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	**0.7**	<0.1	<0.1
Chrysene	mg/kg	0.1	**0.7**	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**1.2**	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	**0.5**	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	**1.0**	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.6**	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.6**	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**1.3**	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**1.4**	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**1.4**	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	**8.4**	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**8.4**	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
Arsenic, As	mg/kg	1	**8**	**7**	**7**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**24**	**11**	**22**
Copper, Cu	mg/kg	0.5	**3.4**	**3.8**	**3.4**
Lead, Pb	mg/kg	1	**14**	**11**	**14**
Nickel, Ni	mg/kg	0.5	<0.5	<0.5	<0.5
Zinc, Zn	mg/kg	2	**5.8**	**3.5**	**5.4**

Mercury in Soil [AN312] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 6/8/2019

PARAMETER	UOM	LOR	BH04_1.05-1.15 SOIL - 29/7/2019 SE196071.002	BH04_1.40-1.50 SOIL - 29/7/2019 SE196071.003	DU1 SOIL - 29/7/2019 SE196071.004
% Moisture	%w/w	0.5	**14**	**18**	**21**

Fibre Identification in soil [AN602] Tested: 8/8/2019

PARAMETER	UOM	LOR	BH04_0.10-0.20 SOIL - 29/7/2019 SE196071.001
Asbestos Detected	No unit	-	No
Estimated Fibres*	%w/w	0.01	<0.01

VOCs in Water [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	Rinsate Water WATER - 29/7/2019 SE196071.005
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 6/8/2019

PARAMETER	UOM	LOR	Rinsate Water WATER - 29/7/2019 SE196071.005
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 6/8/2019

PARAMETER	UOM	LOR	Rinsate Water WATER - 29/7/2019 SE196071.005
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C36	µg/L	450	<450
TRH C10-C40	µg/L	650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 6/8/2019

PARAMETER	UOM	LOR	Rinsate Water WATER - 29/7/2019 SE196071.005
Naphthalene	µg/L	0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1
Total PAH (18)	µg/L	1	<1

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 6/8/2019

PARAMETER	UOM	LOR	Rinsate Water WATER - 29/7/2019 SE196071.005
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	<0.1
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	<1
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 6/8/2019

PARAMETER	UOM	LOR	Rinsate Water WATER - 29/7/2019 SE196071.005
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC /MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup /fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS /ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	FYu@golder.com.au
Project	**19122955 Gran Central**
Order Number	**PO21564**
Samples	1

LABORATORY DETAILS

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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196071 R0**
Date Received	29 Jul 2019
Date Reported	12 Aug 2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemis

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

ANALYTICAL REPORT

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE196071.001	BH04_0.10-0.20	Soil	166g Clay,Sand,Rocks	29 Jul 2019	No Asbestos Found	<0.01

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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STATEMENT OF QA/QC PERFORMANCE

SE196071 R0

CLIENT DETAILS

Contact	Frank Yu
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
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Samples	5

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196071 R0**
Date Received	29 Jul 2019
Date Reported	14 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	PAH (Polynuclear Aromatic Hydrocarbons) in Water	1 item
	TRH (Total Recoverable Hydrocarbons) in Water	1 item
	VOCs in Water	1 item
	Volatile Petroleum Hydrocarbons in Water	1 item
METHOD BLANK	VOCs in Water	2 items
	Volatile Petroleum Hydrocarbons in Water	3 items
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	4 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	4 Soil, 1 Water
Date documentation received	2/8/18@10:20am	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.8°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE196071 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_0.10-0.20	SE196071.001	LB180495	29 Jul 2019	29 Jul 2019	28 Jul 2020	08 Aug 2019	28 Jul 2020	09 Aug 2019

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate Water	SE196071.005	LB180259	29 Jul 2019	29 Jul 2019	26 Aug 2019	06 Aug 2019	26 Aug 2019	06 Aug 2019

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180332	29 Jul 2019	29 Jul 2019	26 Aug 2019	06 Aug 2019	26 Aug 2019	09 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180332	29 Jul 2019	29 Jul 2019	26 Aug 2019	06 Aug 2019	26 Aug 2019	09 Aug 2019
DU1	SE196071.004	LB180332	29 Jul 2019	29 Jul 2019	26 Aug 2019	06 Aug 2019	26 Aug 2019	09 Aug 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180273	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180273	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019
DU1	SE196071.004	LB180273	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	11 Aug 2019	07 Aug 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	12 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	12 Aug 2019
DU1	SE196071.004	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	12 Aug 2019

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
DU1	SE196071.004	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019
DU1	SE196071.004	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	09 Aug 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate Water	SE196071.005	LB180241	29 Jul 2019	29 Jul 2019	05 Aug 2019	06 Aug 2019†	15 Sep 2019	07 Aug 2019

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	12 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	12 Aug 2019
DU1	SE196071.004	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	12 Aug 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180327	29 Jul 2019	29 Jul 2019	25 Jan 2020	06 Aug 2019	25 Jan 2020	09 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180327	29 Jul 2019	29 Jul 2019	25 Jan 2020	06 Aug 2019	25 Jan 2020	09 Aug 2019
DU1	SE196071.004	LB180327	29 Jul 2019	29 Jul 2019	25 Jan 2020	06 Aug 2019	25 Jan 2020	09 Aug 2019

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate Water	SE196071.005	LB180229	29 Jul 2019	29 Jul 2019	25 Jan 2020	06 Aug 2019	25 Jan 2020	06 Aug 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019
DU1	SE196071.004	LB180272	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	08 Aug 2019

HOLDING TIME SUMMARY

SE196071 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate Water	SE196071.005	LB180241	29 Jul 2019	29 Jul 2019	05 Aug 2019	06 Aug 2019†	15 Sep 2019	07 Aug 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180271	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180271	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
DU1	SE196071.004	LB180271	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate Water	SE196071.005	LB180300	29 Jul 2019	29 Jul 2019	05 Aug 2019	06 Aug 2019†	15 Sep 2019	07 Aug 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH04_1.05-1.15	SE196071.002	LB180271	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
BH04_1.40-1.50	SE196071.003	LB180271	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019
DU1	SE196071.004	LB180271	29 Jul 2019	29 Jul 2019	12 Aug 2019	06 Aug 2019	15 Sep 2019	07 Aug 2019

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate Water	SE196071.005	LB180300	29 Jul 2019	29 Jul 2019	05 Aug 2019	06 Aug 2019†	15 Sep 2019	07 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	110
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	103
	DU1	SE196071.004	%	60 - 130%	112

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	94
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	86
	DU1	SE196071.004	%	60 - 130%	92
d14-p-terphenyl (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	90
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	86
	DU1	SE196071.004	%	60 - 130%	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH04_1.05-1.15	SE196071.002	%	70 - 130%	94
	BH04_1.40-1.50	SE196071.003	%	70 - 130%	86
	DU1	SE196071.004	%	70 - 130%	92
d14-p-terphenyl (Surrogate)	BH04_1.05-1.15	SE196071.002	%	70 - 130%	90
	BH04_1.40-1.50	SE196071.003	%	70 - 130%	86
	DU1	SE196071.004	%	70 - 130%	92
d5-nitrobenzene (Surrogate)	BH04_1.05-1.15	SE196071.002	%	70 - 130%	92
	BH04_1.40-1.50	SE196071.003	%	70 - 130%	86
	DU1	SE196071.004	%	70 - 130%	90

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	60
d14-p-terphenyl (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	76
d5-nitrobenzene (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	50

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	110
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	103
	DU1	SE196071.004	%	60 - 130%	112

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	97
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	93
	DU1	SE196071.004	%	60 - 130%	93
d4-1,2-dichloroethane (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	111
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	113
	DU1	SE196071.004	%	60 - 130%	112
d8-toluene (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	105
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	97
	DU1	SE196071.004	%	60 - 130%	96

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	91
d4-1,2-dichloroethane (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	107
d8-toluene (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	101

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	97
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	93
	DU1	SE196071.004	%	60 - 130%	93
d4-1,2-dichloroethane (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	111
	BH04_1.40-1.50	SE196071.003	%	60 - 130%	113
	DU1	SE196071.004	%	60 - 130%	112
d8-toluene (Surrogate)	BH04_1.05-1.15	SE196071.002	%	60 - 130%	105

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH04_1.40-1.50	SE196071.003	%	60 - 130%	97
	DU1	SE196071.004	%	60 - 130%	96

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	91
d4-1,2-dichloroethane (Surrogate)	Rinsate Water	SE196071.005	%	60 - 130%	107
d8-toluene (Surrogate)	Rinsate Water	SE196071.005	%	40 - 130%	101

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB180259.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB180332.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB180272.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	100
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	102

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180241.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	64
		2-fluorobiphenyl (Surrogate)	%	-	68
		d14-p-terphenyl (Surrogate)	%	-	80

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180272.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB180327.001	Arsenic, As	mg/kg	1	1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB180229.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB180272.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB180241.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118
		d8-toluene (Surrogate)	%	-	94
		Bromofluorobenzene (Surrogate)	%	-	98
	Totals	Total BTEX	mg/kg	0.6	<0.6

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180300.001	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5
	Hydrocarbons	Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	106
		d8-toluene (Surrogate)	%	-	105
		Bromofluorobenzene (Surrogate)	%	-	100

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180271.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	118

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180300.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	106
		d8-toluene (Surrogate)	%	-	105
		Bromofluorobenzene (Surrogate)	%	-	100

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196102.009	LB180259.008	Mercury	µg/L	0.0001	<0.0001	0.0000	200	66

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180332.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180273.022	% Moisture	%w/w	0.5	22	18	35	16
SE196071.004	LB180273.026	% Moisture	%w/w	0.5	21	20	35	5
SE196092.004	LB180273.011	% Moisture	%w/w	0.5	0	0	200	0

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.17	30	1

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196082.002	LB180241.030		Naphthalene	µg/L	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	200	0
			Acenaphthylene	µg/L	0.1	<0.1	<0.1	200	0
			Acenaphthene	µg/L	0.1	<0.1	<0.1	200	0
			Fluorene	µg/L	0.1	<0.1	<0.1	200	0
			Phenanthrene	µg/L	0.1	<0.1	<0.1	200	0
			Anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Pyrene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Chrysene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.3	0.3	30	10
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.4	30	8
			d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.4	30	13

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180272.018		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196071.004	LB180327.014	Arsenic, As	mg/kg	1	7	10	42	34
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	22	30	32	32
		Copper, Cu	mg/kg	0.5	3.4	3.3	45	1
		Nickel, Ni	mg/kg	0.5	<0.5	0.6	135	12
		Lead, Pb	mg/kg	1	14	18	36	25
		Zinc, Zn	mg/kg	2	5.4	6.4	64	17

