STAGE 1 AND STAGE 2
ENVIRONMENTAL SITE ASSESSMENT

307 - 311 BEXLEY ROAD & 88 - 96
NEW ILLAWARRA ROAD, BEXLEY NORTH NSW

PREPARED FOR TONY SOUEID
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Client:
Tony Soueid
47 Beaufort Street
Croydon Park NSW 2133

Author: S. McCormack
Field Engineer / Scientist: J. Long / A. Chiem / S. McCormack

PHONE +61 (0) 2 9420 3361 MOBILE +61 (0) 431 480 980
ADDRESS 82 bridge street, lane cove nsw 2066 WEB www.geoenvironmental.com.au
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EXECUTIVE SUMMARY

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by Tony Soueid to undertake a preliminary and detailed Environmental Site Assessment (ESA) at 307 - 311 Bexley Road & 88 - 96 New Illawarra Road, Bexley North, New South Wales (herein referred to as the 'site'). The site covers a combined area of approximately 4,200m^2 and comprises nine allotments which are legally referred to as Lots 3, 4, 5 and 6 in Deposited Plan 508629, Lots A and B in DP388204, Lot 1 in DP1045200, Lot 1 in DP 400341 and Lot 35 in DP663036.

The ESA was required to support a planning proposal which relates to the proposed rezoning of the land to R4 – High Density Residential.

The objective of the ESA was to address the requirements of Council's Contaminated Land Policy (reference 1) and the provisions of the *State Environmental Planning Policy No. 55 – Remediation of Land* (reference 2) by providing a detailed assessment of contamination and in turn an assessment of the suitability of the site for the proposed land-use and possible constraints on future site development. In this regard, GEE has completed a *Stage 1 - Preliminary Site Investigation* (Stage 1 - PSI) and a *Stage 2 - Detailed Site Investigation* (Stage 2 DSI) in accordance with the *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (reference 3) and NEPM (2013) Schedule B(2) *Guideline on Site Characterisation* (reference 4).

The scope of works comprised a:

- ◊ A review of the previous investigation report,
- ◊ Review of the environmental and physical setting in which the site lies, including geology, hydrogeology and topography,
- ◊ Review of the history of the site using readily available records and historical aerial photographs,
- ◊ Detailed site inspection for potential sources of contamination, and
- ◊ A detailed soil and groundwater sampling and analysis program to characterise potential contamination in accessible areas across the site.

A summary of the information obtained and results of this assessment is presented below.

Site History and Potential For Contamination

The historical information indicates that the site was originally part of a larger parcel of land (likely rural/residential) before being progressively subdivided between 1914 and 1940 while owned by NSW Realty Co Limited. Initially the southern part of the site (88 and 90 New Illawarra Road and 311A Bexley Road) was subdivided and sold as two allotments in 1918 and has since been owned by various individuals. The allotments were further subdivided in the late 1960s to create the residential allotment known as 311A Bexley Road (Lot 5 DP508629). Historical aerial photographs suggest that this part of the site has predominately been used for residential purposes (low density). However, the dwelling at No. 90 New Illawarra Road is also known to have been partly used for commercial purposes, including a Butchers in the 1970s and 1980s.

The central part of the site (94 New Illawarra Road and 311 Bexley Road) was subdivided by NSW Realty Co Limited and sold off in 1919 as two allotments which currently exist. Historical aerial photographs indicate that this part of the site has been occupied by residential dwellings (low density) and associated garages, sheds and pools.

The northern part of the site (including 307 – 309 Bexley Road and 96 New Illawarra Road) was sold by NSW Realty Co Limited in 1940 and subdivided into the existing allotments by 1954. 96 New Illawarra Road (Lot A in DP388204) was developed into a dwelling circa 1954, while the remaining part of the land was developed into a service station (including mechanical repair workshop) soon after (late 1950s).

Of particular significance to this investigation are the activities associated with the service station at the northern end of the site, specifically the storage and use of fuels and mechanical repair of vehicles.

Soil Conditions

Soil conditions across the site were assessed at seventeen borehole locations positioned in accessible areas across the site and targeting areas of potential contamination. The number of sampling points exceeds the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards, and it is the opinion of GEE that the number of sampling points was sufficient to support the planning proposal.

The majority of the boreholes drilled by GEE were dry during drilling and also upon completion. Exceptions included some seepage water encountered below 1.6m in

borehole BH102 and slight seepage noted between a depth of 2.0m and 2.8m depth within borehole BH107.

The subsurface conditions, as observed in the boreholes, typically comprised fill material over sandy clay soil which was underlain by sandstone bedrock. The thickness of the topsoil and/or fill unit ranged from 0.3m to 2.7m depth while the depth to the bedrock formation ranged from 0.75m to 2.7m depth.

During the drilling of boreholes, there were no unusual odours (that could be potentially associated with contamination) noted. Additionally, no potentially Asbestos Containing Materials (ACM) was observed below ground during sampling and logging.

GEE submitted a total of 41 primary soil samples from the 17 boreholes to Envirolab for NATA accredited laboratory analysis of metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc), TRH, BTEX, PAHs, OCPs, PCBs and asbestos. The analytical results were compared against relevant set of ecological and health-based Site Acceptance Criteria (SAC) appropriate for the proposed land-use (high density residential).

In summary, the fill and natural soil was found to be free of significant contamination which would impact on the proposed future high density development of the site.

Groundwater Conditions

Groundwater conditions were assessed using three pre-existing monitoring wells (GW01 to GW03) and three recently installed monitoring wells (BH102, BH105, BH107).

The stabilised level of groundwater within the wells installed within BH102, BH107, GW01, GW02 and GW03 was measured on the 14th November 2016 (approximately 13 days after installation of the wells) at depths of 1.28m, 1.78m, 2.21m, 2.13m and 1.34m bgs respectively. The well within borehole BH105 was dry to a depth of 2.4m bgs. Water within the wells was slightly to moderately acidic (4.5<pH<6.5) and low in conductivity.

The water encountered in the wells is considered to be perched water flowing along the soil/bedrock interface and such water is normally significantly influenced by rainfall events and therefore its presence can be intermittent. This is supported by the fact that the well installed within borehole BH105 was dry to a depth of 2.4m.

Taking into account the approximate surface elevation at each of the well locations, it is inferred that the perched water is following the regional topography and flowing in a northerly to north-easterly direction. Although the flow direction is expected to have been significantly altered by the presence of UST tankpit excavations in the northern end of the site.

To assess the presence of contamination within the groundwater, a sample of water was collected and submitted to Envirolab for NATA accredited analysis of dissolved metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury), TRH, BTEX, PAHs and Phenols. The analytical results were then compared against a set of Groundwater Assessment Criteria (GAC) considered appropriate for the environmental setting of the site.

Conclusion and Recommendations

Based on observations made during the field investigations, the sampling and analysis program conducted at the site (including that completed previously by STS), the proposed land-use and with respect to relevant statutory guidelines, GEE conclude that the site can be made suitable for the proposed land-use described in the planning proposal, subject to the excavation, removal and validation of the existing UPSS. In accordance with Council's Contaminated Lands Policy and SEPP 55, a Remedial Action Plan should be prepared which details the methodology for the excavation, removal and validation of the existing UPSS.

1 PROJECT INFORMATION

1.1 INTRODUCTION AND OBJECTIVES

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by Tony Soueid to undertake a preliminary and details Environmental Site Assessment (ESA) at 307 - 311 Bexley Road & 88 - 96 New Illawarra Road, Bexley North, New South Wales (herein referred to as the 'site'). The site covers a combined area of approximately 4,200m^2 and comprises the following allotments:

- Lots 3, 4, 5 and 6 in Deposited Plan (DP) 508629,
- Lots A and B in DP 388204,
- Lot 1 in DP 1045200,
- Lot 1 in DP 400341, and
- Lot 35 in DP 663036.

A site survey plan is provided for reference in **Appendix A**, while a site location map is provided as **Figure 1**.

The ESA was required to support a planning proposal which relates to the proposed rezoning of the land to R4 – High Density Residential.

The objective of the ESA was to address the requirements of Council's Contaminated Land Policy (reference 1) and the provisions of the *State Environmental Planning Policy No. 55 – Remediation of Land* (reference 2) by providing a detailed assessment of contamination and, in turn, an assessment of the suitability of the site for the proposed land-use and possible constraints on future site development.

In this regard, GEE has completed a *Stage 1 - Preliminary Site Investigation* (Stage 1 - PSI) and a Stage *2 – Detailed Site Investigation* (Stage 2 – DSI), in accordance with the *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (reference 3) and NEPM (2013) Schedule B(2) *Guideline on Site Characterisation* (reference 4). The investigation was also conducted in accordance with relevant Office of Environment and Heritage (OEH)[1] endorsed guidelines, the SEPP 55 and relevant Australian Standards.

[1] The OEH incorporates the NSW Environment Protection Authority (EPA) and was formerly known as the NSW Department of Environment and Climate Change and Water (DECCW), the NSW Department of Environment and Climate Change (DECC) and NSW Department of Environment and Conservation (DEC).

1.2 PREVIOUS INVESTIGATIONS

GEE understands that a contamination assessment had previously been completed in 2011 for the northern part of the site (i.e. 307 – 309 Bexley Road), which is currently occupied by a Metro Petroleum service station. However, GEE has not been provided with a copy of this report.

More recently (early 2016), STS GeoEnvironmental Pty Ltd (STS) completed a geotechnical investigation at the northern end of the site (reference 5). The geotechnical report included:

- The drilling of five boreholes (BH1 to BH5 – Refer **Figure 2**) across the northern part of the site (i.e. 307-309 Bexley Road) using a mechanical drilling rig equipped with solid flight augers,
- The performance of Dynamic Cone Penetrometer (DCP) tests at each borehole location to assess the consistency and/or relative density of the soil profile,
- Collection of samples from each of the borehole, and
- Analysis of selective samples for pH, sulphate and chloride content to provide a preliminary assessment of the aggressivity of the soil profile.

The subsurface conditions encountered by the STS boreholes comprised concrete and/or asphalt over fill material which was underlain by natural (i.e. previously undisturbed) sandy clays, clayey sands and weathered sandstone bedrock. The fill layer extended to a maximum depth of 1.6m, while the bedrock formation was encountered at depths of between 2.0m and 4.6m.

1.3 SCOPE OF WORKS

The scope of works completed by GEE, to achieve the above objectives, is provided below:

- A review of the previous investigation report,
- A review of the environmental and physical setting in which the site lies, including geology, hydrogeology and topography,
- A review of the history of the site using readily available records and historical aerial photographs,
- A site inspection for potential sources of contamination,
- Field investigations including:

- The drilling of seventeen boreholes (BH101 to BH109 and BH201 to BH208) across accessible areas of the site,
- The installation of a groundwater monitoring well within three of the nine boreholes. These three wells compliment three existing wells at the northern end of the site within the existing Metro Petroleum Service Station. The origin of the existing wells is not known although they are believed to have been installed during the 2011 contamination assessment mentioned above. For the purpose of this assessment the former wells were labelled as Well GW01, GW02 and GW02 (**Figure 2**),
- Sampling of soil from the boreholes, and
- Sampling of groundwater from the groundwater wells.

◊ Laboratory analysis of selected soil samples for a broad suite of potential contaminants,

◊ Laboratory analysis of the groundwater sample for a broad suite of potential contaminants, and

◊ Preparation of this report including the comparison of the laboratory analytical results against relevant NSW OEH endorsed guidelines.

2 SITE IDENTIFICATION

A summary of the site location details is provided below, while a site location map is provided as **Figure 1**:

Street Address:	307 - 311 Bexley Road & 88 - 96 New Illawarra Road, Bexley North (**Figure 1**)
Legal Description:	Lots 3, 4, 5 and 6 in Deposited Plan 508629, Lots A and B in DP388204, Lot 1 in DP1045200, Lot 1 in DP 400341 and Lot 35 in DP663036.
Coordinates (MGA 56):	325760m E, 6242900m N
Local Government Area:	Bayside (formerly Rockdale)
Site Area:	Approximately 4,200m^2
Current Zoning:	Low Density Residential (R2)[2]
Current Use:	Mixture of low density residential and commercial/industrial (Metro Service Station)
Proposed Zoning:	High Density Residential (R4)
Proposed Use:	Commercial-residential mixed use

[2] Bayside (Rockdale) Local Environment Plan (LEP) 2011

3 SITE HISTORY

The history of the site was researched to provide an understanding of past and present site activities, which in turn may indicate sources and areas of potential contamination as well as potential chemicals of concern.

Information obtained and reviewed included:

- Historical aerial photographs dating back to 1943, as supplied by Lotsearch Pty Ltd using sources including the NSW Land and Property Information, or online aerial photography such as Google Earth, and Nearmap Limited (**Appendix B**).
- Historical title information, dating back to 1910, obtained from Hazlett Information Services (**Appendix C**).
- Historical business directory records from 1950, 1970 and 1991 which is provided in the Lotsearch Report (**Appendix B**).
- A search of dangerous good licences held with WorkCover NSW which often includes underground fuel storage tanks (USTs) (**Appendix D**).
- A search of the contaminated land database, which is available on the OEH website and reiterated in the Lotsearch report (**Appendix B**). This search reveals if there has been any past records of written notices issued on the site by OEH under the Contaminated Land Management Act 1997 (CLM Act), including preliminary investigation orders. Additionally, the search can reveal if the site has ever been notified to the OEH under Section 60 duty to report contaminated sites, of the CLM Act.

GEE notes that a search of WorkCover NSW records for licenced dangerous goods was not completed for the residential properties because it was considered highly unlikely that such dangerous goods would be stored or used.

3.1 HISTORICAL AERIAL PHOTOGRAPHS

Historical aerial photographs were examined for the years 1943, 1955, 1961, 1965, 1970, 1982, 1991, 2000, 2007 and 2014. A description of the site from each photograph is provided below while a copy of the aerial photography is provided in **Appendix B**:

1943 The earliest available aerial image reveals that Bexley Road and New Illawarr Roads were both formed. The northern part of the site (currently occupied by Metro Petroleum) was undeveloped land covered by grass with a tree (or two)

present in the north-western corner. Elsewhere, there was a residential dwelling occupying 94 New Illawarra Road (Lot 1 DP400341), 90 New Illawarra Road (Lot 4 DP508629) and 88 New Illawarra Road (Lot 3 DP508629) and each of these properties appeared to extend east to Bexley Road where there were a few sheds and or garages.

Surrounding land was predominately residential (low density) with much vacant grass covered land.

1955 By 1955 a residential dwelling had been constructed on 96 New Illawarra Road (Lot A DP388204) and 311 Bexley Road (Lot 6 DP 508629). No. 311A Bexley Road appeared to be the rear yard of the dwelling at 88 and 90 New Illawarra Road. The northern part of the site remained undeveloped.

On surrounding land there has been increased development, particularly low density residential.

1961 By 1961 the Service Station at the northern end of the site (Lot 1 DP1045200 and Lot B DP 388204) had been constructed. Elsewhere a new and larger residential dwelling had been constructed at 94 New Illawarra Road (Lot 1 DP400341).

On surrounding land there has been increased development for residential and commercial land use, with the most obvious addition being a large residential-commercial development to the north (which is known to be a series of shops with residential apartments above).

1965 There appears to be little change to the site since 1961. The main change on surrounding land is the development of residential apartment buildings on the land immediately to the south of the site.

1970 By 1970 the land at the rear of 88 and 90 New Illawarra Road had been subdivided creating 311A Bexley Road) and a new residential dwelling had been constructed.

On surrounding land there appears to be little change when compared to the 1965 image.

1982 There appears to be little change to the site and surrounding land when compared to the 1970 image.

1991 There appears to be little change to the site and surrounding land when compared to the 1982 image.

2000 There appears to be little change to the site and surrounding land when

compared to the 1991 image.

2007 There appears to be little change to the site and the surrounding land when compared to the 2000 image.

2014 There appears to be little change to the site and the surrounding land when compared to the 2007 image.

Based on review of the aerial photographs, the most significant observation was the presence of the Service Station located at the northern end of the site, which is currently operated by Metro Petroleum. Elsewhere the site has been occupied by residential dwelling and associated sheds/garages since the earliest available photograph from 1943. However, the author of this report can confirm from local knowledge that the building at 90 New Illawarra Road was also partly used for commercial purposes some 20 to 30 years ago, specifically as butcher on the ground floor.

3.2 HISTORICAL TITLE INFORMATION

A copy of the historical title information obtained from circa 1910 to present is provided for reference in **Appendix C,** along with a summary table listing the past proprietors (owners) and leaseholders of the allotments.

The historical information indicates that the site was originally part of a larger parcel of land (likely rural/residential) before being progressively subdivided between 1914 and 1940, while owned by NSW Realty Co Limited. A summary of the title information is provided below and has been separated into the main areas of the site:

- *307-309 Bexley Road (Lot 1 DP1045200 and Lot B DP 388204 and Lot 35 DP 663036)*

From 1910 to 1954 this part of the site was owned by various individuals and when cross referenced with aerial photographs the land was undeveloped. In 1954 the land was sold to HC Sleigh Limited which is known to have operated Golden Fleece Service Stations. Caltex purchased the site from Golden Fleece (HC Sleigh Limited) in 1995 before being transferred to an individual (Daniel Anthony Ishkhanian) in the same year. Since then the site has been owned by other individuals and a company called Oriental Pacific Holdings Pty Limited which a Google search suggests is also related to the petroleum/service station industry.

In summary the title records support the aerial photographs and indicate that this part of the site has been a service station since 1954 to present. The current owners are Mtanios and Nazah Soueid and it is leased to Michael and Raed Hanna.

- 88 – 96 New Illawarra Road (Lot A DP 388204, Lot 1 DP400341 and Lots 3,4 and 6 DP 508629), 311 and 311A Bexley Road (Lots 5 and 6 in DP508629)

These allotments were progressively formed by subdivision between 1918 and 1962 and have all been owned by various individuals. This supports the historical aerial photographs which suggest that this part of the site has predominately been used for residential purposes (low density). However, the dwelling at No. 90 New Illawarra Road is also known to have been partly used for commercial purposes, including a Butchers circa 1980s.

3.3 BUSINESS DIRECTORY LISTINGS

A search of the historical business directory listings from 1950, 1970 and 1991 was completed to assist with determining any past land-use activities, and in particular past land-use activities that may cause contamination. A list of some activities that may cause contamination is provided in Table 1 of SEPP 55 (reference 2) and includes motor garages, dry cleaners and service stations.

The results are provided in the Lotsearch Report (**Appendix B**) and they confirmed the existence of a service station and motor vehicle repair centre in the northern part of the site in 1950, 1970 and 1991. The search also confirmed the presence of a Butchers at 90 New Illawarra Road both in 1950 and 1970 business directory.

Beyond the subject site there is another service station with mechanical workshop listed on the 1970 and 1991 director which is located approximately 60 to 70 m to the north of the site. There is also a dry cleaners located approximately 100m to the north/north-east. This service station and dry cleaners are both expected to be down-hydraulic gradient of the site and therefore unlikely to have any impact on the site.

3.4 WORKCOVER NSW

WorkCover NSW has searched their Stored Chemical Information Database and has provided records of licensed dangerous goods (e.g. fuel) being kept on the premises. The WorkCover documents are provided in **Appendix D** and indicate that there are six Underground fuel Storage Tanks (USTs) located on the site. The earliest record of the USTs was from 1964 when the service station was being operated by Golden Fleece.

According to the plan of the site at this time there were four USTs present (identified herein as Tanks 1 to 4) and these were likely installed at the same time that the service station was developed (i.e. late 1950s). Around 1970 another UST was installed (Tank 5) and by mid 1970s two of the original USTs (Tanks 3 and 4) were abandoned and presumably remain below ground. Circa 1979 another larger UST was installed (Tank 6) and a small kerosene UST was also installed (Tank 7). Most recently (circa 1995) the largest UST (Tank 8) was installed, while recent plans provided by WorkCover NSW suggest that another tank (herein referred to as Tank 9) exists adjacent to the vehicle workshop and is used for waste oil. GEE has not confirmed the size of the waste oil tank or whether it was an Above ground Storage Tank (AST) or a UST.

A table summarising the UST details including estimated installation date, size and contents is provided in **Table 1**. The approximate locations of the USTs are shown on **Figure 3**.

Table 1: UST Details

Tank Number	Location	Installed Date	Contents	Size	Status
Tank 1	Next to main canopy	Approx 1959	Super (now unleaded)	7,500L	In Use
Tank 2	North of Office/Shop	Approx 1959	Super (now diesel)	7,500L	In Use
Tank 3	North of Office/Shop	Approx 1959	Not known	3,700L	Abandoned
Tank 4	North of Office/Shop	Approx 1959	Not known	3,700L	Abandoned
Tank 5	Northern End	Approx 1970	Super (now unleaded)	27,600L	In Use
Tank 6	Northern End	Approx 1979	Super (now unleaded)	27,600L	In Use
Tank 7	West of office/shop	Approx 1979	Kerosene	2,000L	Likely abandoned
Tank 8	South-eastern part of service station	Approx 1995	unleaded	34,000L	In Use
Tank 9	Adjacent to the Workshop	Approx 1995	Waste oil	Not known	In Use

According the dangerous goods licencing information, LPG is also stored on site in above ground tanks.

3.5 CONTAMINATED LAND DATABASE

A search of the contaminated land database, which is available on the Office of Environment and Heritage (OEH) website, was conducted and revealed there has been no past record of written notices issued on the site, by the OEH, under the Contaminated Land Management Act 1997 (CLM Act), including preliminary investigation orders. Additionally, the site has never been notified to the OEH under Section 60 duty to report contaminated sites, of the CLM Act.