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196102.009	LB180229.012	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.004	LB180272.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE196071.004	LB180272.018		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196053.001	LB180241.014		TRH C10-C14	µg/L	50	<50	<50	200	0
			TRH C15-C28	µg/L	200	<200	<200	200	0
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C36	µg/L	450	<450	<450	200	0
			TRH C10-C40	µg/L	650	<650	<650	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0
SE196082.002	LB180241.030		TRH C10-C14	µg/L	50	<50	<50	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Water (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196082.002	LB180241.030		TRH C15-C28	µg/L	200	<200	<200	200	0
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C36	µg/L	450	<450	<450	200	0
			TRH C10-C40	µg/L	650	<650	<650	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.9	5.9	50	1
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.3	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	50	3
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE196071.004	LB180271.020	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	50	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196053.002	LB180300.022	Monocyclic	Benzene	µg/L	0.5	<0.5	0.6228960813	122	22
		Aromatic	Toluene	µg/L	0.5	<0.5	0.3665303924	178	0
			Ethylbenzene	µg/L	0.5	<0.5	0.2752397894	200	0
			m/p-xylene	µg/L	1	1	1.8493296211	93	32
			o-xylene	µg/L	0.5	<0.5	0.3565379873	195	0
		Polycyclic	Naphthalene	µg/L	0.5	1.6	2.1416665269	57	31
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	5.505	30	4
			d8-toluene (Surrogate)	µg/L	-	5.2	4.956	30	5
			Bromofluorobenzene (Surrogate)	µg/L	-	4.9	4.5725	30	7
SE196094.001	LB180300.023	Monocyclic	Benzene	µg/L	0.5	<0.5	0.0274845529	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.1869563601	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.0161713977	200	0
			m/p-xylene	µg/L	1	<1	0.0537890219	200	0
			o-xylene	µg/L	0.5	<0.5	0.0215012162	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.2597955373	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.4	5.41	30	1
			d8-toluene (Surrogate)	µg/L	-	5.2	5.23	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	4.5	4.5045	30	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.9	5.9	30	1
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.3	30	2

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196067.002	LB180271.014	Surrogates	Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE196071.004	LB180271.020		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	11.4	30	2
			d8-toluene (Surrogate)	mg/kg	-	9.6	9.6	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	9.4	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196053.002	LB180300.024		TRH C6-C10	µg/L	50	<50	3.0470450182	200	0
			TRH C6-C9	µg/L	40	<40	2.1977539509	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	5.505	30	4
			d8-toluene (Surrogate)	µg/L	-	5.2	4.956	30	5
			Bromofluorobenzene (Surrogate)	µg/L	-	4.9	4.5725	30	7
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.6228960813	122	22
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.4234888534	200	0
SE196094.001	LB180300.025		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.4	5.41	30	1
			d8-toluene (Surrogate)	µg/L	-	5.2	5.23	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	4.5	4.5045	30	0
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.0274845529	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.3059025490	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180332.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	113

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	108
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	112
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	98
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	116
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	80
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Dichlorvos	mg/kg	0.5	2.4	2	60 - 140	119
		Diazinon (Dimpylate)	mg/kg	0.5	2.1	2	60 - 140	103
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.1	2	60 - 140	107
		Ethion	mg/kg	0.2	2.2	2	60 - 140	112
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		Naphthalene	mg/kg	0.1	4.6	4	60 - 140	115
		Acenaphthylene	mg/kg	0.1	4.7	4	60 - 140	119
		Acenaphthene	mg/kg	0.1	4.4	4	60 - 140	110
		Phenanthrene	mg/kg	0.1	5.0	4	60 - 140	124
		Anthracene	mg/kg	0.1	4.9	4	60 - 140	122
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	112
		Pyrene	mg/kg	0.1	4.8	4	60 - 140	121
		Benzo(a)pyrene	mg/kg	0.1	4.9	4	60 - 140	122
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180241.002		Naphthalene	µg/L	0.1	32	40	60 - 140	81
		Acenaphthylene	µg/L	0.1	36	40	60 - 140	89
		Acenaphthene	µg/L	0.1	33	40	60 - 140	83
		Phenanthrene	µg/L	0.1	38	40	60 - 140	95
		Anthracene	µg/L	0.1	36	40	60 - 140	89
		Fluoranthene	µg/L	0.1	34	40	60 - 140	85
		Pyrene	µg/L	0.1	39	40	60 - 140	98
		Benzo(a)pyrene	µg/L	0.1	35	40	60 - 140	88
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.3	0.5	40 - 130	66
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	70
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	78

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	114

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180327.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	103
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	104
	Chromium, Cr	mg/kg	0.5	36	35.2	80 - 120	103
	Copper, Cu	mg/kg	0.5	330	370.46	80 - 120	88
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	91

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180327.002		Lead, Pb	mg/kg	1	95	107.87	79 - 120	88
		Zinc, Zn	mg/kg	2	290	301.27	80 - 121	95

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180229.002		Arsenic, As	µg/L	1	17	20	80 - 120	84
		Cadmium, Cd	µg/L	0.1	17	20	80 - 120	85
		Chromium, Cr	µg/L	1	21	20	80 - 120	104
		Copper, Cu	µg/L	1	19	20	80 - 120	93
		Lead, Pb	µg/L	1	18	20	80 - 120	88
		Nickel, Ni	µg/L	1	19	20	80 - 120	94
		Zinc, Zn	µg/L	5	16	20	80 - 120	80

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180272.002		TRH C10-C14	mg/kg	20	38	40	60 - 140	95
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	83
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	TRH F Bands	TRH >C10-C16	mg/kg	25	36	40	60 - 140	90
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	80
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180241.002		TRH C10-C14	µg/L	50	970	1200	60 - 140	81
		TRH C15-C28	µg/L	200	1100	1200	60 - 140	93
		TRH C29-C36	µg/L	200	1300	1200	60 - 140	112
	TRH F Bands	TRH >C10-C16	µg/L	60	1100	1200	60 - 140	88
		TRH >C16-C34 (F3)	µg/L	500	1200	1200	60 - 140	97
		TRH >C34-C40 (F4)	µg/L	500	780	600	60 - 140	131

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002	Monocyclic Aromatic	Benzene	mg/kg	0.1	2.1	2.9	60 - 140	72
		Toluene	mg/kg	0.1	2.0	2.9	60 - 140	70
		Ethylbenzene	mg/kg	0.1	2.4	2.9	60 - 140	81
		m/p-xylene	mg/kg	0.2	4.8	5.8	60 - 140	83
		o-xylene	mg/kg	0.1	2.3	2.9	60 - 140	79
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180300.002	Monocyclic Aromatic	Benzene	µg/L	0.5	49	45.45	60 - 140	109
		Toluene	µg/L	0.5	60	45.45	60 - 140	132
		Ethylbenzene	µg/L	0.5	57	45.45	60 - 140	125
		m/p-xylene	µg/L	1	120	90.9	60 - 140	129
		o-xylene	µg/L	0.5	56	45.45	60 - 140	124
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.6	10	60 - 140	132
		d8-toluene (Surrogate)	µg/L	-	5.6	10	60 - 140	112
		Bromofluorobenzene (Surrogate)	µg/L	-	5.0	10	60 - 140	99

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180271.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140	89
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.4	10	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.4	10	60 - 140	94
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	123

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180300.027		TRH C6-C10	µg/L	50	900	946.63	60 - 140	95
		TRH C6-C9	µg/L	40	760	818.71	60 - 140	93
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	10	60 - 140	98
		d8-toluene (Surrogate)	µg/L	-	5.0	10	60 - 140	99
		Bromofluorobenzene (Surrogate)	µg/L	-	4.9	10	60 - 140	99
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	580	639.67	60 - 140	90

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180332.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	102

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	78
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	86
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	86
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	94
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	80
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	81
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.13	-	94

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Dichlorvos	mg/kg	0.5	2.2	<0.5	2	112
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	101
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	<0.2	2	108
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	2.4	<0.2	2	118
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	8.7	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019	Naphthalene	mg/kg	0.1	4.6	<0.1	4	114
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.8	0.2	4	116
		Acenaphthene	mg/kg	0.1	4.3	<0.1	4	108
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	6.1	1.7	4	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Anthracene	mg/kg	0.1	5.1	0.3	4	120
			Fluoranthene	mg/kg	0.1	6.8	2.7	4	104
			Pyrene	mg/kg	0.1	7.1	2.5	4	115
			Benzo(a)anthracene	mg/kg	0.1	1.2	1.0	-	-
			Chrysene	mg/kg	0.1	1.2	1.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	1.6	1.6	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	0.5	0.5	-	-
			Benzo(a)pyrene	mg/kg	0.1	6.2	1.3	4	121
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.7	0.7	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	0.1	0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	0.7	0.7	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	6.7	1.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	6.7	1.8	-	-
			Total PAH (18)	mg/kg	0.8	51	14	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	-	88
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	106
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	89

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196065.001	LB180327.004		Arsenic, As	mg/kg	1	46	6	50	80
			Cadmium, Cd	mg/kg	0.3	45	<0.3	50	91
			Chromium, Cr	mg/kg	0.5	60	22	50	77
			Copper, Cu	mg/kg	0.5	71	37	50	67 ④
			Nickel, Ni	mg/kg	0.5	70	37	50	65 ④
			Lead, Pb	mg/kg	1	54	20	50	68 ④
			Zinc, Zn	mg/kg	2	79	65	50	29 ④

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.002	LB180272.019		TRH C10-C14	mg/kg	20	46	<20	40	115
			TRH C15-C28	mg/kg	45	90	54	40	90
			TRH C29-C36	mg/kg	45	60	<45	40	83
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	200	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	48	<25	40	120
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	48	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	110	<90	40	83
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Monocyclic	Benzene	mg/kg	0.1	1.9	<0.1	2.9	63
		Aromatic	Toluene	mg/kg	0.1	1.8	<0.1	2.9	60
			Ethylbenzene	mg/kg	0.1	2.0	<0.1	2.9	66
			m/p-xylene	mg/kg	0.2	4.2	<0.2	5.8	71
			o-xylene	mg/kg	0.1	2.1	<0.1	2.9	72

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004	Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		Totals	Total Xylenes	mg/kg	0.3	6.3	<0.3	-	-
			Total BTEX	mg/kg	0.6	12	<0.6	-	-

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196053.002	LB180300.026	Monocyclic	Benzene	µg/L	0.5	53	<0.5	45.45	115
		Aromatic	Toluene	µg/L	0.5	58	<0.5	45.45	128
			Ethylbenzene	µg/L	0.5	54	<0.5	45.45	119
			m/p-xylene	µg/L	1	110	1	90.9	122
			o-xylene	µg/L	0.5	57	<0.5	45.45	125
		Polycyclic	Naphthalene	µg/L	0.5	63	1.6	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.3	-	112
			d8-toluene (Surrogate)	µg/L	-	5.5	5.2	-	109
			Bromofluorobenzene (Surrogate)	µg/L	-	5.0	4.9	-	99

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196092.001	LB180271.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	72
			TRH C6-C9	mg/kg	20	<20	<20	23.2	68
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.8	6.3	-	108
			d8-toluene (Surrogate)	mg/kg	-	8.7	5.5	-	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	4.9	-	96
		VPH F	Benzene (F0)	mg/kg	0.1	1.9	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	74

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196053.002	LB180300.026		TRH C6-C10	µg/L	50	820	<50	946.63	87
			TRH C6-C9	µg/L	40	770	<40	818.71	94
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.3	-	112
			d8-toluene (Surrogate)	µg/L	-	5.5	5.2	-	109
			Bromofluorobenzene (Surrogate)	µg/L	-	5.0	4.9	-	99
		VPH F	Benzene (F0)	µg/L	0.5	53	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	490	<50	639.67	76

MATRIX SPIKE DUPLICATES

SE196071 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

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CHAIN OF CUSTODY

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet..... of.....

Project No:	19122955	Lab Name:	SGS
Site Location:	Good St, Granville	Quote No.	
Sampled By:	Simon Demler.	Order No.:	
Turnaround Time	24hrs ☐ 36hrs ☐	48hrs ☐ 5 Days ☐	Standard ☐ Date Required By:
Delivery	HARD ☐ FAX ☐	DISK ☐	EMAIL ☐ SHAREPOINT ☐
Report	PDF ☐	EXCEL ☐	ESDAT ☐

GEOTECHNICAL ☐

Comments/Special Instructions:

ENVIRONMENTAL ☐

Comments/Special Instructions:

GOLDER ASSOCIATES PTY LTD
Level 8, 40 Mount Street, North Sydney
Project Manager: ~~Ben~~ Ben Caruana

Phone : (02) 9478 3900
Fax : (02) 9478 3901
Reviewed:
Phone 0405 262 936 Email:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination	pH	EC	Sulphates	Chlorides	TRH	BTEX	PAH	HM* (8)
	2x 40mL vials							✓	✓	✓	✓	✓	✓	✓	✓
	1x 1L amber bottle														
	2x 200mL														
	2x 500 mL bottle.														