Beyond the subject site, there were no properties within a 1km radius that that has been notified to the NSW EPA under Section 60 of the CLM Act or had notices issued on them by the OEH.

3.6 SUMMARY OF SITE HISTORY INFORMATION

The historical information indicates that the site was originally part of a larger parcel of land (likely rural/residential) before being progressively subdivided between 1914 and 1940 while owned by NSW Realty Co Limited. Initially the southern part of the site (88 and 90 New Illawarra Road and 311A Bexley Road) was subdivided and sold as two allotments in 1918 to George and Annie Gibbons and has since been owned by various individuals. The allotments extended between New Illawarra Road to the west and Bexley Road to the east and were further subdivided in the late 1960s to create the residential allotment known as 311A Bexley Road (Lot 5 DP508629). Historical aerial photographs suggest that this part of the site has predominately been used for residential purposes (low density). However, the dwelling at No. 90 New Illawarra Road is also known to have been partly used for commercial purposes, including a Butchers in the 1970s and 1980s.

The central part of the site (94 New Illawarra Road and 311 Bexley Road) was subdivided by NSW Realty Co Limited and sold off in 1919 as two allotments which currently exist. Historical aerial photographs indicate that this part of the site has been occupied by residential dwellings (low density) and associated garages, sheds and pools.

The northern part of the site (including 307 – 309 Bexley Road and 96 New Illawarra Road) was sold by NSW Realty Co Limited in 1940 and subdivided into the existing allotments by 1954. No. 96 New Illawarra Road (Lot A in DP388204) was developed into a dwelling circa 1954, while the remaining part of the land was developed into a service station (including mechanical repair workshop) soon after (late 1950s).

Of particular significance to this investigation are the activities associated with the service station at the northern end of the site, specifically the storage and use of fuels and mechanical repair of vehicles.

4 SITE CONDITION AND SURROUNDING ENVIRONMENT

4.1 SITE DESCRIPTION

The site bounded by New Illawarra Road to the west, Bexley Road to the east a park/recreational space to the north and residential land to the south.

At the time of the field investigation, a Metro service station, with shop and mechanical workshop, occupied the northern end of the site (307-309 Bexley Road). The buildings in this part of the site were constructed of fibro and brick with a corrugated iron roof. Additionally, there was a metal awning extending from the eastern side of the shop over three fuel dispensers. A fourth fuel dispenser was located midway along the northern boundary. There were several underground fuel Storage Tanks (USTs) across the Metro Service station property and the surface predominately comprised concrete or asphalt pavements with some garden beds along the perimeter of the property. The exact number of USTs was not confirmed but based on WorkCover NSW documents it is believed that there are nine tanks present (refer to **Table 1** and **Figure 3**).

Three groundwater monitoring wells were also observed across the Metro Service station forecourt and are likely from the former contamination assessment completed in 2011. As previously mentioned, GEE has not been provided with a copy of this report. Each of these wells were used to sample groundwater as part of this investigation and for the purpose of this investigation they were labelled GW01 to GW03. Their approximate locations are shown on **Figure 2**.

The remainder of the site was occupied by residential dwellings, associated garages, sheds and swimming pools, although the dwelling at 94 New Illawarra Road was being used for commercial purposes (specifically an office for the Mental Health Recovery Institute.

4.2 TOPOGRAPHY

During the site investigation, it was noted that the site was situated on a slope, highest in elevation at the southern end of the site, dipping down towards the north and north-east at approximately 5% to 10%.

4.3 GEOLOGY AND SOILS

4.3.1 *Regional*

A review of the Sydney 1:100,000 regional geological map (reference 6) indicates that the site is situated on the geological contact between the Ashfield Shale and

Hawkesbury Sandstone formations. The Ashfield Shale formation comprises "*…black to dark-grey shale and laminite"* whilst the Hawkesbury Sandstone typically consists "*...medium to coarse-grained quartz sandstone, very minor shale and laminite lenses".*

A review of the regional soils map (reference 7) indicates the site is located within the Gymea Soil Landscape Group, recognised by undulating to rolling rises and low hills on Hawkesbury Sandstone. Local reliefs are between 20-80m while slopes are typically between 10-25% in gradient. Soils of the Gymea Group are typically erosional sands and clays, have very low soil fertility and form a high soil erosion hazard.

4.3.2 *Local*

The subsurface conditions encountered by the STS boreholes (reference 5) comprised concrete and/or asphalt over fill material which was underlain by natural (i.e. previously undisturbed) sandy clays, clayey sands and weathered sandstone bedrock. The fill layer extended to a maximum depth of 1.6m, while the bedrock formation was encountered at depths of between 2.0m and 4.6m.

4.4 HYDROGEOLOGY

Permanent groundwater is likely to be confined or partly confined within discrete, water-bearing zones within the bedrock formation. However, intermittent 'perched' water seepage is likely to occur at the soil-bedrock interface following heavy and prolonged rainfall events.

Groundwater flow is dominated by water movement through fractures or joints, where stress has caused partial loss of cohesion in the rock, with evidence of potential water bearing fractures usually the presence of clay or iron-staining along the face of joints.

4.5 ACID SULFATE SOIL POTENTIAL

Acid Sulfate Soil is naturally occurring sediments and soils containing iron sulfides (principally iron sulfide, iron disulfide or their precursors). Oxidation of these soils through exposure to the atmosphere or through lowering of groundwater levels results in the generation of sulfuric acid.

Land that may contain potential acid sulfate soils was mapped by the NSW Department of Land and Water Conservation (DLWC) and based on these maps local Councils produced their own acid sulfate soil maps to be used for planning purposes.

The Acid Sulfate Soils Map produced by the NSW Department of Planning and Environment, via interactive online mapping, indicates that the site lies within area defined as "*Class 5*". In accordance with Clause 6.1 of Council's Local Environment Plan (LEP) 2011, a preliminary assessment of acid sulfate soil and potentially a management plan is recommended for any "*Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land*".

Firstly, the surface elevation is greater than 5m AHD (approximately between 10-20m AHD). Secondly, the maximum depth of proposed excavation is expected to be 7m below the ground surface (bgs) which equates to a bulk excavation level which is significantly greater 1m AHD. Additionally, there is no need for de-watering which would reduce the water table in adjoining Class 1 to Class 4 land below 1m AHD, which according to the acid sulphate maps produced by Council, is approximately 250m west of the site. In this regard, there is no need for an acid sulphate soil assessment or management plan

5 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) is a representation, or summary, of information obtained regarding potential contamination sources, receptors and exposure pathways between the sources and receptors. The key elements of a CSM include:

- ◊ known and potential sources of contamination and contaminants of concern, including the mechanisms of contamination (such as 'top down' spills or sub-surface releases from corroded tanks or pipes),
- ◊ potentially affected media (such as soil, sediment, groundwater, surface water, indoor and ambient air),
- ◊ human and ecological receptors, and
- ◊ potential and complete exposure pathways.

GEE notes that this CSM is based on existing information (i.e. the historical information and the review of the site physical and environmental setting).

5.1 CONTAMINANT SOURCES

Based on GEE's knowledge of the site, including review of the site's history and physical and environmental setting, the main sources of potential contamination include:

- ◊ *Past development of the site, specifically the potential for contaminated fill.*

  With any site development works there is a possibility that fill material was used to raise site levels above predicted flood levels, or to create a level building platform. When sourced from an unknown origin, the quality of the fill is also unknown and potentially contaminated. Based on the regional topography, historical aerial photographs and an intrusive investigation completed by STS, filling up to 2.0m depth was encountered at the northern end of the site.

- ◊ *Current use of the site as a petrol station and auto-repair workshop.*

  This may have resulted in 'top down' contamination of fuels from the service pumps and the fuels, oils, paints, and solvents during the machinery operations. However, the concrete pavement / floor slab across the site would have minimised any migration of contaminants into the ground.

- ◊ *Current storage and use of petrol / diesel in USTs.*

  The USTs and any associated infrastructure has the potential to cause significant soil and groundwater contamination if leakage occurs. There is also the potential

for 'top down' spills or leaks of the fuel/solvents during filling and extraction of the products from the USTs, however, the concrete pavement would have minimised any migration of contaminants into the ground.

5.2 POTENTIAL CONTAMINANTS OF CONCERN

A summary of the potential contaminants of concern attributed to the fill is summarised below in **Table 1**.

Table 1: Summary of Potential Contamination

Potential Contaminating Activity	Area of Environmental Concern (AEC)	Chemical of Potential Concern (COPC)
Past filling	Entire Site	Metals, TRH, Polycyclic Aromatic Hydrocarbons (PAHs), Pesticides (OCPs), PCBs and Asbestos[3]
Current Vehicle Repair Shop	The likely use and storage of fuel products and oil	TRH, BTEX, Lead, PAHs, Phenols.
Current UST	Leakage of current contents and existing petroleum hydrocarbon impacted water	TRH, BTEX, Lead

5.3 POTENTIAL OR KNOWN CONTAMINATED MEDIA

Potential contaminated media is the fill layer across the site and natural soil and/or bedrock in the vicinity of the existing USTs. Groundwater is likely to also be impacted, particularly nearby the existing USTs.

5.4 CONTAMINANT RECEPTORS

Potential receptors to the contamination include workers engaged to construct the proposed development including earthworks contractors. Future users of the site are not expected to be impacted because the majority of the site will be excavated to facilitate the construction of a basement.

5.5 POTENTIAL EXPOSURE PATHWAYS

At this preliminary stage, potential exposure pathways include direct contact for workers on site and future users of the site.

[3] These are common contaminants of concern for developed areas across Sydney.

6 SAMPLING AND ANALYSIS PROGRAM

The sampling and analysis program was designed with reference to the site's history and a recent site inspection. The purpose of the program was to provide a preliminary assessment of the soil and groundwater conditions across the entire site, particularly in areas of environmental concern.

In accordance with the NSW DEC *Contaminated Sites: Guidelines for NSW Site Auditor Scheme* (reference 8), the Data Quality Objectives (DQOs) process was used to define the type, quantity and quality of the data needed to support decisions relating to the environmental condition of a site. Details of the DQO process adopted for the soil sampling and analysis program is provided in **Appendix E**.

6.1 SAMPLING PROGRAM

The sampling program was undertaken in two stages by Stephen McCormack from GEE and comprised:

- ◊ The drilling of seventeen boreholes (BH101 to BH109 and BH201 to 208) in accessible areas across the site,
- ◊ Installation of a groundwater monitoring well within three of the nine boreholes (BH102, BH105 and BH107),
- ◊ The collection of soil samples from each borehole for subsequent selective laboratory analysis, and
- ◊ The collection of a groundwater sample from each of the groundwater monitoring wells installed on the site, for subsequent laboratory analysis.

6.1.1 *Borehole Drilling Operations and Logging*

Fieldwork was completed in two stages and prior to the commencement of the bores a scan for potential underground services and utilities was completed by a specialist contractor and cross-checked with the results of a Dial Before you Dig (DBYD) search.

The initial stage of fieldwork was completed in November 2016 and comprised the drilling of nine boreholes (BH101 to BH109) in accessible areas across the site with a particular focus on the service station which represented the most significant risk of contamination. The second stage of fieldwork was completed in July 2017 and comprised the drilling of an additional eight boreholes (BH201 to BH208) to provide increased coverage across the site.

The number of sampling points (boreholes), when combined with the STS boreholes, exceeds the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards (reference 10 and 11) and was considered by GEE to be appropriate for the current and past land-use.

The boreholes were positioned to provide broadly even coverage across the site, subject to the constraints of existing buildings and buries infrastructure. The boreholes were drilled using either an 85mm diameter stainless steel hand auger operated by Stephen McCormack from GEE, or with a mechanical Hanjin D&B track rig that was owned and operated by Total Drilling Pty Ltd and equipped with Solid Flight Augers (SFA) and a tungsten-carbide drill bit (TC-bit). The hand auger was used in areas where the mechanical rig could not access.

The majority of boreholes drilled by GEE were dry during drilling and also upon completion. Exceptions included some seepage water encountered below 1.6m in borehole BH102 and slight seepage noted between a depth of 2.0m and 2.8m depth within borehole BH107.

With the exception of borehole BH104, the boreholes were extended through any fill material into the natural soil profile before terminating on, or within, the underlying sandstone bedrock formation at depths of between 0.75m and 3.8m below ground surface (bgs). Borehole BH104 refused on an obstruction within the fill profile (likely concrete) at a depth of 1.2m bgs.

To minimise cross contamination between sampling locations, the hand auger and the lead SFA was washed with Decon90, a laboratory grade cleaning agent and decontaminant, at the start of the fieldwork and after each boreholes. The auger was then rinsed vigorously with water after to ensure the removal of all traces of contamination as well as the cleaning agent.

During drilling, the encountered fill material and any natural soil was geologically logged, taking care to describe the presence and depth of any adverse aesthetics such as discolouration or odours, of which there were none. Detailed descriptions of the subsurface conditions on site are provided in the borehole logs provided in **Appendix F**.

A summary of the borehole information, including total depth, is provided in **Table 2** and their locations are shown on **Figure 2**. Also included in Table 1 and Figure 2 are details and location of the geotechnical bores completed by STS (reference 5).

Table 2: Summary of the Borehole Information

Borehole ID	Date Completed	Drilling Method	Total Depth	Depth of Filling [1]	Depth to Bedrock	Well Screen Interval
			(m BGS)	(m BGS)	(m BGS)	(m BGS)
GEE Boreholes						
BH101	1 Nov 2016	Mechanical	3.8	0.4	2.7	--
BH102	1 Nov 2016	Mechanical	2.4	2.0	2.0	1.0 – 2.2
BH103	1 Nov 2016	Mechanical	1.4	1.1	1.1	--
BH104	1 Nov 2016	Mechanical	1.2	>1.2	--	--
BH105	1 Nov 2016	Mechanical	2.4	1.05	2.3	1.15 – 2.35
BH106	1 Nov 2016	Mechanical	2.2	0.6	1.9	--
BH107	1 Nov 2016	Mechanical	2.8	0.7	1.4	1.6 – 2.8
BH108	1 Nov 2016	Hand Auger	0.75	0.3	0.75	--
BH109	1 Nov 2016	Hand Auger	1.35	0.7	1.35	--
BH201	19 Jul 2017	Hand Auger	1.6	1.0	--	--
BH202	19 Jul 2017	Hand Auger	1.8	1.3	--	--
BH203	19 Jul 2017	Hand Auger	1.2	0.6	--	--
BH204	19 Jul 2017	Hand Auger	0.7	>0.7	--	--
BH205	19 Jul 2017	Hand Auger	1.0	0.5	--	--
BH206	19 Jul 2017	Hand Auger	1.1	0.6	--	--
BH207	19 Jul 2017	Hand Auger	1.0	0.4	--	--
BH208	19 Jul 2017	Hand Auger	1.0	0.5	--	--
STS Boreholes 2015						
BH1	14 Dec 2015	Mechanical	3.2	0.2	3.0	--
BH2	14 Dec 2015	Mechanical	0.6	>0.6	--	--
BH3	14 Dec 2015	Mechanical	5.0	1.6	4.6	--
BH4	14 Dec 2015	Mechanical	2.2	0.6	2.0	--
BH5	14 Dec 2015	Mechanical	0.8	>0.8	--	--

m BGS = metres below ground surface
Note 1: Depth of fill included topsoil, concrete and any soil which had been previously disturbed.

6.1.2 *Soil Sampling*

A total of 54 primary samples were collected from the seventeen GEE boreholes. This included a near-surface sample (approximately 0 – 200mm depth), followed by samples at regular intervals or changes in soils type. Each sample was collected by hand using dedicated, disposable nitrile gloves in general accordance with techniques described in Australian Standard AS4482.2 (reference 9) and NEPM (2013 – reference 4), to maintain the representativeness and integrity of the samples. The soil was then placed in laboratory supplied, acid washed glass jars.

Field screening of samples for the potential presence of volatile contaminants, such as fuel, was not carried out, however, there was no obvious hydrocarbon odour noted during the fieldwork and the majority of near surface soil samples were analysed for volatile component of Total Petroleum Hydrocarbons, which is more conclusive than field screening with a PID.

The samples for laboratory analysis were each labelled with a unique sample identification number, in addition to the date of collection and project number, before being placed on ice within an esky. The sample identification number was repeated on the borehole logs (**Appendix F**)

At the completion of each borehole, including logging and the sampling of soils, each borehole was backfilled with soil cuttings. A summary of the samples collected during this investigation is provided in **Table 4.**

6.1.3 *Groundwater Well Installations and Monitoring*

Groundwater monitoring wells were installed in boreholes BH102, BH105 and BH107 in general accordance with the Land and Water Biodiversity Committee (2012) *Minimum Construction Requirements for Water Bores in Australia* (reference 12), using 50 mm diameter uPVC pipe, with a machine slotted screen section, 2 mm sand pack and a bentonite seal. The depths of the screened section of the well is provided in **Table 2**.

The stabilised level of groundwater within the wells installed within BH102, BH107, GW01, GW02 and GW03 was measured on the 14th November 2016 (approximately 13 days after installation of the wells) at depths of 1.28m, 1.78m, 2.21m, 2.13m and 1.34m bgs respectively. As previously mentioned, the well within borehole BH105 was dry to a depth of 2.4m bgs.

The water encountered in the wells is considered to be perched water flowing along the soil/bedrock interface and such water is normally significantly influenced by rainfall events and therefore its presence can be intermittent. This is supported by the fact that the well installed within borehole BH105 was dry. Taking into account the approximate surface elevation at each of the well locations, it is inferred that the perched water is following the regional topography and flowing in a northerly to north-easterly direction. Although the flow direction is expected to have been significantly altered by the presence of UST tankpit excavations in the northern end of the site.

6.1.4 *Groundwater Sampling*

Groundwater was sampled from three existing monitoring wells (GW01 to GW03), as well as from two monitoring wells installed by GEE (BH102 & BH107). It is noted that a monitoring well was also installed within BH105, however it was dry at the time of sampling.

Sampling was undertaken following purging of the wells to remove stagnant water from the well casing and to ensure that the samples are representative of groundwater in the surrounding geological formation.

Immediately prior to purging and sampling, the well was dipped to determine the depth to stabilised water level and, using a clear disposable bailer, assessed for the presence of a hydrocarbon sheen and Light Non-Aqueous Phase Liquids (LNAPLs) which may be floating on the water. Neither sheen nor LNAPLs was observed on the surface of the water in each well. However, a slight hydrocarbon odour was noted within wells GW01, GW02 and GW03 during purging and sampling.

Purging of the monitoring wells took place on the 11th of November 2016. The well was installed within a low-transmissive formation, therefore, slow to re-charge and thus purging was undertaken using a high volume pump with dedicated tubing until practically dry. Following purging, the wells were allowed to recharge to at least 80% before sampling later the same day, using dedicated Waterra foot valves.

A calibrated water quality meter was used during the sampling to assess pH, redox potential (Eh), electrical conductivity (EC), dissolved oxygen (DO) and temperature.

The groundwater was collected directly into laboratory supplied sample containers in order of volatility, with the most volatile substances collected first. Samples to be analysed for metals were collected last and filtered in the field using a new disposable 0.45micron filter and syringe. Samples to be analysed for volatile substances (*e.g.*

BTEX), were filled to the container brim and capped, making sure that there were no bubbles / headspace.

All sample containers were immediately placed within an esky in which ice had been added. At the end of each sampling day the samples in the esky were transported to the GEE office where more ice was added and the samples delivered to the laboratory (within one working day).

All sample containers were labelled with the sample number, project number and date collected and the information repeated on a Chain-of-Custody (COC) form which accompanied the samples to the laboratory. The chain-of custody form (provided by the laboratory) demonstrates that the samples were properly received, documented, processed and stored.

While on site, the supervising engineer/scientist filled out a copy of the GEE "Groundwater Sampling Field Sheet" which documents, the sample identification, date of sampling, time of sampling, stabilised groundwater level, water quality field screening results, physical description of the water, presence or absence of odour, well condition and volumes purged. A copy of the "Groundwater Sampling Field Sheet" is provided in **Appendix G**.

Finally, it is noted that the purging and sampling equipment did not require decontamination because GEE used dedicated equipment for each well.

A summary of the groundwater samples collected and analysed during this investigation are provided in **Table 5**.

6.2 ANALYTICAL PROGRAM

In accordance with Section 5.2, selected soil samples were analysed for a broad suite of potential contaminants, including:

- ◊ Metals (Arsenic, Cadmium, Chromium, Copper, Nickel, Lead and Zinc)
- ◊ TRH
- ◊ BTEX
- ◊ PAH
- ◊ OCPs
- ◊ OPPs

- ◊ PCBs
- ◊ Asbestos.

Also, the pH and Cation Exchange Capacity (CEC) of some samples was also analysed to assist with determining the most appropriate ecological assessment criteria for some metals.

The groundwater samples collected from existing and recently installed groundwater wells were analysed for dissolved metals, TRH, BTEX, PAH and VOC. The primary soil and groundwater environmental samples were analysed by Envirolab Services Pty Ltd which is National Association of Testing Authorities (NATA) registered for the testing undertaken.

A summary of the soil analytical program, including which samples were selected for analysis and the chemicals analysed, is provided in **Table 4**, while a summary of the groundwater analytical program is provided in **Table 5**.