SAMPLE MATRIX = Soil / Sediment / Fill / Water

SAMPLE TYPE = Composite(C) / Disturbed(DS) / Core(CR) / Grab (GS) / Standard Penetraion Test (SPT)

HIGH CONCENTRATION: circle expected parameters in analysis list

	NAME and SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Simon Demler	GOLDER	9/08/19	12.45PM
RECEIVED BY		SGS	9/8/19	12.45
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Ship ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled		LAB. BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address	

8/08/2019

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; LSB MANAGER; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE RECEIPT ADVICE

SE196280

CLIENT DETAILS

Contact	Ben Caruana
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	BCaruana@golder.com.au
Project	**19122955 - Good St, Granville**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 9/8/2019
Report Due	Fri 16/8/2019
SGS Reference	**SE196280**

SUBMISSION DETAILS

This is to confirm that 1 sample was received on Friday 9/8/2019. Results are expected to be ready by COB Friday 16/8/2019. Please quote SGS reference SE196280 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	1 Water
Date documentation received	9/8/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	0.9°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

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SAMPLE RECEIPT ADVICE

SE196280

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Good St, Granville

SUMMARY OF ANALYSIS

No.	Sample ID	Anions by Ion Chromatography in Water	Conductivity and TDS by Calculation - Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	pH in water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	19122955	2	1	22	1	7	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE196280

CLIENT DETAILS

Client GOLDER ASSOCIATES PTY LTD

Project 19122955 - Good St, Granville

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water
001	19122955	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Ben Caruana
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	BCaruana@golder.com.au
Project	**19122955 - Good St, Granville**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196280 R0**
Date Received	9/8/2019
Date Reported	16/8/2019

COMMENTS

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

SIGNATORIES



Akheeqar Beniameen
Chemist



Dong Liang
Metals/Inorganics Team Leader



Ly Kim Ha
Organic Section Head

VOCs in Water [AN433] Tested: 13/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	**0.9**
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 13/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 12/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C36	µg/L	450	<450
TRH C10-C40	µg/L	650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 12/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
Naphthalene	µg/L	0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1
Total PAH (18)	µg/L	1	<1

Anions by Ion Chromatography in Water [AN245] Tested: 12/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
Chloride	mg/L	1	**1100**
Sulfate, SO4	mg/L	1	**660**

pH in water [AN101] Tested: 14/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
pH**	No unit	-	**6.4**

Conductivity and TDS by Calculation - Water [AN106] Tested: 14/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
Conductivity @ 25 C	µS/cm	2	**4400**

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 12/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	**0.1**
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	**3**
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	**6**
Zinc, Zn	µg/L	5	**150**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 13/8/2019

PARAMETER	UOM	LOR	19122955 WATER - 8/8/2019 SE196280.001
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos /cm or µS/cm @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
AN106	Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present , measured by the conductivity, are present as NaCl.
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO2, NO3 and SO4 are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

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STATEMENT OF QA/QC PERFORMANCE

SE196280 R0

CLIENT DETAILS

Contact	Ben Caruana
Client	GOLDER ASSOCIATES PTY LTD
Address	Level 8, 40 Mount Street North Sydney NSW 2065
Telephone	0431 063 254
Facsimile	02 9478 3901
Email	BCaruana@golder.com.au
Project	**19122955 - Good St, Granville**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE196280 R0**
Date Received	09 Aug 2019
Date Reported	16 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	pH in water	1 item
Analysis Date	pH in water	1 item
METHOD BLANK	VOCs in Water	1 item

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice
Samples received in correct containers	Yes	Sample counts by matrix	1 Water
Date documentation received	9/8/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	0.9°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE196280 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180670	08 Aug 2019	09 Aug 2019	05 Sep 2019	12 Aug 2019	05 Sep 2019	14 Aug 2019

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180898	08 Aug 2019	09 Aug 2019	05 Sep 2019	14 Aug 2019	05 Sep 2019	14 Aug 2019

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180738	08 Aug 2019	09 Aug 2019	05 Sep 2019	13 Aug 2019	05 Sep 2019	13 Aug 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180659	08 Aug 2019	09 Aug 2019	15 Aug 2019	12 Aug 2019	21 Sep 2019	14 Aug 2019

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180898	08 Aug 2019	09 Aug 2019	09 Aug 2019	14 Aug 2019†	09 Aug 2019	14 Aug 2019†

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180647	08 Aug 2019	09 Aug 2019	04 Feb 2020	12 Aug 2019	04 Feb 2020	12 Aug 2019

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180659	08 Aug 2019	09 Aug 2019	15 Aug 2019	12 Aug 2019	21 Sep 2019	15 Aug 2019

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180788	08 Aug 2019	09 Aug 2019	15 Aug 2019	13 Aug 2019	22 Sep 2019	16 Aug 2019

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
19122955	SE196280.001	LB180788	08 Aug 2019	09 Aug 2019	15 Aug 2019	13 Aug 2019	22 Sep 2019	16 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	19122955	SE196280.001	%	40 - 130%	86
d14-p-terphenyl (Surrogate)	19122955	SE196280.001	%	40 - 130%	94
d5-nitrobenzene (Surrogate)	19122955	SE196280.001	%	40 - 130%	76

VOCs in Water — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	19122955	SE196280.001	%	40 - 130%	93
d4-1,2-dichloroethane (Surrogate)	19122955	SE196280.001	%	40 - 130%	92
d8-toluene (Surrogate)	19122955	SE196280.001	%	40 - 130%	108

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	19122955	SE196280.001	%	40 - 130%	93
d4-1,2-dichloroethane (Surrogate)	19122955	SE196280.001	%	60 - 130%	92
d8-toluene (Surrogate)	19122955	SE196280.001	%	40 - 130%	108

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result
LB180670.001	Chloride	mg/L	1	<1.0
	Sulfate, SO4	mg/L	1	<1.0

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB180898.001	Conductivity @ 25 C	µS/cm	2	<2

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB180738.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB180659.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	72
		2-fluorobiphenyl (Surrogate)	%	-	76
		d14-p-terphenyl (Surrogate)	%	-	88

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB180647.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB180659.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180788.001	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5
	Hydrocarbons	Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	94

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180788.001	Surrogates	d8-toluene (Surrogate)	%	-	101
		Bromofluorobenzene (Surrogate)	%	-	100

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB180788.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	94
		d8-toluene (Surrogate)	%	-	101
		Bromofluorobenzene (Surrogate)	%	-	100

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196280.001	LB180670.007	Chloride	mg/L	1	1100	1100	15	2
		Sulfate, SO4	mg/L	1	660	650	15	2

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196268.001	LB180898.014	Conductivity @ 25 C	µS/cm	2	309.96	312.37	16	1

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196199.024	LB180738.014	Mercury	µg/L	0.0001	<0.0001	0.0000	200	39
SE196280.001	LB180738.024	Mercury	µg/L	0.0001	<0.0001	0.0000	200	18

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196280.001	LB180659.021		Naphthalene	µg/L	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	200	0
			Acenaphthylene	µg/L	0.1	<0.1	<0.1	200	0
			Acenaphthene	µg/L	0.1	<0.1	<0.1	200	0
			Fluorene	µg/L	0.1	<0.1	<0.1	200	0
			Phenanthrene	µg/L	0.1	<0.1	<0.1	200	0
			Anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Pyrene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Chrysene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.3	30	11
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.4	30	12
			d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.4	30	9

pH in water

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196268.001	LB180898.014	pH**	pH Units	-	7.821	7.857	16	0

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196280.001	LB180659.021		TRH C10-C14	µg/L	50	<50	<50	200	0
			TRH C15-C28	µg/L	200	<200	<200	200	0
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C36	µg/L	450	<450	<450	200	0
			TRH C10-C40	µg/L	650	<650	<650	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196268.001	LB180788.015	Monocyclic	Benzene	µg/L	0.5	0.059423505	20.015588997	200	0
		Aromatic	Toluene	µg/L	0.5	0.287823533	20.096827925	200	0
			Ethylbenzene	µg/L	0.5	0.115558821	60.008815389	200	0
			m/p-xylene	µg/L	1	0.395033605	50.029113221	200	0
			o-xylene	µg/L	0.5	0.239111555	00.050733287	200	0
		Polycyclic	Naphthalene	µg/L	0.5	0.04	0.033868792	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.496797581	89.605836686	30	1
			d8-toluene (Surrogate)	µg/L	-	10.209183253	30.690727742	30	5
			Bromofluorobenzene (Surrogate)	µg/L	-	8.806243776	88.495609821	30	4
SE196272.006	LB180788.017	Monocyclic	Benzene	µg/L	0.5	0.062073734	00.016664022	200	0
		Aromatic	Toluene	µg/L	0.5	0.113280269	60.097968134	200	0
			Ethylbenzene	µg/L	0.5	0.010999685	10.016346174	200	0
			m/p-xylene	µg/L	1	0.067210912	80.066335763	200	0
			o-xylene	µg/L	0.5	0.013666663	30.020944964	200	0
		Polycyclic	Naphthalene	µg/L	0.5	0.132266771	40.242397276	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	8.345017944	09.647793151	30	14
			d8-toluene (Surrogate)	µg/L	-	10.110902064	00.566453479	30	4
			Bromofluorobenzene (Surrogate)	µg/L	-	8.416335582	98.494069451	30	1

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196268.001	LB180788.015		TRH C6-C10	µg/L	50	0	0	200	0
			TRH C6-C9	µg/L	40	0	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.496797581	89.605836686	30	1
			d8-toluene (Surrogate)	µg/L	-	10.209183253	30.690727742	30	5
			Bromofluorobenzene (Surrogate)	µg/L	-	8.806243776	88.495609821	30	4
		VPH F Bands	Benzene (F0)	µg/L	0.5	0.059423505	20.015588997	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	-1.096951020	7-0.201078822	200	0
SE196272.006	LB180788.017	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	8.345017944	09.647793151	30	14
			d8-toluene (Surrogate)	µg/L	-	10.110902064	00.566453479	30	4
			Bromofluorobenzene (Surrogate)	µg/L	-	8.416335582	98.494069451	30	1
		VPH F Bands	Benzene (F0)	µg/L	0.5	0.062073734	00.016664022	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180670.002	Chloride	mg/L	1	20	20	80 - 120	99
	Sulfate, SO4	mg/L	1	20	20	80 - 120	99

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180898.002	Conductivity @ 25 C	µS/cm	2	320	303	90 - 110	107

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180659.002		Naphthalene	µg/L	0.1	29	40	60 - 140	72
		Acenaphthylene	µg/L	0.1	31	40	60 - 140	78
		Acenaphthene	µg/L	0.1	32	40	60 - 140	80
		Phenanthrene	µg/L	0.1	33	40	60 - 140	84
		Anthracene	µg/L	0.1	32	40	60 - 140	80
		Fluoranthene	µg/L	0.1	33	40	60 - 140	83
		Pyrene	µg/L	0.1	32	40	60 - 140	81
		Benzo(a)pyrene	µg/L	0.1	32	40	60 - 140	81
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.3	0.5	40 - 130	64
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.3	0.5	40 - 130	66
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	72

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180898.003	pH**	No unit	-	7.4	7.415	98 - 102	100