Table 4: Summary of the Sampling and Analysis Program

Location	Sample Id	Sample Depth	Material Type	Analytical Program				
				Metals	TRH/ BTEX	PAHs	OCPs / PCBs	Asbestos
			Primary Samples					
BH101	SMC011116-01	0.2 – 0.3	FILL	✓	✓	✓	---	---
BH101	SMC011116-02	0.4 – 0.5	SAND	✓	✓	---	---	---
BH101	SMC011116-03	0.9 – 1.0	SAND	---	---	---	---	---
BH101	SMC011116-04	1.3 – 1.5	SAND	---	✓	---	---	---
BH101	SMC011116-05	3.0 – 3.3	SANDSTONE	✓	---	---	---	---
BH102	SMC011116-06	0.2 – 0.3	FILL	✓	✓	✓	✓	✓
BH102	SMC011116-07	0.6 – 0.7	FILL	---	---	---	---	---
BH102	SMC011116-08	0.9 – 1.0	FILL	---	---	---	---	---
BH102	SMC011116-09	1.8 – 2.0	FILL	✓	✓	✓	---	---
BH103	SMC011116-11	0.1 – 0.25	FILL	✓	✓	✓	---	---
BH103	SMC011116-13	0.5 – 0.7	FILL	✓	✓	✓	---	---
BH104	SMC011116-15	0.2 – 0.3	FILL	✓	✓	✓	✓	✓
BH104	SMC011116-16	0.5 – 0.65	FILL	✓	---	---	---	---
BH104	SMC011116-17	0.8 – 0.95	FILL	✓	✓	✓	---	---
BH105	SMC011116-18	0.1 – 0.2	FILL	✓	✓	✓	✓	✓
BH105	SMC011116-19	0.5 – 0.6	FILL	---	---	---	---	---
BH105	SMC011116-20	0.9 – 1.0	FILL	✓	✓	✓	---	---
BH105	SMC011116-21	1.1 – 1.25	Sandy CLAY	✓	✓	---	---	---
BH105	SMC011116-23	1.8 – 2.0	Sandy CLAY	---	---	---	---	---
BH106	SMC011116-24	0.1 – 0.3	FILL	✓	✓	✓	---	---
BH106	SMC011116-25	0.7 – 0.9	Sandy CLAY	✓	✓	---	---	---
BH106	SMC011116-27	1.3 – 1.5	Sandy CLAY	✓	---	---	---	---
BH107	SMC011116-29	0.1 – 0.2	FILL	✓	✓	✓	✓	✓
BH106	SMC011116-30	0.4 - 0.5	FILL	✓	---	---	---	---
BH107	SMC011116-28	0.7 – 0.8	Silty CLAY	---	---	---	---	---
BH107	SMC011116-31	1.5 – 1.6	SANDSTONE	---	---	---	---	---
BH107	SMC011116-35	2.5 – 2.8	SANDSTONE	---	---	---	---	---
BH108	SMC011116-32	0.0 – 0.15	TOPSOIL / FILL	✓	✓	✓	✓	✓
BH108	SMC011116-33	0.3 – 0.5	Sandy CLAY	✓	---	---	---	---
BH109	SMC011116-34	0.0 – 0.15	TOPSOIL / FILL	✓	✓	✓	---	---
BH109	SMC011116-36	0.5 – 0.6	TOPSOIL / FILL	---	---	---	---	---
BH109	SMC011116-37	0.7 – 0.85	Sandy CLAY	✓	---	---	---	---
BH201	JL190717-01	0.05 – 0.15	FILL	✓	✓	✓	---	---
BH201	JL190717-02	0.4 – 0.5	FILL	---	---	---	---	---
BH201	JL190717-03	0.7 – 0.8	FILL	✓	✓	✓	---	---

BH201	JL190717-04	1.0 – 1.1	Clayey SAND	✓	---	---	---	---
BH201	JL190717-05	1.4 – 1.5	Sandy CLAY	---	---	---	---	---
BH202	JL190717-06	0.25 – 0.35	FILL	✓	✓	✓	✓	---
BH202	JL190717-08	0.6 – 0.7	FILL	✓	✓	✓	---	---
BH202	JL190717-09	1.1 – 1.2	FILL	✓	---	---	---	---
BH202	JL190717-10	1.4 – 1.5	Sandy CLAY	✓	✓	✓	---	---
BH203	JL190717-11	0.15 – 0.25	FILL	✓	✓	✓	✓	✓
BH203	JL190717-12	0.7 – 0.8	Clayey SAND	✓	---	---	---	---
BH203	JL190717-13	1.1 – 1.2	Clayey SAND	---	---	---	---	---
BH204	JL190717-14	0.2 – 0.3	FILL	✓	✓	✓	✓	---
BH204	JL190717-15	0.6 – 0.7	FILL	✓	---	---	---	---
BH205	JL190717-16	0.05 – 0.15	FILL	✓	✓	✓	✓	✓
BH205	JL190717-18	0.6 – 0.7	Sandy CLAY	✓	✓	✓	---	---
BH206	JL190717-19	0.05 – 0.15	TOPSOIL / FILL	✓	✓	✓	---	---
BH206	JL190717-20	0.7 – 0.8	SAND	✓	---	---	---	---
BH207	JL190717-21	0.05 – 0.15	TOPSOIL / FILL	✓	✓	✓	---	---
BH207	JL190717-22	0.5 – 0.6	Sandy CLAY	✓	---	---	---	---
BH207	JL190717-23	0.9 – 1.0	Sandy CLAY	---	---	---	---	---
BH208	JL190717-24	0.05 – 0.15	TOPSOIL / FILL	✓	✓	✓	✓	✓
BH208	JL190717-26	0.5 – 0.6	Sandy CLAY	✓	---	---	---	---
Total				41	29	25	10	8
Quality Control Samples								
BH102	SMC011116-10	Blind Replicate of 'SMC011116-09'		✓	✓	✓	---	---
BH103	SMC011116-12	Split Replicate of 'SMC011116-11'		✓	✓	✓	---	---
BH103	SMC011116-14	Blind Replicate of 'SMC011116-13'		---	---	---	---	---
BH105	SMC011116-22	Blind Replicate of 'SMC011116-21'		---	---	---	---	---
BH106	SMC011116-26	Blind Replicate of 'SMC011116-25'		---	---	---	---	---
--	Trip Blank	Sand		---	✓[1]	---	---	---
--	Trip Spike	Sand		---	✓[2]	---	---	---
BH202	JL190717-07	Blind Replicate of 'JL190717-06'		✓	✓	✓	✓	---
BH205	JL190717-17	Blind Replicate of 'JL190717-16'		---	---	---	---	---
BH208	JL190717-25	Blind Replicate of 'JL190717-24'		---	---	---	---	---
--	Trip Blank	Sand		---	✓[1]	---	---	---
--	Trip Spike	Sand		---	✓[2]	---	---	---

Note 1: BTEX and TRH (C6-C9) only
Note 2: BTEX only

Table 5: Summary of the Groundwater Sampling and Analysis Program

Location	Sample Id	Analytical Program			
		Metals	TRH/BTEX	PAHs	Phenols
Primary Groundwater Samples					
BH107	AC111116-01	✓	✓	✓	✓
GW01	AC111116-03	✓	✓	✓	✓
GW02	AC111116-04	✓	✓	✓	✓
GW03	AC111116-05	✓	✓	✓	✓
BH102	AC111116-06	✓	✓	✓	✓
Quality Control Samples					
BH107	AC111116-02 Duplicate of 'AC111116-01'	✓	✓	✓	✓
--	Trip Blank	---	✓[1]	---	---
--	Trip Spike	---	✓[2]	---	---

Note 1: BTEX and TRH (C6-C9) only
Note 2: BTEX only

7 DATA QUALITY ASSESSMENT

A detailed Quality Assurance (QA) assessment, including the analysis of Quality Control (QC) samples, was carried out by GEE to determine the suitability and reliability of field procedures and analytical results. In accordance with NSW DEC (reference 8), the QA assessment used Data Quality Indicators (DQIs) which included:

- ◊ precision.
- ◊ accuracy (or bias).
- ◊ representativeness.
- ◊ completeness.
- ◊ comparability.

The detailed QA assessment report is provided in **Appendix H**, and concludes that the field procedures and analytical data presented herein are of suitable quality for making conclusions and recommendations regarding the contamination status of the site.

8 ASSESSMENT CRITERIA

1.1 SOIL

For any contamination assessment, it is necessary to evaluate the human health and ecological risks associated with the presence of site contamination. Also, in accordance with Appendix I of DEC, 2006 guidelines (reference 8), residential sites need to address aesthetics such as highly malodorous soils.

1.1.1 *Aesthetics*

Aesthetics was continually assessed in the field during borehole drilling and logging and no significant and adverse observations were noted.

1.1.2 *Ecological Risk*

To address potential ecological risks, GEE has compared the soil analytical results against the Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) detailed in NEPM (2013), *Schedule B(1) – Guidelines on Investigation Levels for Soil and Groundwater* (reference 13).

Ecological Investigation Levels (EILs)

EILs were derived for common contaminants in soil (specifically Arsenic, Copper, Chromium (III), DDT, naphthalene, Nickel, Lead and Zinc) and are based on a species sensitivity distribution (SSD) model developed for Australian conditions. They consider the physicochemical properties of soil (e.g. Cation Exchange Capacity, pH and clay content), contaminants and the capacity of the local ecosystem to accommodate increases in contaminant levels (referred to as the 'added contaminant limit' or ACL) above ambient background. Also, EILs consider various land use scenarios and generally only apply to the top 2m of soil which corresponds to the root zone and habitation zone of many species.

Finally, different EILs apply for 'fresh' contamination and 'aged' contamination. 'Fresh' contamination is usually associated with current activity and chemical spills, while a contaminant that has been incorporated into a soil for more than 2 years is considered to be 'aged'. For the purpose of this report 'aged' EILs have been adopted because any contamination present at the site is likely to have been present for more than 2 years.

To assist with determining appropriate EILs to screen the soil analytical results, particularly for Copper, Chromium -III, Nickel and Zinc, the Cation Exchange Capacity (CEC) and pH of the soil was analysed for each of the samples. The CEC values for

each sample ranged from <1.0 to 29.0 meq/100g, while the pH values ranged from 3.5 to 9.6. For the purpose of this report, and to screen the analytical results, GEE has adopted the lowest values for both CEC and pH which was a CEC of 1.0 meq/100g and pH of 3.5. Additionally, a value of 1% clay composition has been adopted when determining the EIL for chromium (III).

When determining the EILs for Copper, Nickel, Chromium and Zinc, ambient background concentrations can be used to increase the final EIL, however, for the purpose of this investigation zero ambient background concentrations have been adopted.

The broad land-use scenarios are areas of ecological significance, urban residential/ public space, and commercial/industrial. Each land-use scenario assumes different exposure scenarios and are generally based on the primary land-use activity of the exposed soils (i.e. any deep soil areas). For the proposed rezoning application the most sensitive land-use scenario is high density residential therefore residential land-use has been adopted.

A summary of the EILs appropriate for the site is provided in **Table 6**.