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180647.002	Arsenic, As	µg/L	1	21	20	80 - 120	105
	Cadmium, Cd	µg/L	0.1	21	20	80 - 120	106
	Chromium, Cr	µg/L	1	21	20	80 - 120	107
	Copper, Cu	µg/L	1	22	20	80 - 120	108
	Lead, Pb	µg/L	1	22	20	80 - 120	112
	Nickel, Ni	µg/L	1	21	20	80 - 120	104
	Zinc, Zn	µg/L	5	21	20	80 - 120	107

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180659.002		TRH C10-C14	µg/L	50	940	1200	60 - 140	78
		TRH C15-C28	µg/L	200	1000	1200	60 - 140	86
		TRH C29-C36	µg/L	200	1100	1200	60 - 140	93
	TRH F Bands	TRH >C10-C16	µg/L	60	990	1200	60 - 140	83
		TRH >C16-C34 (F3)	µg/L	500	1100	1200	60 - 140	89
		TRH >C34-C40 (F4)	µg/L	500	660	600	60 - 140	109

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180788.002	Monocyclic	Benzene	µg/L	0.5	46	45.45	60 - 140	101
	Aromatic	Toluene	µg/L	0.5	46	45.45	60 - 140	102
		Ethylbenzene	µg/L	0.5	46	45.45	60 - 140	102
		m/p-xylene	µg/L	1	85	90.9	60 - 140	93
		o-xylene	µg/L	0.5	45	45.45	60 - 140	99
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.4	10	60 - 140	94
		d8-toluene (Surrogate)	µg/L	-	10.6	10	60 - 140	106
		Bromofluorobenzene (Surrogate)	µg/L	-	10.5	10	60 - 140	105

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180788.002		TRH C6-C10	µg/L	50	800	946.63	60 - 140	85
		TRH C6-C9	µg/L	40	700	818.71	60 - 140	86
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.4	10	60 - 140	94
		d8-toluene (Surrogate)	µg/L	-	10.6	10	60 - 140	106
		Bromofluorobenzene (Surrogate)	µg/L	-	10.5	10	60 - 140	105
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	540	639.67	60 - 140	84

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196129.001	LB180738.004	Mercury	mg/L	0.0001	0.0064	<0.0001	0.008	80

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196268.001	LB180647.004	Arsenic, As	µg/L	1	20	0.202	20	97
		Cadmium, Cd	µg/L	0.1	20	0.013	20	100
		Chromium, Cr	µg/L	1	22	1.838	20	99
		Copper, Cu	µg/L	1	20	0.553	20	99
		Lead, Pb	µg/L	1	21	0.101	20	104
		Nickel, Ni	µg/L	1	20	0.28	20	98
		Zinc, Zn	µg/L	5	23	1.902	20	104

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE196280.001	LB180788.016	Monocyclic	Benzene	µg/L	0.5	53	<0.5	45.45	118
		Aromatic	Toluene	µg/L	0.5	55	0.9	45.45	118
			Ethylbenzene	µg/L	0.5	59	<0.5	45.45	130
			m/p-xylene	µg/L	1	120	<1	90.9	136
			o-xylene	µg/L	0.5	56	<0.5	45.45	124
		Polycyclic	Naphthalene	µg/L	0.5	47	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.1	9.2	-	91
			d8-toluene (Surrogate)	µg/L	-	10.2	10.8	-	102
			Bromofluorobenzene (Surrogate)	µg/L	-	10.9	9.3	-	109

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE196280.001	LB180788.016		TRH C6-C10	µg/L	50	<50	946.63	105
			TRH C6-C9	µg/L	40	<40	818.71	109
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.2	-	91
			d8-toluene (Surrogate)	µg/L	-	10.8	-	102
			Bromofluorobenzene (Surrogate)	µg/L	-	9.3	-	109
		VPH F	Benzene (F0)	µg/L	0.5	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	639.67	101

MATRIX SPIKE DUPLICATES

SE196280 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

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CHAIN OF CUSTODY FORM - Client

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Unit 7, 17 Willes Rd, Berrimah, NT 0820

Client: Golder Associates	Client Project Name/Number/Site etc (ie report title):
Contact Person: Frank Yu	Gran Central 19122955
Project Mgr: Shane Doyle	PO No.:
Sampler: Frank Yu	Envirolab Quote No. :
Address:	Date results required: Standard T/A
Level 8, 40 Mount Street	Or choose: standard / same day / 1 day / 2 day / 3 day
North Sydney NSW 2060	*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: Mob: 0431 063 264	Additional report format: esdat / equis /
Email: fyu@golder.com.au sdoyle@golder.com.au	Lab Comments:

Sample Information					Tests Required												Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combination 6												Provide as much information about the sample as you can
1	TR1		1/08/2019	Soil	X												

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

Relinquished by (Company): F Yu	Received by (Company): ENS	*Lab Use Only*	
Print Name: F Yu	Print Name: Kevin	Job number: 223049	Cooling: Ice / Ice pack / None
Date & Time: 2/8/2019	Date & Time: 1535 2/8/19	Temperature: 11.2	Security seal: Intact / Broken / None
Signature:	Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Golder Associates Pty Ltd
Attention	Frank Yu

Sample Login Details

Your reference	Gran Central 19122955
Envirolab Reference	223049
Date Sample Received	02/08/2019
Date Instructions Received	02/08/2019
Date Results Expected to be Reported	09/08/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	11.2
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticidesin soil	PCBsin Soil	Acid Extractable metalsin soil
TR1	✓	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 223049

Client Details

Client	Golder Associates Pty Ltd
Attention	Frank Yu
Address	124 Pacific Highway, St Leonards, NSW, 2065

Sample Details

Your Reference	**Gran Central 19122955**
Number of Samples	1 soil
Date samples received	02/08/2019
Date completed instructions received	02/08/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

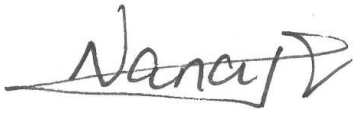
Date results requested by	09/08/2019
Date of Issue	09/08/2019

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Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		223049-1
Your Reference	UNITS	TR1
Date Sampled		01/08/2019
Type of sample		soil
Date extracted	-	05/08/2019
Date analysed	-	06/08/2019
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	106

svTRH (C10-C40) in Soil		
Our Reference		223049-1
Your Reference	UNITS	TR1
Date Sampled		01/08/2019
Type of sample		soil
Date extracted	-	05/08/2019
Date analysed	-	08/08/2019
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	78

PAHs in Soil		
Our Reference		223049-1
Your Reference	UNITS	TR1
Date Sampled		01/08/2019
Type of sample		soil
Date extracted	-	05/08/2019
Date analysed	-	09/08/2019
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	81

Organochlorine Pesticides in soil		
Our Reference		223049-1
Your Reference	UNITS	TR1
Date Sampled		01/08/2019
Type of sample		soil
Date extracted	-	05/08/2019
Date analysed	-	05/08/2019
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	92

PCBs in Soil		
Our Reference		223049-1
Your Reference	UNITS	TR1
Date Sampled		01/08/2019
Type of sample		soil
Date extracted	-	05/08/2019
Date analysed	-	05/08/2019
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	92

Acid Extractable metals in soil		
Our Reference		223049-1
Your Reference	UNITS	TR1
Date Sampled		01/08/2019
Type of sample		soil
Date prepared	-	05/08/2019
Date analysed	-	05/08/2019
Arsenic	mg/kg	6
Cadmium	mg/kg	<0.4
Chromium	mg/kg	20
Copper	mg/kg	4
Lead	mg/kg	20
Mercury	mg/kg	<0.1
Nickel	mg/kg	<1
Zinc	mg/kg	20

Moisture		
Our Reference		223049-1
Your Reference	UNITS	TR1
Date Sampled		01/08/2019
Type of sample		soil
Date prepared	-	05/08/2019
Date analysed	-	06/08/2019
Moisture	%	22

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Date analysed	-			06/08/2019	[NT]	[NT]	[NT]	[NT]	06/08/2019	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	122	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	122	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	123	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	121	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	122	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	106	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Date analysed	-			08/08/2019	[NT]	[NT]	[NT]	[NT]	08/08/2019	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	133	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	138	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	133	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	138	[NT]
Surrogate o-Terphenyl	%		Org-003	86	[NT]	[NT]	[NT]	[NT]	119	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Date analysed	-			09/08/2019	[NT]	[NT]	[NT]	[NT]	09/08/2019	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	90	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	87	[NT]	[NT]	[NT]	[NT]	78	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Date analysed	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	69	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	73	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	70	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	96	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Date analysed	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-006	96	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date prepared	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Date analysed	-			05/08/2019	[NT]	[NT]	[NT]	[NT]	05/08/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	109	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	101	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