Ecological Screening Levels (ESLs)

ESLs have been developed for selected petroleum hydrocarbon compounds (specifically TRH[4], BTEX and Benzo(a)pyrene) and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse- and fine-grained soils and like EILs the ESLs consider various land use scenarios, only apply to the top 2m of soil and differ for 'fresh' contamination and 'aged' contamination. For the purpose of this report, coarse-grained soil and 'aged' ESLs have been adopted. Coarse grained soil was adopted over fine grained soil because it provides the most conservative criteria and if an exceedance occurs then the criteria will be adjusted to suit the actual soil type.

With respect to land-use, residential ESLs have been adopted and like with EILs, these are considered to be suitable for the proposed re-zoning application.

A summary of the ESLs appropriate for the site is provided in **Table 6.** GEE notes that screening levels are the concentrations of a contaminants above which will require further evaluation and consideration.

[4] ESLs for the various carbon fractions are based on TRH analysis with F1 (C6-C9) being obtained after subtraction of BTEX.

8.1.1 *Human Health Risk*

To address potential health impacts at the site, GEE has compared the analytical results against Health Investigation Levels (HILs) and Health Screening Levels (HSLs), provided in NEPM (2013), *Schedule B(1) – Guidelines on Investigation Levels for Soil and Groundwater* (reference 13).

Health Investigation Levels (HILs)

The HILs are scientifically based, generic assessment criteria to be used as a first stage (or tier 1) screening of potential risks to human health from chronic exposure to contaminants. They are intentionally conservative and are based on four different and generic land use scenarios (i.e. HIL-A described as residential with accessible soils, HIL-B which includes residential with minimal opportunities for soil access, HIL-C for public space such as parks and HIL-D for commercial/industrial sites). Each land-use scenario assumes different exposure scenarios and when land is used for more than one purpose, the HILs that are relevant to the more sensitive land-use should be adopted. In this regard, the most appropriate land-use scenario is HIL-B.

HILs for soil contaminants are provided in Table 1A(1) of the NEPM guidelines and includes metals, PAHs, Pesticides and PCBs. Petroleum hydrocarbons are not included.

A summary of the HILs appropriate for the site is provided in **Table 6**.

Health Screening Levels (HSLs)

Health Screening Levels (HSLs) were developed for selected petroleum hydrocarbons (specifically TRH C_6 – C_{10} or F1 fraction, TRH >C_{10} – C_{16} or F2 fraction and BTEX) by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) and have been adopted and are referenced in Schedule B(1) of NEPM (2013 – reference 13) and Friebel & Nadebaum (2011 – reference 14).

The assessment of petroleum hydrocarbon contamination is primarily driven by human health concerns relating to volatile components (e.g. TRH C_6 – C_{10}, TRH >C_{10} – C_{16} and Benzene) which have the potential to cause health issues via vapour intrusion. HSLs also apply for direct human contact (Table A4 – reference 14) but only where this is likely.

For vapour intrusion and direct contact, different HSLs apply for different land use scenarios, different soil types (i.e. sand, silt and clay) and different depths. For the purpose of this investigation, criteria relevant for shallow (0m to 1m) sandy soils has

been adopted to screen the soil analytical results because they are most conservative. If a sample exceedance occurs at greater depth then the criteria will be adjusted to suit.

With respect to land-use there are four scenarios:

- HSL-A for low density residential sites
- HSL-B for high density residential sites
- HSL-C for recreational/open space areas
- HSL-D for commercial and industrial sites

The land use setting is based on ground floor occupation because if the vapour exposure is acceptable at ground level then it can be assumed to be acceptable on the floors above. As previously mentioned, it is proposed to rezone the site for high density residential land-use as such HSL-B is considered to be appropriate (which is the same threshold levels as HSL-A).

Where there is a HSL for vapour intrusion as well as direct contact, the lowest criteria has been adopted, which is the vapour intrusion HSLs. Where there are no direct contact or vapour intrusion HSLs available, GEE has adopted management limits (Table 1B(7) – reference 13) which apply for TRH. The management limits are designed to avoid or minimise potential effects of petroleum hydrocarbons including:

- The formation of observable light non-aqueous phase liquids (LNAPL),
- Fire and explosive hazards, and
- The effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.

Again, there are different management limits for the various land use scenarios and GEE has adopted the management limits appropriate for high density residential sites have been adopted. Finally, where there are HILs or management limits available for a particular contaminant, GEE has adopted HSLs recommended for direct contact on high density residential sites (Table A4 – reference 17). A summary of the petroleum hydrocarbon HSLs adopted for the site is provided in **Table 6**.

Table 6: Soil Site Assessment Criteria (SAC)

Analyte	**Health Investigation/Screening Levels (HILs/HSLs)** (mg/kg)		**Ecological Investigation/Screening Levels (EILs/ESLs)** (mg/kg)	
	HIL-B / HSL-B	Reference	**Residential EIL/ESL**	Reference
Total Metals				
Arsenic	500	Table 1A – Reference 13	100	Table 1B(5) – Reference 13
Cadmium	150	Table 1A – Reference 13	--	--
Chromium (VI)	500	Table 1A – Reference 13	--	--
Chromium (III)	--	--	190	Table 1B(3) – Reference 13
Copper	30,000	Table 1A – Reference 13	35	Table 1B(2) – Reference 13
Lead	1,200	Table 1A – Reference 13	1,100	Table 1B(4) – Reference 13
Mercury (inorganic)	120	Table 1A – Reference 13	--	--
Nickel	1,200	Table 1A – Reference 13	6	Table 1B(3) – Reference 13
Zinc	60,000	Table 1A – Reference 13	95	Table 1B(1) – Reference 13
Total Polychlorinated Biphenyls (PCBs)				
Total PCBs	1	Table 1A – Reference 13	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	3	Table 1A(3) – Reference 13	170	Table 1B(5) – Reference 13
Benzo(a)pyrene	--	--	0.7	Table 1B(6) – Reference 13
Benzo(a)pyrene TEQ	4	Table 1A – Reference 13	--	--
TOTAL PAHs	400	Table 1A – Reference 13	--	--
Organochlorine Pesticides (OCP)				
Heptachlor	10	Table 1A – Reference 13	--	--
Aldrin + Dieldrin	10	Table 1A – Reference 13	--	--
Endrin	20	Table 1A – Reference 13	--	--
Chlordane	90	Table 1A – Reference 13	--	--
Endosulfan	400	Table 1A – Reference 13	--	--
HCB	15	Table 1A – Reference 13	--	--
Methoxychlor	500	Table 1A – Reference 13	--	--
DDE + DDD + DDT	600	Table 1A – Reference 13	--	--
DDT	--	--	180	Table 1B(5) – Reference 13
BTEX				
Benzene	0.5	Table 1A(3) – Reference 13	50	Table 1B(6) – Reference 13
Toluene	160	Table 1A(3) – Reference 13	85	Table 1B(6) – Reference 13
Ethylbenzene	55	Table 1A(3) – Reference 13	70	Table 1B(6) – Reference 13
Xylenes	40	Table 1A(3) – Reference 13	45	Table 1B(6) – Reference 13
Total Recoverable Hydrocarbons (TRH)				
(F1) C6 – C10	45	Table 1A(3) – Reference 13	180	Table 1B(6) – Reference 13
(F2) >C10 - C16	110	Table 1A(3) – Reference 13	120	Table 1B(6) – Reference 13
(F3) >C16 – C34	2,500	Table 1B(7) – Reference 13	300	Table 1B(6) – Reference 13
(F4) >C34 – C40	10,000	Table 1B(7) – Reference 13	2,800	Table 1B(6) – Reference 13
Asbestos				
Surface Soil	No visible Asbestos	Table 7 – Reference 13	--	--
Buried Bonded	0.04%	Table 7 – Reference 13	--	--
Buried Friable	0.001%	Table 7 – Reference 13	--	--

8.2 WATER SAMPLES

Assessment criteria for groundwater were derived from the NEPM (2013), *Schedule B(1) – Guidelines on Investigation Levels for Soil and Groundwater* (reference 13) which are based on the ANZECC/ARMCANZ (2000) *water quality guidelines (reference 15)*. However, with respect to specific petroleum hydrocarbons the assessment criteria provided in NEPM (2013) are based on Health Screening Levels (HSLs) developed by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) and published by Friebel & Nadebaum (2011 – reference 14).

Typically the assessment of petroleum hydrocarbon contamination is driven by human health concerns relating to volatile components (e.g. TRH $C_6 – C_{10}$ (F1), TRH $>C_{10} – C_{16}$ (F2), BTEX and Naphthalene) which have the potential to cause health issues or explosive risks via vapour intrusion. The HSL criterion depends on the soil type, the depth to groundwater and land-use scenario where the groundwater exists. The HSLs change depending on the soil type and depth to groundwater and for the purpose of this assessment GEE have adopted the most conservative criteria which relates to sand and a depth of less than 2.0 metres. Also, an exposure scenario of residential land use with limited accessible soil (HSL-B) has been adopted, which is considered conservative for the proposed development.

For other analytes not covered by HSLs, GEE has adopted the Groundwater Investigation Levels (GILs) which are derived from the from ANZECC/ARMCANZ (2000) *water quality guidelines (*reference 15). GILs for fresh water were adopted for this study rather than marine water guidelines, on the basis that the receiving system for groundwater at the site is most likely to be either Wolli Creek or Bardwell Creek. Also the electrical conductivity of the water within the groundwater wells was relatively low. A search of registered groundwater bores in the vicinity of the site did not reveal any drinking water extraction wells and therefore drinking water guidelines levels were not appropriate.

ANZECC/ARMCANZ (2000) specifies four sets of trigger values corresponding with different levels of protection for ecosystem conditions. Trigger values, derived using the statistical distribution method, relate to the protection of 99%, 95%, 90% and 80% of species in an aquatic ecosystem. Three "categories of ecosystem conditions" are developed in the guidelines and the level of protection afforded to a particular ecosystem should be determined following consideration of site conditions in consultation with key stakeholders. Additionally, for each chemical, ANZECC/ARMCANZ (2000) provides three grades of guideline trigger values: high, moderate or low

reliability trigger values. The grade depends on the data available and hence the confidence or reliability of the final figures.

The groundwater investigation levels (GILs) in NEPM (2013) relate to "slightly to moderately disturbed" aquatic ecosystems and adopt trigger values based on a 95% level of protection, however, this is increased to 99% for some chemicals that have the potential to bioaccumulate or where the 95% value may not provide sufficient protection for key species. In the absence of high or moderate reliable fresh water criteria, GEE has adopted the high or moderate reliable criteria for marine water. Then, in the absence of high or moderate trigger values, GEE has applied low reliability trigger levels from ANZECC/ ARMCANZ (2000) as 'first pass' criteria. It should be noted that low reliability trigger values were originally derived from insufficient data sets and should not be used as final guidelines but as indicative interim figures, which if exceeded, suggest the need to obtain further data.

Finally, in all cases where the laboratory limit of reporting exceeds the ANZECC/ARMCANZ (2000) trigger value, the detection limit of that analyte is used as a trigger for further investigation.