APPENDIX K

Summary Tables

TABLE K1
SOIL ANALYSIS RESULTS

ChemName	output unit	EQL	Residential B	Location_Code	BH01M	BH01M	BH02	BH02	BH02	BH03	BH03	BH03	BH03	BH03	BH04	BH04	BH04	BH04	BH04
				DATEONLY	2019-07-30	2019-07-30	2019-07-31	2019-07-31	2019-07-31	2019-08-01	2019-08-01	2019-08-01	2019-08-01	2019-08-01	2019-07-29	2019-07-29	2019-07-29	2019-07-29	2019-07-29
				Field_ID	BH01_0.14-0.18	BH01_1.30-1.40	BH02_0.15-0.20	BH02_1.40-1.50	BH02_1.8-1.85	BH03_0.10-0.20	BH03_0.80-0.90	DU2	TR1	BH03_1.40-1.50	BH04_0.10-0.20	BH04_0.55-0.65	BH04_1.05-1.15	DU1	BH04_1.40-1.50
Asbestos																			
Asbestos in soil (>7mm ACM)	%w/w	0.01	**0.04**		<0.01	-	<0.01	-	-	<0.01	-	-	-	-	-	-	-	-	-
Asbestos in soil (<2mm AF/FA)	%w/w	0.001			<0.001	-	<0.001	-	-	<0.001	-	-	-	-	-	-	-	-	-
Asbestos in soil (<7mm AF/FA)	%w/w	0.001	**0.001**		<0.001	-	**0.012**	-	-	**0.039**	-	-	-	-	-	-	-	-	-
Asbestos in soil (>2mm to <7mm AF/FA)	%w/w	0.001			<0.001	-	0.012	-	-	0.039	-	-	-	-	-	-	-	-	-
Weight Asbestos in soil (<2mm AF/FA)	g				<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weight Asbestos in soil (>2mm to <7mm AF/FA)	g				<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mass Asbestos in FA & AF	g	0.0001			-	-	0.036	-	-	0.108	-	-	-	-	-	-	-	-	-
Asbestos (1-Detect or <1-Non-Detect)	No	0			-	-	1[#1]	-	-	1[#1]	-	-	-	-	-	-	-	-	-
Asbestos Detected	-	0.01			<0.01	-	>0.01	-	-	>0.01	-	-	-	-	<0.01	-	-	-	-
Mass of test sample	g				<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sample weight (dry)	g	1			378	-	291	-	-	280	-	-	-	-	-	-	-	-	-
Mass ACM	g	0.01			-	-	<0.01	-	-	<0.01	-	-	-	-	-	-	-	-	-
Mass Asbestos in Asbestos Fines (AF)	g	0.0001			-	-	<0.0001	-	-	<0.0001	-	-	-	-	-	-	-	-	-
TRH - HSL																			
TRH C6 - C10 Fraction F1	mg/kg	25			<25	<25	<25	<25	-	-	<25	<25	<25	<25	-	-	<25	<25	<25
TRH C6 - C10 Fraction Less BTEX F1	mg/kg	25	**45**		<25	<25	<25	<25	-	-	<25	<25	<25	<25	-	-	<25	<25	<25
TRH >C10 - C16 Fraction F2	mg/kg	25			<25	<25	<25	<25	-	-	<25	<25	<50	<25	-	-	<25	<25	<25
TRH >C10 - C16 Fraction Less Naphthalene (F2)	mg/kg	25	**110**		<25	<25	<25	<25	-	-	<25	<25	<50	<25	-	-	<25	<25	<25
TRH >C16 - C34 Fraction F3	mg/kg	90	**NL**		<90	<90	150	<90	-	-	<90	<90	<100	<90	-	-	140	<90	<90
TRH >C34 - C40 Fraction F4	mg/kg	120	**NL**		<120	<120	<120	<120	-	-	<120	<120	<100	<120	-	-	<120	<120	<120
TRH C37 - C40 Fraction	mg/kg	100			<100	<100	<100	<100	-	-	<100	<100	-	<100	-	-	<100	<100	<100
TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	210			<210	<210	<210	<210	-	-	<210	<210	<50	<210	-	-	<210	<210	<210
TPH Group - Waste Classification																			
TRH C6 - C9 Fraction	mg/kg	20			<20	<20	<20	<20	-	-	<20	<20	<25	<20	-	-	<20	<20	<20
TRH C10 - C14 Fraction	mg/kg	20			<20	<20	<20	<20	-	-	<20	<20	<50	<20	-	-	<20	<20	<20
TRH C15 - C28 Fraction	mg/kg	45			<45	<45	91	<45	-	-	<45	<45	<100	<45	-	-	69	<45	<45
TRH C29 - C36 Fraction	mg/kg	45			60	<45	71	<45	-	-	<45	<45	<100	<45	-	-	87	<45	<45
TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	110			<110	<110	160	<110	-	-	<110	<110	-	<110	-	-	160	<110	<110
BTEX																			
Benzene	mg/kg	0.1	**0.5**		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.2	<0.1	-	-	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	**160**		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.5	<0.1	-	-	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	**55**		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<1	<0.1	-	-	<0.1	<0.1	<0.1
Xylenes (m & p)	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<2	<0.2	-	-	<0.2	<0.2	<0.2
Xylene (o)	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<1	<0.1	-	-	<0.1	<0.1	<0.1
Xylenes (Sum of total) (Lab Reported)	mg/kg	0.3	**40**		<0.3	<0.3	<0.3	<0.3	-	-	<0.3	<0.3	<3	<0.3	-	-	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6			<0.6	<0.6	<0.6	<0.6	-	-	<0.6	<0.6	-	<0.6	-	-	<0.6	<0.6	<0.6
Heavy Metals																			
Arsenic	mg/kg	1	**500**		6	3	130	2	-	-	8	5	6	8	-	-	8	7	7
Cadmium	mg/kg	0.3	**150**		<0.3	<0.3	2.3	<0.3	-	-	<0.3	<0.3	<0.4	<0.3	-	-	<0.3	<0.3	<0.3
Chromium	mg/kg	0.5	**500**		22	2.1	26	2.5	-	-	21	17	20	11	-	-	24	22	11
Copper	mg/kg	0.5	**30,000**		37	5.6	150	4.3	-	-	3.4	3.7	4	4.6	-	-	3.4	3.4	3.8
Lead	mg/kg	1	**1200**		20	5	930	9	-	-	27	15	20	28	-	-	14	14	11
Mercury	mg/kg	0.05	**120**		<0.05	<0.05	1.4	<0.05	-	-	<0.05	<0.05	<0.1	<0.05	-	-	<0.05	<0.05	<0.05
Nickel	mg/kg	0.5	**1200**		37	0.5	22	<0.5	-	-	0.6	0.6	<1	<0.5	-	-	<0.5	<0.5	<0.5
Zinc	mg/kg	2	**60,000**		65	3.4	1300	3.2	-	-	27	21	20	19	-	-	5.8	5.4	3.5
Organochlorine Pesticides																			
p,p-DDE	mg/kg				<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1
Heptachlor & heptachlor epoxide (Sum Lab Reported)	mg/kg				<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1
2,4-DDT	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
a-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	**10**		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
b-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
cis-Chlordane	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	0.1	**90**		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
trans-Chlordane	mg/kg	0.1			-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-
d-BHC	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
DDD	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
DDE	mg/kg	0.1			-	-	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-
DDT	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
DDT+DDE+DDD (Sum of total) (Lab Reported)	mg/kg	0.1	**600**		-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-
Endosulfan I	mg/kg	0.2	**400**		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Endosulfan II	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Endosulfan sulphate	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Endrin	mg/kg	0.2	**20**		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2

			Location_Code	BH01M	BH01M	BH02	BH02	BH02	BH03	BH03	BH03	BH03	BH03	BH04	BH04	BH04	BH04	BH04
			DATEONLY	2019-07-30	2019-07-30	2019-07-31	2019-07-31	2019-07-31	2019-08-01	2019-08-01	2019-08-01	2019-08-01	2019-08-01	2019-07-29	2019-07-29	2019-07-29	2019-07-29	2019-07-29
			Field_ID	BH01_0.14-0.18	BH01_1.30-1.40	BH02_0.15-0.20	BH02_1.40-1.50	BH02_1.8-1.85	BH03_0.10-0.20	BH03_0.80-0.90	DU2	TR1	BH03_1.40-1.50	BH04_0.10-0.20	BH04_0.55-0.65	BH04_1.05-1.15	DU1	BH04_1.40-1.50
ChemName	output unit	EQL	Residential B															
Endrin aldehyde	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
g-BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	**10**	-	-	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-
Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Hexachlorobenzene	mg/kg	0.1	**15**	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	**500**	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	**20**	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
o,p-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
o,p-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
Organophosphorous Pesticides																		
OPP (Sum of total)	mg/kg			<1.7	<1.7	-	-	-	-	-	-	-	-	-	-	<1.7	<1.7	<1.7
Azinphos-methyl	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Bromophos-ethyl	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Chlorpyriphos	mg/kg	0.2	**340**	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Diazinon	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Dichlorvos	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Fenitrothion	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Parathion	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
PAH																		
Benzo(b+j) & Benzo(k)fluoranthene	mg/kg	0.2		-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1		0.2	<0.1	0.2	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1		<0.1	<0.1	0.3	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	0.1	<0.1	<0.1
Benz(a)anthracene	mg/kg	0.1		0.2	<0.1	1.4	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	0.7	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1		0.3	<0.1	**2.1**	<0.1	-	-	<0.1	<0.1	<0.05	<0.1	-	-	**1**	<0.1	<0.1
Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.2		0.4	<0.2	2.9	<0.2	-	-	<0.2	<0.2	<0.5	<0.2	-	-	1.3	<0.2	<0.2
Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.2		-	-	2.9	<0.2	-	-	<0.2	<0.2	<0.5	<0.2	-	-	1.4	<0.2	<0.2
Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.3	**4**	0.5	<0.3	2.9	<0.3	-	-	<0.3	<0.3	<0.5	<0.3	-	-	1.4	<0.3	<0.3
Benzo(b)&(j)fluoranthene	mg/kg	0.1		0.3	<0.1	2.2	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	1.2	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1		0.3	<0.1	1.2	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	0.6	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1		0.1	<0.1	1.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	0.5	<0.1	<0.1
Chrysene	mg/kg	0.1		0.2	<0.1	1.7	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	0.7	<0.1	<0.1
Dibenz(a,h)anthracene	mg/kg	0.1		<0.1	<0.1	0.2	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ (Calculated)	TEQ			0.4	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1		0.3	<0.1	3.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	1.2	<0.1	<0.1
Fluorene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		0.2	<0.1	1.2	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	0.6	<0.1	<0.1
Naphthalene	mg/kg	0.1		<0.1	<0.1	<0.1 - 0.2	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1		0.3	<0.1	1.5	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	0.4	<0.1	<0.1
Pyrene	mg/kg	0.1		0.5	<0.1	3.3	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	-	-	1.3	<0.1	<0.1
PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.8	**400**	2.9	<0.8	20	<0.8	-	-	<0.8	<0.8	-	<0.8	-	-	8.4	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8		2.9	<0.8	20	<0.8	-	-	<0.8	<0.8	<0.05	<0.8	-	-	8.4	<0.8	<0.8
1-Methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
2-Methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
Polychlorinated Biphenyls																		
Aroclor 1016	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1232	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1242	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1248	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1254	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1260	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1268	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1221	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	<0.1	<0.2	-	-	<0.2	<0.2	<0.2
Aroclor 1262	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
PCB (Sum of Total-Lab Reported)	mg/kg	1	**1**	<1	<1	<1	<1	-	-	<1	<1	<0.1	<1	-	-	<1	<1	<1

Data Comments
#1 Asbestos Detected Yes

			Location_Code									
			DATEONLY									
			Field_ID									
			Residential B	Statistical Summary								
ChemName	**output unit**	**EQL**		Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Number of Guideline Exceedances	Number of Guideline Exceedances (Detects Only)
Asbestos											
Asbestos in soil (>7mm ACM)	%w/w	0.01	**0.04**	3	0	<0.01	ND	<0.01	ND	0	0
Asbestos in soil (<2mm AF/FA)	%w/w	0.001		3	0	<0.001	ND	<0.001	ND	0	0
Asbestos in soil (<7mm AF/FA)	%w/w	0.001	**0.001**	3	2	<0.001	0.012	0.039	0.039	2	2
Asbestos in soil (>2mm to <7mm AF/FA)	%w/w	0.001		3	2	<0.001	0.012	0.039	0.039	0	0
Weight Asbestos in soil (<2mm AF/FA)	g			1	0	<0.0001	ND	<0.0001	ND	0	0
Weight Asbestos in soil (>2mm to <7mm AF/FA)	g			1	0	<0.0001	ND	<0.0001	ND	0	0
Mass Asbestos in FA & AF	g	0.0001		2	2	0.036	0.036	0.108	0.108	0	0
Asbestos (1-Detect or <1-Non-Detect)	No	0		2	2	1	1	1	1	0	0
Asbestos Detected	-	0.01		4	2	<0.01	0.01	0.01	0.01	0	0
Mass of test sample	g			1	0	<0.01	ND	<0.01	ND	0	0
Sample weight (dry)	g	1		3	3	280	280	378	378	0	0
Mass ACM	g	0.01		2	0	<0.01	ND	<0.01	ND	0	0
Mass Asbestos in Asbestos Fines (AF)	g	0.0001		2	0	<0.0001	ND	<0.0001	ND	0	0
TRH - HSL											
TRH C6 - C10 Fraction F1	mg/kg	25		11	0	<25	ND	<25	ND	0	0
TRH C6 - C10 Fraction Less BTEX F1	mg/kg	25	**45**	11	0	<25	ND	<25	ND	0	0
TRH >C10 - C16 Fraction F2	mg/kg	25		11	0	<25	ND	<50	ND	0	0
TRH >C10 - C16 Fraction Less Naphthalene (F2)	mg/kg	25	**110**	11	0	<25	ND	<50	ND	0	0
TRH >C16 - C34 Fraction F3	mg/kg	90	**NL**	11	2	<90	140	150	150	0	0
TRH >C34 - C40 Fraction F4	mg/kg	120	**NL**	11	0	<100	ND	<120	ND	0	0
TRH C37 - C40 Fraction	mg/kg	100		10	0	<100	ND	<100	ND	0	0
TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	210		11	0	<50	ND	<210	ND	0	0
TPH Group - Waste Classification											
TRH C6 - C9 Fraction	mg/kg	20		11	0	<20	ND	<25	ND	0	0
TRH C10 - C14 Fraction	mg/kg	20		11	0	<20	ND	<50	ND	0	0
TRH C15 - C28 Fraction	mg/kg	45		11	2	<45	69	<100	91	0	0
TRH C29 - C36 Fraction	mg/kg	45		11	3	<45	60	<100	87	0	0
TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	110		10	2	<110	160	160	160	0	0
BTEX											
Benzene	mg/kg	0.1	**0.5**	11	0	<0.1	ND	<0.2	ND	0	0
Toluene	mg/kg	0.1	**160**	11	0	<0.1	ND	<0.5	ND	0	0
Ethylbenzene	mg/kg	0.1	**55**	11	0	<0.1	ND	<1	ND	0	0
Xylenes (m & p)	mg/kg	0.2		11	0	<0.2	ND	<2	ND	0	0
Xylene (o)	mg/kg	0.1		11	0	<0.1	ND	<1	ND	0	0
Xylenes (Sum of total) (Lab Reported)	mg/kg	0.3	**40**	11	0	<0.3	ND	<3	ND	0	0
Total BTEX	mg/kg	0.6		10	0	<0.6	ND	<0.6	ND	0	0
Heavy Metals											
Arsenic	mg/kg	1	**500**	11	11	2	2	130	130	0	0
Cadmium	mg/kg	0.3	**150**	11	1	<0.3	2.3	2.3	2.3	0	0
Chromium	mg/kg	0.5	**500**	11	11	2.1	2.1	26	26	0	0
Copper	mg/kg	0.5	**30,000**	11	11	3.4	3.4	150	150	0	0
Lead	mg/kg	1	**1200**	11	11	5	5	930	930	0	0
Mercury	mg/kg	0.05	**120**	11	1	<0.05	1.4	1.4	1.4	0	0
Nickel	mg/kg	0.5	**1200**	11	5	<0.5	0.5	37	37	0	0
Zinc	mg/kg	2	**60,000**	11	11	3.2	3.2	1300	1300	0	0
Organochlorine Pesticides											
p,p-DDE	mg/kg			5	0	<0.1	ND	<0.1	ND	0	0
Heptachlor & heptachlor epoxide (Sum Lab Reported)	mg/kg			5	0	<0.1	ND	<0.1	ND	0	0
2,4-DDT	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
a-BHC	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
Aldrin	mg/kg	0.1	**10**	11	0	<0.1	ND	<0.1	ND	0	0
Dieldrin	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
b-BHC	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
cis-Chlordane	mg/kg	0.1	**90**	11	0	<0.1	ND	<0.1	ND	0	0
gamma-Chlordane	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
trans-Chlordane	mg/kg	0.1		1	0	<0.1	ND	<0.1	ND	0	0
d-BHC	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
DDD	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
DDE	mg/kg	0.1		6	0	<0.1	ND	<0.1	ND	0	0
DDT	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
DDT+DDE+DDD (Sum of total) (Lab Reported)	mg/kg	0.1	**600**	1	0	<0.1	ND	<0.1	ND	0	0
Endosulfan I	mg/kg	0.2	**400**	11	0	<0.1	ND	<0.2	ND	0	0
Endosulfan II	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Endosulfan sulphate	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
Endrin	mg/kg	0.2	**20**	11	0	<0.1	ND	<0.2	ND	0	0

			Location_Code									
			DATEONLY									
			Field_ID									
			Residential B	Statistical Summary								
ChemName	**output unit**	**EQL**		Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Number of Guideline Exceedances	Number of Guideline Exceedances (Detects Only)
Endrin aldehyde	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
Endrin ketone	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
g-BHC	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
Heptachlor	mg/kg	0.1	**10**	6	0	<0.1	ND	<0.1	ND	0	0
Heptachlor epoxide	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
Hexachlorobenzene	mg/kg	0.1	**15**	11	0	<0.1	ND	<0.1	ND	0	0
Isodrin	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
Methoxychlor	mg/kg	0.1	**500**	11	0	<0.1	ND	<0.1	ND	0	0
Mirex	mg/kg	0.1	**20**	10	0	<0.1	ND	<0.1	ND	0	0
o,p-DDD	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
o,p-DDE	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
trans-Nonachlor	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
Organophosphorous Pesticides											
OPP (Sum of total)	mg/kg			5	0	<1.7	ND	<1.7	ND	0	0
Azinphos-methyl	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
Bromophos-ethyl	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
Chlorpyriphos	mg/kg	0.2	**340**	10	0	<0.2	ND	<0.2	ND	0	0
Diazinon	mg/kg	0.5		10	0	<0.5	ND	<0.5	ND	0	0
Dichlorvos	mg/kg	0.5		10	0	<0.5	ND	<0.5	ND	0	0
Dimethoate	mg/kg	0.5		10	0	<0.5	ND	<0.5	ND	0	0
Ethion	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
Fenitrothion	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
Malathion	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
Methidathion	mg/kg	0.5		10	0	<0.5	ND	<0.5	ND	0	0
Parathion	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
PAH											
Benzo(b+j) & Benzo(k)fluoranthene	mg/kg	0.2		1	0	<0.2	ND	<0.2	ND	0	0
Acenaphthene	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
Acenaphthylene	mg/kg	0.1		11	2	<0.1	0.2	0.2	0.2	0	0
Anthracene	mg/kg	0.1		11	2	<0.1	0.1	0.3	0.3	0	0
Benz(a)anthracene	mg/kg	0.1		11	3	<0.1	0.2	1.4	1.4	0	0
Benzo(a)pyrene	mg/kg	0.1		11	3	<0.05	0.3	2.1	2.1	0	0
Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.2		11	3	<0.2	0.4	2.9	2.9	0	0
Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.2		9	2	<0.2	1.4	2.9	2.9	0	0
Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.3	**4**	11	3	<0.3	0.5	2.9	2.9	0	0
Benzo(b)&(j)fluoranthene	mg/kg	0.1		10	3	<0.1	0.3	2.2	2.2	0	0
Benzo(g,h,i)perylene	mg/kg	0.1		11	3	<0.1	0.3	1.2	1.2	0	0
Benzo(k)fluoranthene	mg/kg	0.1		10	3	<0.1	0.1	1.1	1.1	0	0
Chrysene	mg/kg	0.1		11	3	<0.1	0.2	1.7	1.7	0	0
Dibenz(a,h)anthracene	mg/kg	0.1		11	1	<0.1	0.2	0.2	0.2	0	0
Benzo(a)pyrene TEQ (Calculated)	TEQ			2	1	<0.2	0.4	0.4	0.4	0	0
Fluoranthene	mg/kg	0.1		11	3	<0.1	0.3	3.1	3.1	0	0
Fluorene	mg/kg	0.1		11	0	<0.1	ND	<0.1	ND	0	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		11	3	<0.1	0.2	1.2	1.2	0	0
Naphthalene	mg/kg	0.1		11	1	<0.1	ND	0.2	0.2	0	0
Phenanthrene	mg/kg	0.1		11	3	<0.1	0.3	1.5	1.5	0	0
Pyrene	mg/kg	0.1		11	3	<0.1	0.5	3.3	3.3	0	0
PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.8	**400**	10	3	<0.8	2.9	20	20	0	0
Total PAH (NEPM/WHO 16)	mg/kg	0.8		11	3	<0.05	2.9	20	20	0	0
1-Methylnaphthalene	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
2-Methylnaphthalene	mg/kg	0.1		10	0	<0.1	ND	<0.1	ND	0	0
Polychlorinated Biphenyls											
Aroclor 1016	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Aroclor 1232	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Aroclor 1242	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Aroclor 1248	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Aroclor 1254	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Aroclor 1260	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Aroclor 1268	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
Aroclor 1221	mg/kg	0.2		11	0	<0.1	ND	<0.2	ND	0	0
Aroclor 1262	mg/kg	0.2		10	0	<0.2	ND	<0.2	ND	0	0
PCB (Sum of Total-Lab Reported)	mg/kg	1	**1**	11	0	<0.1	ND	<1	ND	0	0

Data Comments
#1 Asbestos Detected Yes

			Field_ID	19122955	
			Location_Code	BH01M	
			Sampled_Date_Time	8/08/2019	
			ANZECC 2000 Freshwater 95%		
ChemName	**output unit**	**EQL**			Number of Guideline Exceedances (Detects Only)
TRH - HSL					
TRH C6 - C10 Fraction F1	mg/L	0.05		<0.05	0
TRH C6 - C10 Fraction Less BTEX F1	mg/L	0.05	**1**	<0.05	0
TRH >C10 - C16 Fraction F2	mg/L	0.06		<0.06	0
TRH >C10 - C16 Fraction Less Naphthalene (F2)	mg/L	0.06	**1**	<0.06	0
TRH >C16 - C34 Fraction F3	mg/L	0.5	**NL**	<0.5	0
TRH >C34 - C40 Fraction F4	mg/L	0.5	**NL**	<0.5	0
TRH C37 - C40 Fraction	mg/L	0.2		<0.2	0
TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/L	0.65		<0.65	0
BTEX					
Benzene	µg/L	0.5	**950**	<0.5	0
Toluene	µg/L	0.5	**180**	0.9	0
Ethylbenzene	µg/L	0.5	**80**	<0.5	0
Xylenes (m & p)	µg/L	1		<1	0
Xylene (o)	µg/L	0.5		<0.5	0
Xylenes (Sum of total) (Lab Reported)	µg/L	1.5	**75**	<1.5	0
Total BTEX	µg/L	3		<3	0
Heavy Metals					
Arsenic (Filtered)	µg/L	1	**13**	<1	0
Cadmium (Filtered)	µg/L	0.1	**0.2**	0.1	0
Chromium (Filtered)	µg/L	1	**3.3**	<1	0
Copper (Filtered)	µg/L	1	**1.4**	**3**	1
Lead (Filtered)	µg/L	1	**3.4**	<1	0
Mercury (Filtered)	µg/L	0.1	**0.06**	<0.1	0
Nickel (Filtered)	µg/L	1	**11**	6	0
Zinc (Filtered)	µg/L	5	**8**	**150**	1
PAH					
Acenaphthene	µg/L	0.1		<0.1	0
Acenaphthylene	µg/L	0.1		<0.1	0
Anthracene	µg/L	0.1	**0.01**	<0.1	0
Benz(a)anthracene	µg/L	0.1		<0.1	0
Benzo(a)pyrene	µg/L	0.1	**0.1**	<0.1	0
Benzo(b)&(j)fluoranthene	µg/L	0.1		<0.1	0
Benzo(g,h,i)perylene	µg/L	0.1		<0.1	0
Benzo(k)fluoranthene	µg/L	0.1		<0.1	0
Chrysene	µg/L	0.1		<0.1	0
Dibenz(a,h)anthracene	µg/L	0.1		<0.1	0
Fluoranthene	µg/L	0.1	**1.0**	<0.1	0
Fluorene	µg/L	0.1		<0.1	0
Indeno(1,2,3-c,d)pyrene	µg/L	0.1		<0.1	0
Naphthalene	µg/L	0.1	**16**	<0.1	0
Phenanthrene	µg/L	0.1	**0.6**	<0.1	0
Pyrene	µg/L	0.1		<0.1	0
PAH (Sum of Common 16 PAHs - Lab Reported)	µg/L	1		<1	0
1-Methylnaphthalene	µg/L	0.1		<0.1	0
2-Methylnaphthalene	µg/L	0.1		<0.1	0

APPENDIX L

Data Validation Records

GOLDER

DATA VALIDATION SUMMARY SHEET (Sydney)

Project Name:	**Gran Central Development**	**Project Number:**	**19122955**
Primary Laboratory:	**SGS**	**Work order Number:**	**SE196065**
Secondary Laboratory:	**N/A**	**Work order Number:**	**N/A**
Date Sampled:	**30/07/2019**	**Sample Medium:**	**Soil**

Sample Information

Number of Primary Samples:	**2**	**Number of Triplicate Samples:**	**0**
Number of Duplicate Samples:	**0**	**Number of Other QAQC Samples:**	**0**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by field staff and laboratory personnel.
All requested analysis completed?	Y	All requested analysis completed .
Samples received intact and chilled?	Y	4.8'C, ice present, samples received in good order.
Samples analysed within appropriate holding times?	Y	All samples were analysed within appropriate holding times.
Sample volumes sufficient for QC analysis?	Y	Sufficient sample volume was provided for laboratory tests.
Are there non-NATA accredited methods used?	N	SGS is not NATA accredited for Total OP Pesticides (accredited for individual pesticides), estimated asbestos fibres and asbestos quantification. SGS is NATA accredited for all other methods in this batch.
Chromatograms supplied as appropriate?	N/A	N/A
Laboratory reports signed by authorised personnel?	Y	All laboratory reports signed by authorised personnel.