A summary of the Groundwater Assessment Criteria (GAC) adopted for this site is provided in **Table 7**.

Table 7: Groundwater Assessment Criteria (GAC)

Analyte	Units	GILs [1]	Source
Metals			
Arsenic V	µg/L	13	Table 1C (fresh) - Reference 13
Cadmium	µg/L	0.2	Table 1C (fresh) - Reference 13
Chromium VI	µg/L	1	Table 1C (fresh) - Reference 13
Copper	µg/L	1.4	Table 1C (fresh) - Reference 13
Lead	µg/L	3.4	Table 1C (fresh) - Reference 13
Nickel	µg/L	11	Table 1C (fresh) - Reference 13
Zinc	µg/L	8	Table 1C (fresh) - Reference 13
Mercury (inorganic)	µg/L	0.06	Table 1C (fresh) - Reference 13
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	µg/L	16	Table 1C (fresh) - Reference 13
Anthracene	µg/L	*0.4*	Reference 15
Phenanthrene	µg/L	*2*	Reference 15
Fluoranthene	µg/L	*1.4*	Reference 15
Benzo(a)pyrene	µg/L	*0.2*	Reference 15
Phenols			
Phenol	µg/L	*320*	Table 1C (fresh) - Reference 13
Total Petroleum Hydrocarbons (TPH)			
(F1) C6 – C10	µg/L	1,000 [2]	Table 1A(4) - Reference 13
(F2) >C10 - C16	µg/L	1,000 [2]	Table 1A(4) - Reference 13
(F3) >C16 – C34	µg/L	--	--
(F4) >C34 – C40	µg/L	--	--
BTEX			
Benzene	µg/L	800	Table 1A(4) - Reference 13
Toluene	µg/L	*180*	Reference 15 (fresh)
Ethylbenzene	µg/L	*80*	Reference 15 (fresh)
para-Xylene	µg/L	200	Table 1C (fresh) - Reference 13
ortho-Xylene	µg/L	350	Table 1C (fresh) - Reference 13

Notes:

[1] Criteria shown in italics are low reliability trigger values used as a first pass assessment in the absence of more reliable trigger values.

[2] Criteria depends on the type of soil and depth of sample. Criteria adopted is for sandy soil which is the most conservative and residential land use (HSL-B).

NL – Criteria Not Limiting

9 ANALYTICAL RESULTS

9.1 SOIL SAMPLES

A copy of the laboratory report is provided in **Appendix I**, while a summary of the results compared to the SAC (**Table 8**) is provided in below.

9.1.1 *Metals*

A total of 41 primary samples were analysed by GEE for the presence of metals, specifically, arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury. A summary of the results is provided below:

Metal	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Exceedances	
				Health	Ecological	Health	Ecological
Arsenic	41	<4	20	500	100	0	0
Cadmium	41	<0.4	0.9	150	--	0	0
Chromium	41	2	95	500	190	0	0
Copper	41	<1	45	30,000	35	0	**4**
Lead	41	1	590	1,200	1,100	0	0
Mercury	41	<0.1	2	120	--	0	0
Nickel	41	<1	87	1,200	15	0	**7**
Zinc	41	2	380	60,000	170	0	**9**

In summary, there were no samples that contained metal concentrations above the health-based SAC, however, sixteen samples contained concentrations of copper, nickel and/or zinc above the ecological based SAC. As previously mentioned, the ecological-based SAC are dependent on the CEC and/or pH of the individual samples. The SAC provided in **Table 6** are based on the lowest values of CEC and pH for all samples (i.e. 3.5 pH and 1.0 meq/100g) and was done as the 'first pass' assessment of the results. The actual CEC and pH results for these samples are as follows:

Sample ID	Actual pH value	Actual CEC (meq/100g)
SM011116-01	9.6	16
SM011116-02	9.1	16
SM011116-11/12	8.2	22
SM011116-16	8.3	12
SM011116-24	7.7	26
SM011116-32	7.0	11
SM011116-34	3.5	<1.0
SM011116-37	6.2	8.5
JL190717-01	6.6	20
JL190717-03	7.3	6.3
JL190717-06/07	8.6	29
JL190717-15	8.0	22
JL190717-16	5.7	6.2
JL190717-19	6.3	6.1
JL190717-21	6.2	6.1
JL190717-24	6.2	6.1

When using the actual CEC and pH values for each sample, the ecological SAC increases as indicated below:

Sample ID	Sample Concentration (mg/kg)	'First Pass' Ecological SAC (mg/kg)	Actual Ecological SAC
Copper			
SM011116-11/12	38	20	230
SM011116-16	42	20	210
SM011116-24	42	20	230
JL190717-24	45	20	130
Nickel			
SM011116-01	48	5	230
SM011116-02	20	5	230
SM011116-11/12	87	5	290
SM011116-24	63	5	320
JL190717-01	14	5	270
JL190717-03	9	5	60

JL190717-06/07	27	5	350
Zinc			
SM011116-32	380	75	510
SM011116-34	**100**	75	95
SM011116-37	110	75	430
JL190717-01	250	75	720
JL190717-15	130	75	830
JL190717-16	180	75	320
JL190717-19	220	75	350
JL190717-21	270	75	350
JL190717-24	**380**	75	350

As shown above, when adopting the individual pH and CEC sample results the sample concentrations were below the ecological SAC except for zinc within sample SM011116-34 and JL190717-24. Based on the analytical results, GEE considers that the elevated zinc concentration at these locations do not pose a significant contamination issue for the proposed development because:

- ◊ The concentrations are only slightly above the SAC,
- ◊ The site is not located within an area of known ecological significance,
- ◊ There will be no ecological exposure pathway available when the basement is constructed, and
- ◊ The EIL adopted was for residential land-use which is considered rather conservative considering the ground floor will be commercial land-use and the commercial based criteria would be 100mg/kg and 500mg/kg respectively.

In summary, metals do not pose a significant contamination issue for soils at the site.

9.1.2 *TRH and BTEX*

A total of 29 primary samples were selected for TRH and BTEX analysis. A summary of the results is provided below:

Analyte	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Number of Exceedances	
				Health	Ecological	Health	Ecological
TRH C6-C10 (F1)	29	<25	<25	45	180	0	0
TRH >C10 – C16 (F2)	29	<50	<50	110	120	0	0
TRH >C16 – C34 (F3)	29	<100	790	2,500	300	0	1
TRH >C34 – C40 (F4)	29	<100	480	10,000	2,800	0	0
Benzene	29	<0.2	<0.2	0.5	50	0	0
Toluene	29	<0.5	<0.5	160	85	0	0
Ethylbenzene	29	<1	<1	55	70	0	0
Xylenes	29	<2	<2	40	45	0	0

In summary, there were no samples that contained concentrations above the health-based SAC, however, one sample (JL190717-01 from BH201) contained a concentration of TRH C16-C34 (790mg/kg) which was above the ecological based SAC. GEE considers that the elevated TRH concentration at this location does not pose a significant contamination issue for the proposed development because:

- ◊ The site is not located within an area of known ecological significance,
- ◊ There is normally very limited ecological exposure pathway available for high density residential developments, especially if a basement is constructed, and
- ◊ The ESL is a screening threshold level only and therefore conservative.

In summary, TRH/BTEX does not pose a significant contamination issue for soils at the site.

9.1.3 *PAHs*

A total of 25 primary samples were analysed for PAHs. A summary of the results is provided below:

Analyte	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Number of Exceedances
				Health	Ecological	
Naphthalene	25	<0.1	<0.1	3	170	0
Benzo(a)pyrene	25	<0.05	0.2	--	0.7	0
Benzo(a)pyrene TEQ	25	<0.5	<0.5	4	--	0
Total PAHs	25	NIL(+)VE	2.1	40	--	0

Based on the soil analytical results, GEE considers that PAHs do not pose a contamination issue for the proposed land-use.

9.1.4 *OCPs and PCBs*

Eight primary samples were analysed for OCPs and PCBs and a summary of the results is provided below:

Analyte	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Number of Exceedances
				Health	Ecological	
Heptachlor	10	<0.1	<0.1	10	--	0
Aldrin + Dieldrin	10	<0.1	<0.1	10	--	0
Endrin	10	<0.1	<0.1	20	--	0
Chlordane	10	<0.1	<0.1	90	--	0
Endosulfan	10	<0.1	<0.1	400	--	0
HCB	10	<0.1	<0.1	15	--	0
Methoxychlor	10	<0.1	<0.1	200	--	0
DDE + DDD + DDT	10	<0.1	0.3	600	--	0
DDT	10	<0.1	<0.1	--	180	0
Total PCBs	10	<0.1	<0.1	1	--	0

On the basis of the soil analytical results, OCPs and PCBs are not considered to be a contamination issue for the development.

9.1.5 *Asbestos*

Asbestos fibres were not detected in each of the eight near surface soil samples selected for analysis and there were no obvious visible fragments of asbestos containing materials (such as fibro) observed below the surface in the nine boreholes.

TABLE 8 - Summary of Analytical Results (Soil)