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Method Blank	MB	All results were below the LOR.

Trip Spike Information

Analyte	Control Spike Concentrations	Trip Spike Concentration	% Recovery	Comments
Sample ID: No TS analysed as part of this batch.				
-	-	-	-	-

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
All	All laboratory control spike recoveries are within laboratory based DQOs.

Matrix Spike (MS) Analyses

Analyte Group	Comments
Metals	Matrix spike recovery for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) exceeded laboratory based data quality objectives (70-130%). *Refer to overall comments* .

Laboratory Duplicates (LD) Analyses

Analyte Group	Sample ID	Comments
All	-	All laboratory duplicate RPDs are within laboratory based DQOs.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
-	-	-	No FD analysed as part of this batch.

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
-	-	-	No FT analysed as part of this batch.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
All	-	All surrogate recoveries are within laboratory based DQOs.

Overall Comments

MS recoveries for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) were below the acceptable data quality objectives, indicating the potential for under-reporting of these analytes. As reported by SGS: "Recovery failed acceptance criteria due to matrix interference". It is noted that with the exception of zinc, the MS recoveries were marginally (2-5%) less than the lower data quality objectives.

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Pauline Voukidis**	**Checked By:**	**Rita Bonetti**
Date:	**4/09/2019**	**Date:**	**5/09/2019**

GOLDER

DATA VALIDATION SUMMARY SHEET (Sydney)

Project Name:	**Gran Central Development**	**Project Number:**	**19122955**
Primary Laboratory:	**SGS**	**Work order Number:**	**SE196066**
Secondary Laboratory:	**N/A**	**Work order Number:**	**N/A**
Date Sampled:	**31/07/2019**	**Sample Medium:**	**Soil**

Sample Information

Number of Primary Samples:	**2**	**Number of Triplicate Samples:**	**0**
Number of Duplicate Samples:	**0**	**Number of Other QAQC Samples:**	**0**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by field staff and laboratory personnel.
All requested analysis completed?	Y	All requested analysis completed.
Samples received intact and chilled?	Y	4.8'C, ice present, samples received in good order.
Samples analysed within appropriate holding times?	Y	All samples were analysed within appropriate holding times.
Sample volumes sufficient for QC analysis?	Y	Sufficient sample volume was provided for laboratory tests.
Are there non-NATA accredited methods used?	N	SGS is not NATA accredited for Total OP Pesticides (accredited for individual pesticides), estimated asbestos fibres and asbestos quantification. SGS is NATA accredited for all other methods in this batch.
Chromatograms supplied as appropriate?	N/A	N/A
Laboratory reports signed by authorised personnel?	Y	Laboratory reports signed by authorised personnel.

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Method Blank	MB	All results were below the LOR.

Trip Spike Information

Analyte	Control Spike Concentrations	Trip Spike Concentration	% Recovery	Comments
Sample ID: No TS analysed as part of this batch.				
-	-	-	-	-

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
All	All laboratory control spike recoveries are within laboratory based DQOs.

Matrix Spike (MS) Analyses

Analyte Group	Comments
All	Matrix spike recovery for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) exceeded laboratory based data quality objectives (70-130%). *Refer to overall comments* .

Laboratory Duplicates (LD) Analyses

Analyte Group	Sample ID	Comments
All	-	All laboratory duplicate RPDs are within laboratory based DQOs.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
-	-	-	No FD analysed as part of this batch.

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
-	-	-	No FT analysed as part of this batch.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
All	-	All surrogate recoveries are within laboratory based DQOs.

Overall Comments

MS recoveries for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) were below the acceptable data quality objectives, indicating the potential for under-reporting of these analytes. As reported by SGS: "Recovery failed acceptance criteria due to matrix interference". It is noted that while this sample (SE196065.001) is not directly associated with this batch (SE196066), it is not considered anonymous as this sample was analysed as part of another batch collected from the site. Refer to the data validation sheet for batch SE196065 for further discussion.

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Pauline Voukidis**	**Checked By:**	**Rita Bonetti**
Date:	**4/09/2019**	**Date:**	**5/09/2019**

GOLDER

DATA VALIDATION SUMMARY SHEET (Sydney)

Project Name:	**Gran Central Development**	**Project Number:**	**19122955**
Primary Laboratory:	**SGS**	**Work order Number:**	**SE196067**
Secondary Laboratory:	**Envirolab**	**Work order Number:**	**223049**
Date Sampled:	**1/08/2019**	**Sample Medium:**	**Soil**

Sample Information

Number of Primary Samples:	**3**	**Number of Triplicate Samples:**	**1**
Number of Duplicate Samples:	**1**	**Number of Other QAQC Samples:**	**0**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by field staff and laboratory personnel (SGS & Envirolab).
All requested analysis completed?	Y	All requested analysis completed (SGS & Envirolab).
Samples received intact and chilled?	N	SGS: 4.8'C, ice present, samples received in good order. Envirolab: 11.2'C, ice present, samples received in appropriate condition for analysis. *Refer to overall comments.*
Samples analysed within appropriate holding times?	Y	All samples were analysed within appropriate holding times (SGS & Envirolab).
Sample volumes sufficient for QC analysis?	Y	Sufficient sample volume was provided for laboratory tests (SGS & Envirolab).
Are there non-NATA accredited methods used?	N	SGS is not NATA accredited for Total OP Pesticides (accredited for individual pesticides), estimated asbestos fibres and asbestos quantification. SGS is NATA accredited for all other methods in this batch. Envirolab is NATA accredited for methods in this batch.
Chromatograms supplied as appropriate?	N/A	N/A
Laboratory reports signed by authorised personnel?	Y	All laboratory reports signed by authorised personnel (SGS & Envirolab).

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Method Blank	MB	All results were below the LOR (SGS & Envirolab).

Trip Spike Information

Analyte	Control Spike Concentrations	Trip Spike Concentration	% Recovery	Comments
Sample ID: No TS analysed as part of this batch.				
-	-	-	-	-

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
All	SGS & Envirolab: All laboratory control spike recoveries are within laboratory based DQOs.

Matrix Spike (MS) Analyses

Analyte Group	Comments
All	SGS: Matrix spike recovery for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) exceeded laboratory based data quality objectives (70-130%). *Refer to overall comments* .
-	Envirolab: No MS recoveries reported.

Laboratory Duplicates (LD) Analyses

Analyte Group	Sample ID	Comments
All	-	SGS: All laboratory duplicate RPDs are within laboratory based DQOs.
-	-	Envirolab: No LD RPDs reported.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
Metals	BH03_0.80-0.90	DU2	FD RPD for lead (57%) is not within data quality objectives. (*Refer to overall comments*).

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
-	BH03_0.80-0.90	TR1	All field triplicate RPDs are within DQOs.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
All	-	SGS & Envirolab: All surrogate recoveries are within laboratory based DQOs.

Overall Comments

Envirolab: A sample receipt temperature (11.2˚C) above recommended sample temperature was reported. The elevated temperature is not expected to significantly impact the overall quality of the data as Envirolab was the secondary laboratory and all field triplicate RPDs were within acceptable data quality objectives.

Envirolab: "Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria."

MS recoveries for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) were below the acceptable data quality objectives, indicating the potential for under-reporting of these analytes. As reported by SGS: "Recovery failed acceptance criteria due to matrix interference". It is noted that while this sample (SE196065.001) is not directly associated with this batch (SE196066), it is not considered anonymous as this sample was analysed as part of another batch collected from the site. Refer to the data validation sheet for batch SE196065 for further discussion.

FD RPD for lead (57%) was not within data quality objectives. The high RPD may be attributed to the small laboratory sub-sample size and/or as samples were not homogenised during collection. As a conservative measure, the highest concentration will be used for interpretive purposes.

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Pauline Voukidis**	**Checked By:**	**Rita Bonetti**
Date:	**4/09/2019**	**Date:**	**5/09/2019**

GOLDER

DATA VALIDATION SUMMARY SHEET (Sydney)

Project Name:	**Gran Central Development**	**Project Number:**	**19122955**
Primary Laboratory:	**SGS**	**Work order Number:**	**SE196071**
Secondary Laboratory:	**N/A**	**Work order Number:**	**N/A**
Date Sampled:	**29/07/2019**	**Sample Medium:**	**Soil**

Sample Information

Number of Primary Samples:	**3**	**Number of Triplicate Samples:**	**0**
Number of Duplicate Samples:	**1**	**Number of Other QAQC Samples:**	**1**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by field staff and laboratory personnel.
All requested analysis completed?	N	Sample BH04_0.10-0.20 was not analysed for asbestos WA DoH NEPM due to insufficient sample volume. All other requested analysis completed.
Samples received intact and chilled?	Y	4.8'C, ice present, samples received in good order.
Samples analysed within appropriate holding times?	N	Sample 'Rinsate Water' was extracted one day overdue for TRH, VOCs and volatile petroleum hydrocarbons. All other samples were analysed within appropriate holding times.
Sample volumes sufficient for QC analysis?	Y	Sufficient sample volume was provided for laboratory tests.
Are there non-NATA accredited methods used?	N	SGS is not NATA accredited for Total OP Pesticides (accredited for individual pesticides) and estimated asbestos fibres. SGS is NATA accredited for all other methods in this batch.
Chromatograms supplied as appropriate?	N/A	N/A
Laboratory reports signed by authorised personnel?	Y	All laboratory reports signed by authorised personnel.

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Method Blank	MB	All results were below the LOR. It is noted that surrogate exceedances were reported for the method blank for VOCs in water and volatile petroleum hydrocarbons in water. The surrogate recoveries ranged between 100% and 105% which is considered acceptable.
Rinsate Blank	Rinsate Water	All results were below the LOR.

Trip Spike Information

Analyte	Control Spike Concentrations	Trip Spike Concentration	% Recovery	Comments
Sample ID: No TS analysed as part of this batch.				
-	-	-	-	-

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
All	All laboratory control spike recoveries are within laboratory based DQOs.

Matrix Spike (MS) Analyses

Analyte Group	Comments
All	Matrix spike recovery for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) exceeded laboratory based data quality objectives (70-130%). *Refer to overall comments* .

Laboratory Duplicates (LD) Analyses

Analyte Group	Sample ID	Comments
All	-	All laboratory duplicate RPDs are within laboratory based DQOs.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
PAH	BH04_1.05-1.15	DU1	FD RPDs for BaP (164%), benzo(b-j)fluoranthene (169%), fluoranthene (169%), pyrene (1713%) and sum of 16 PAHs (165%) are not within data quality objectives. *Refer to overall comments* .

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
-	-	-	No FT analysed as part of this batch.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
All	-	All surrogate recoveries are within laboratory based DQOs.

Overall Comments

Sample 'Rinsate Water' was extracted one day overdue for TRH, VOCs and volatile petroleum hydrocarbons. This is not considered to significantly impact the interpretation of the dataset as the exceedance was marginal (1 day) and the sample is a quality control sample. It is further noted that the sample was received by the laboratory in good condition and chilled to 4.8'C.

MS recoveries for copper (67%), nickel (65%), lead (68%) and zinc (29%) in sample SE196065.001 (BH01_0.14-0.18) were below the acceptable data quality objectives, indicating the potential for under-reporting of these analytes. As reported by SGS: "Recovery failed acceptance criteria due to matrix interference". It is noted that while this sample (SE196065.001) is not directly associated with this batch (SE196066), it is not considered anonymous as this sample was analysed as part of another batch collected from the site. Refer to the data validation sheet for batch SE196065 for further discussion.

FD RPDs for BaP (164%), benzo(b-j)fluoranthene (169%), fluoranthene (169%), pyrene (1713%) and sum of 16 PAHs (165%) are not within data quality objectives. The high RPDs may be attributed to the small laboratory sub-sample size and/or as samples were not homogenised during collection. As a conservative measure, the highest concentration will be used for interpretive purposes.

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Pauline Voukidis**	**Checked By:**	**Rita Bonetti**
Date:	**4/09/2019**	**Date:**	**5/09/2019**

Project: Gran Central Development
Duplicate Analysis RPDs
Project No. : 19122955
Batch/es: SE196071

		Sample ID	BH04_1.05-1.15	DU1	N/A		
		Sample Type	Primary	Field Duplicate	Field Triplicate		
		Date Sampled	29/07/2019	29/07/2019	N/A		
						RPDs	
Analyte	**Units**	**LOR**				**Primary vs Duplicate**	**Primary vs Triplicate**
TRH							
TRH C6 - C10 Fraction F1	mg/kg	25	<25	<25	-	ND	-
TRH C6 - C10 Fraction Less BTEX F1	mg/kg	25	<25	<25	-	ND	-
TRH >C10 - C16 Fraction F2	mg/kg	25	<25	<25	-	ND	-
TRH >C10 - C16 Fraction Less Naphthalene (F2)	mg/kg	25	<25	<25	-	ND	-
TRH >C16 - C34 Fraction F3	mg/kg	90	**140**	<90	-	43%	-
TRH >C34 - C40 Fraction F4	mg/kg	120	<120	<120	-	ND	-
TRH C37 - C40 Fraction	mg/kg	100	<100	<100	-	ND	-
TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	210	<210	<210	-	ND	-
TPH							
TRH C6 - C9 Fraction	mg/kg	20	<20	<20	-	ND	-
TRH C10 - C14 Fraction	mg/kg	20	<20	<20	-	ND	-
TRH C15 - C28 Fraction	mg/kg	45	**69**	<45	-	42%	-
TRH C29 - C36 Fraction	mg/kg	45	**87**	<45	-	64%	-
TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	110	**160**	<110	-	37%	-
BTEX							
Benzene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Toluene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Xylenes (m & p)	mg/kg	0.2	<0.2	<0.2	-	ND	-
Xylene (o)	mg/kg	0.1	<0.1	<0.1	-	ND	-
Xylenes (Sum of total) (Lab Reported)	mg/kg	0.3	<0.3	<0.3	-	ND	-
Total BTEX	mg/kg	0.6	<0.6	<0.6	-	ND	-
Metals							
Arsenic	mg/kg	1	**8**	**7**	-	13%	-
Cadmium	mg/kg	0.3	<0.3	<0.3	-	ND	-
Chromium	mg/kg	0.5	**24**	**22**	-	9%	-
Copper	mg/kg	0.5	**3.4**	**3.4**	-	0%	-
Lead	mg/kg	1	**14**	**14**	-	0%	-
Mercury	mg/kg	0.05	<0.05	<0.05	-	ND	-
Nickel	mg/kg	0.5	<0.5	<0.5	-	ND	-
Zinc	mg/kg	2	**5.8**	**5.4**	-	7%	-
OCP							
p,p-DDE	mg/kg		<0.1	<0.1	-	ND	-
Heptachlor & heptachlor epoxide (Sum Lab Repo	mg/kg		<0.1	<0.1	-	ND	-
2,4-DDT	mg/kg	0.1	<0.1	<0.1	-	ND	-
a-BHC	mg/kg	0.1	<0.1	<0.1	-	ND	-
Aldrin	mg/kg	0.1	<0.1	<0.1	-	ND	-
Dieldrin	mg/kg	0.2	<0.2	<0.2	-	ND	-
b-BHC	mg/kg	0.1	<0.1	<0.1	-	ND	-
cis-Chlordane	mg/kg	0.1	<0.1	<0.1	-	ND	-
gamma-Chlordane	mg/kg	0.1	<0.1	<0.1	-	ND	-
d-BHC	mg/kg	0.1	<0.1	<0.1	-	ND	-
DDD	mg/kg	0.1	<0.1	<0.1	-	ND	-
DDT	mg/kg	0.1	<0.1	<0.1	-	ND	-
Endosulfan I	mg/kg	0.2	<0.2	<0.2	-	ND	-
Endosulfan II	mg/kg	0.2	<0.2	<0.2	-	ND	-
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	ND	-
Endrin	mg/kg	0.2	<0.2	<0.2	-	ND	-
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	-	ND	-
Endrin ketone	mg/kg	0.1	<0.1	<0.1	-	ND	-
g-BHC	mg/kg	0.1	<0.1	<0.1	-	ND	-
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	ND	-
Hexachlorobenzene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Isodrin	mg/kg	0.1	<0.1	<0.1	-	ND	-
Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	ND	-
Mirex	mg/kg	0.1	<0.1	<0.1	-	ND	-
o,p-DDD	mg/kg	0.1	<0.1	<0.1	-	ND	-
o,p-DDE	mg/kg	0.1	<0.1	<0.1	-	ND	-
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	ND	-
OPP					-		
OPP (Sum of total)	mg/kg		<1.7	<1.7	-	ND	-
Azinphos-methyl	mg/kg	0.2	<0.2	<0.2	-	ND	-
Bromophos-ethyl	mg/kg	0.2	<0.2	<0.2	-	ND	-
Chlorpyriphos	mg/kg	0.2	<0.2	<0.2	-	ND	-
Diazinon	mg/kg	0.5	<0.5	<0.5	-	ND	-
Dichlorvos	mg/kg	0.5	<0.5	<0.5	-	ND	-
Dimethoate	mg/kg	0.5	<0.5	<0.5	-	ND	-
Ethion	mg/kg	0.2	<0.2	<0.2	-	ND	-
Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	ND	-
Malathion	mg/kg	0.2	<0.2	<0.2	-	ND	-
Methidathion	mg/kg	0.5	<0.5	<0.5	-	ND	-
Parathion	mg/kg	0.2	<0.2	<0.2	-	ND	-
PAH					-		
Acenaphthene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Anthracene	mg/kg	0.1	**0.1**	<0.1	-	0%	-
Benz(a)anthracene	mg/kg	0.1	**0.7**	<0.1	-	150%	-
Benzo(a)pyrene	mg/kg	0.1	**1**	<0.1	-	**164%**	-
Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.2	**1.3**	<0.2	-	147%	-
Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.2	**1.4**	<0.2	-	150%	-
Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.3	**1.4**	<0.3	-	129%	-
Benzo(b)&(j)fluoranthene	mg/kg	0.1	**1.2**	<0.1	-	**169%**	-
Benzo(g,h,i)perylene	mg/kg	0.1	**0.6**	<0.1	-	143%	-
Benzo(k)fluoranthene	mg/kg	0.1	**0.5**	<0.1	-	133%	-
Chrysene	mg/kg	0.1	**0.7**	<0.1	-	150%	-
Dibenz(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Fluoranthene	mg/kg	0.1	**1.2**	<0.1	-	**169%**	-
Fluorene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	**0.6**	<0.1	-	143%	-
Naphthalene	mg/kg	0.1	**0.1**	<0.1	-	0%	-
Phenanthrene	mg/kg	0.1	**0.4**	<0.1	-	120%	-

Created by : PV 04/09/2019
Checked by: RB 05/09/2019

Project: Gran Central Development
Duplicate Analysis RPDs
Project No. : 19122955
Batch/es: SE196071

Sample ID	BH04_1.05-1.15	DU1	N/A	
Sample Type	Primary	Field Duplicate	Field Triplicate	
Date Sampled	29/07/2019	29/07/2019	N/A	

						RPDs	
Analyte	**Units**	**LOR**				**Primary vs Duplicate**	**Primary vs Triplicate**
Pyrene	mg/kg	0.1	**1.3**	<0.1	-	**171%**	-
PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.8	**8.4**	<0.8	-	**165%**	-
1-Methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	ND	-
2-Methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	ND	-
Polychlorinated Biphenyls					-		
Aroclor 1016	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1232	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1242	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1248	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1254	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1260	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1268	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1221	mg/kg	0.2	<0.2	<0.2	-	ND	-
Aroclor 1262	mg/kg	0.2	<0.2	<0.2	-	ND	-
PCB (Sum of Total-Lab Reported)	mg/kg	1	<1	<1	-	ND	-

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Indicates RPD result does not meet the acceptable criteria

Acceptable RPDs: RPD <= 30%

RPD > 30%, Analysis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Created by : PV 04/09/2019
Checked by: RB 05/09/2019

GOLDER

DATA VALIDATION SUMMARY SHEET (Sydney)

Project Name:	**Gran Central Development**	**Project Number:**	**19122955**
Primary Laboratory:	**SGS**	**Work order Number:**	**SE196280**
Secondary Laboratory:	**N/A**	**Work order Number:**	**N/A**
Date Sampled:	**8/08/2019**	**Sample Medium:**	**Water**

Sample Information

Number of Primary Samples:	**1**	**Number of Triplicate Samples:**	**0**
Number of Duplicate Samples:	**0**	**Number of Other QAQC Samples:**	**0**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by field staff and laboratory personnel.
All requested analysis completed?	Y	All requested analysis completed .
Samples received intact and chilled?	Y	0.9'C, ice present, samples received in good order.
Samples analysed within appropriate holding times?	N	All samples were analysed within appropriate holding times, with exception of pH which was extracted and analysed 5 days overdue. *Refer to overall comments* .
Sample volumes sufficient for QC analysis?	Y	Sufficient sample volume was provided for laboratory tests.
Are there non-NATA accredited methods used?	N	SGS is NATA accredited for all methods used in this batch.
Chromatograms supplied as appropriate?	N/A	N/A
Laboratory reports signed by authorised personnel?	Y	All laboratory reports signed by authorised personnel.

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Method Blank	MB	All results were below the LOR. It is noted that one surrogate exceedance was reported for the method blank for VOCs in water. The surrogate recovery was 94% which is considered acceptable.

Trip Spike Information

Analyte	Control Spike Concentrations	Trip Spike Concentration	% Recovery	Comments
Sample ID: No TS analysed as part of this batch.				
-	-	-	-	-

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
All	All laboratory control spike recoveries are within laboratory based DQOs.

Matrix Spike (MS) Analyses

Analyte Group	Comments
All	All laboratory matrix spike recoveries are within laboratory based DQOs.

Laboratory Duplicates (LD) Analyses

Analyte Group	Sample ID	Comments
All	-	All laboratory duplicate RPDs are within laboratory based DQOs.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
-	-	-	-

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
-	-	-	-

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
All	-	All surrogate recoveries are within laboratory based DQOs.

Overall Comments

pH which was extracted and analysed 5 days overdue for the sample collected. As such it is considered that pH results should be used for indicative purposes only.

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Pauline Voukidis**	**Checked By:**	**Rita Bonetti**
Date:	**4/09/2019**	**Date:**	**5/09/2019**

APPENDIX M

Limitations

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