Sample ID		SM011116-01	SM011116-02	SM011116-04	SM011116-05	SM011116-06	SM011116-09	SM011116-10	SM011116-11	SM011116-12	SM011116-13	SM011116-15	SM011116-16	SM011116-17	Site Acceptance Criteria	
Analyte	Location	BH101	BH101	BH101	BH101	BH102	BH102	Blind	BH103	Split	BH103	BH104	BH104	BH104	Health	Ecological
	Depth	0.2 - 0.3	0.4 - 0.5	1.3 - 1.5	3.0 - 3.3	0.2 - 0.3	1.8 - 2.0	Replicate	0.1 - 0.25	Duplicate	0.5 - 0.7	0.2 - 0.3	0.5 - 0.65	0.8 - 0.95		
	Type	FILL	SAND	SAND	SANDSTONE	FILL	FILL	of '09'	FILL	of '11'	FILL	FILL	FILL	FILL		
Asbestos																
Asbestos Detected	-	--	--	--	--	No	--	--	--	--	--	No	--	--	**0.04%**	**--**
Respirable Fibres	-	--	--	--	--	No	--	--	--	--	--	No	--	--	**0.001%**	**--**
Metals																
Arsenic	mg/kg	<4	<4	--	5	<4	9	12	5	20	12	<4	6	6	**500**	**100**
Cadmium	mg/kg	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	**150**	**--**
Chromium[1]	mg/kg	59	35	--	11	5	20	20	95	34	7	4	3	7	**500**	**190**
Copper	mg/kg	17	8	--	4	3	10	14	38	17	6	17	42	14	**30,000**	**35**
Lead	mg/kg	11	3	--	20	6	48	33	20	66	15	17	2	11	**1,200**	**1,100**
Mercury	mg/kg	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	**120**	**--**
Nickel	mg/kg	48	20	--	3	1	3	4	87	15	1	6	<1	2	**1,200**	**6**
Zinc	mg/kg	33	10	--	29	15	87	30	62	64	30	24	3	21	**60,000**	**95**
BTEX																
Benzene	mg/kg	<0.2	<0.2	<0.2	--	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	--	<0.2	**0.5**	**50**
Toluene	mg/kg	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	>0.1	<0.5	<0.5	--	<0.5	**160**	**85**
Ethylbenzene	mg/kg	<1	<1	<1	--	<1	<1	<1	<1	<0.1	<1	<1	--	<1	**55**	**70**
Total Xylenes	mg/kg	<2	<2	<2	--	<2	<2	<2	<2	<0.3	<2	<2	--	<2	**40**	**45**
TRH																
TRH C_6 - C_{10} (F1)	mg/kg	<25	<25	<25	--	<25	<25	<25	<25	<20	<25	<25	--	<25	**45**	**180**
TRH >C_{10} - C_{16} (F2)	mg/kg	<50	<50	<50	--	<50	<50	<50	<50	<50	<50	<50	--	<50	**110**	**120**
TRH >C_{16}-C_{34} (F3)	mg/kg	<100	<100	<100	--	<100	<100	<100	<100	<100	<100	<100	--	<100	**2,500**	**300**
TRH >C_{34}-C_{40} (F4)	mg/kg	<100	<100	<100	--	<100	<100	<100	<100	<100	<100	<100	--	<100	**10,000**	**2,800**
PAHs																
Naphthalene	mg/kg	<0.1	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	--	<0.1	**3**	**170**
Benzo(a)pyrene	mg/kg	<0.05	--	--	--	<0.05	<0.05	<0.05	0.2	<0.5	<0.05	0.07	--	<0.05	**--**	**0.7**
Benzo(a)pyrene TEQ	mg/kg	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	**4**	**--**
Total PAHs	mg/kg	NIL(+)VE	--	--	--	NIL(+)VE	NIL(+)VE	NIL(+)VE	2.1	<0.5	NIL(+)VE	0.81	--	NIL(+)VE	**400**	**--**
OCPs																
Heptachlor	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**10**	**--**
Aldrin	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--		
Dieldrin	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**10**	**--**
Endrin	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**20**	**--**
gamma-Chlordane	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--		**--**
alpha-chlordane	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**90**	**--**
Endosulfan I	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--		**--**
Endosulfan II	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**400**	**--**
HCB	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**15**	**--**
Methoxychlor	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**500**	**--**
pp-DDE	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--		**--**
pp-DDD	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**600**	**--**
pp-DDT	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--		**180**
PCBs																
Total PCBs	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	**1**	**--**

TABLE NOTES:

Analytical results which exceed any of the Health-based Investigation Levels (HILs) are shown as **bold** text.

Analytical results which exceed any of the Ecological-based Investigation Levels (PILs) are shown as boxed text.

1 – Total Chromium analytical result includes chromium (III) and (VI).

TABLE 8 - Summary of Analytical Results (Soil)

Sample ID		SM011116-18	SM011116-20	SM011116-21	SM011116-24	SM011116-25	SM011116-27	SM011116-29	SM011116-30	SM011116-32	SM011116-33	SM011116-34	SM011116-37	Site Acceptance Criteria	
Analyte	Location	BH105	BH105	BH105	BH106	BH106	BH106	BH107	BH107	BH108	BH108	BH109	BH109	Health	Ecological
	Depth	0.1 - 0.2	0.9 - 1.0	1.1 - 1.25	0.1 - 0.3	0.7 - 0.9	1.3 - 1.5	0.1 - 0.2	0.4 - 0.5	0.0 - 0.15	0.3 - 0.5	0.0 - 0.15	0.7 - 0.85		
	Type	FILL	FILL	Sandy CLAY	FILL	Sandy CLAY	Sandy CLAY	FILL	FILL	FILL	Sandy CLAY	FILL	Sandy CLAY		
Asbestos															
Asbestos Detected	-	No	--	--	--	--	--	No	--	No	--	--	--	**0.04%**	--
Respirable Fibres	-	No	--	--	--	--	--	No	--	No	--	--	--	**0.001%**	--
Metals															
Arsenic	mg/kg	4	4	<4	4	<4	<4	<4	5	6	6	6	8	**500**	**100**
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.7	<0.4	<0.4	<0.4	**150**	--
Chromium[1]	mg/kg	11	12	15	72	12	11	4	9	12	23	13	21	**500**	**190**
Copper	mg/kg	12	9	1	42	3	1	1	7	23	2	24	3	**30,000**	**35**
Lead	mg/kg	34	32	7	30	6	6	8	74	170	9	420	12	**1,200**	**1,100**
Mercury	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	**120**	--
Nickel	mg/kg	2	2	2	63	2	1	1	2	4	3	2	2	**1,200**	**6**
Zinc	mg/kg	25	28	5	69	4	5	10	74	380	38	100	110	**60,000**	**95**
BTEX															
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2	--	<0.2	--	<0.2	--	**0.5**	**50**
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	<0.5	--	**160**	**85**
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1	--	<1	--	<1	--	<1	--	**55**	**70**
Total Xylenes	mg/kg	<2	<2	<2	<2	<2	--	<2	--	<2	--	<2	--	**40**	**45**
TRH															
TRH C_6 - C_{10} (F1)	mg/kg	<25	<25	<25	<25	<25	--	<25	--	<25	--	<25	--	**45**	**180**
TRH >C_{10} - C_{16} (F2)	mg/kg	<50	<50	<50	<50	<50	--	<50	--	<50	--	<50	--	**110**	**120**
TRH >C_{16}-C_{34} (F3)	mg/kg	<100	<100	<100	<100	<100	--	<100	--	<100	--	<100	--	**2,500**	**300**
TRH >C_{34}-C_{40} (F4)	mg/kg	<100	<100	<100	<100	<100	--	<100	--	<100	--	<100	--	**10,000**	**2,800**
PAHs															
Naphthalene	mg/kg	<0.1	<0.1	--	<0.1	--	--	<0.1	--	<0.1	--	<0.1	--	**3**	**170**
Benzo(a)pyrene	mg/kg	0.2	0.07	--	<0.05	--	--	<0.05	--	0.08	--	0.08	--	**--**	**0.7**
Benzo(a)pyrene TEQ	mg/kg	<0.5	<0.5	--	<0.5	--	--	<0.5	--	<0.5	--	<0.5	--	**4**	--
Total PAHs	mg/kg	1.5	0.37	--	NIL(+)VE	--	--	NIL(+)VE	--	0.08	--	0.43	--	**400**	--
OCPs															
Heptachlor	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**10**	--
Aldrin	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--		
Dieldrin	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**10**	--
Endrin	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**20**	--
gamma-Chlordane	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--		--
alpha-chlordane	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**90**	--
Endosulfan I	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--		--
Endosulfan II	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**400**	--
HCB	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**15**	--
Methoxychlor	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**500**	--
pp-DDE	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--		--
pp-DDD	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**600**	--
pp-DDT	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--		**180**
PCBs															
Total PCBs	mg/kg	<0.1	--	--	--	--	--	<0.1	--	<0.1	--	--	--	**1**	--

TABLE NOTES:

Analytical results which exceed any of the Health-based Investigation Levels (HILs) are shown as **bold** text.

Analytical results which exceed any of the Ecological-based Investigation Levels (PILs) are shown as boxed text.

1 – Total Chromium analytical result includes chromium (III) and (VI).

TABLE 8 - Summary of Analytical Results (Soil)

Sample ID		JL190717-01	JL190717-03	JL190717-04	JL190717-06	JL190717-07	JL190717-08	JL190717-09	JL190717-10	JL190717-11	JL190717-12	Site Acceptance Criteria	
Analyte	Location	BH201	BH201	BH201	BH202	Blind	BH202	BH202	BH202	BH203	BH203	Health	Ecological
	Depth	0.05 – 0.15	0.7 – 0.8	1.0 – 1.1	0.25 – 0.35	Replicate	0.6 – 0.7	1.1 – 1.2	1.4 – 1.5	0.15 – 0.25	0.7 – 0.8		
	Type	FILL	FILL	Clayey SAND	FILL	of '06'	FILL	FILL	Sandy CLAY	FILL	Clayey SAND		
Asbestos													
Asbestos Detected	-	--	--	--	--	--	--	--	--	No	--	**0.04%**	**--**
Respirable Fibres	-	--	--	--	--	--	--	--	--	No	--	**0.001%**	**--**
Metals													
Arsenic	mg/kg	8	5	<4	4	7	<4	6	4	14	11	**500**	**100**
Cadmium	mg/kg	0.9	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	**150**	**--**
Chromium[1]	mg/kg	16	12	15	22	16	2	9	9	10	12	**500**	**190**
Copper	mg/kg	34	13	1	24	29	<1	9	11	8	2	**30,000**	**35**
Lead	mg/kg	590	74	14	9	12	1	43	29	65	13	**1,200**	**1,100**
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**120**	**--**
Nickel	mg/kg	14	9	2	27	24	<1	2	2	3	2	**1,200**	**6**
Zinc	mg/kg	250	75	21	30	39	2	40	11	94	51	**60,000**	**95**
BTEX													
Benzene	mg/kg	<0.2	<0.2	--	<0.2	<0.2	<0.2	--	<0.2	<0.2	--	**0.5**	**50**
Toluene	mg/kg	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	**160**	**85**
Ethylbenzene	mg/kg	<1	<1	--	<1	<1	<1	--	<1	<1	--	**55**	**70**
Total Xylenes	mg/kg	<2	<2	--	<2	<2	<2	--	<2	<2	--	**40**	**45**
TRH													
TRH C_6 - C_{10} (F1)	mg/kg	<25	<25	--	<25	<25	<25	--	<25	<25	--	**45**	**180**
TRH >C_{10} - C_{16} (F2)	mg/kg	<50	<50	--	<50	<50	<50	--	<50	<50	--	**110**	**120**
TRH >C_{16}-C_{34} (F3)	mg/kg	790	<100	--	<100	<100	<100	--	<100	<100	--	**2,500**	**300**
TRH >C_{34}-C_{40} (F4)	mg/kg	480	<100	--	<100	<100	<100	--	<100	<100	--	**10,000**	**2,800**
PAHs													
Naphthalene	mg/kg	<1	<1	--	<1	<0.1	<1	--	<1	<1	--	**3**	**170**
Benzo(a)pyrene	mg/kg	<0.05	0.1	--	<0.05	<0.05	<0.05	--	0.05	<0.05	--	**--**	**0.7**
Benzo(a)pyrene TEQ	mg/kg	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	**4**	**--**
Total PAHs	mg/kg	0.5	1.3	--	<0.05	<0.05	<0.05	--	0.06	<0.05	--	**400**	**--**
OCPs													
Heptachlor	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**10**	**--**
Aldrin	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**10**	**--**
Dieldrin	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--		
Endrin	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**20**	**--**
gamma-Chlordane	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**90**	**--**
alpha-chlordane	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--		**--**
Endosulfan I	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**400**	**--**
Endosulfan II	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--		**--**
HCB	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**15**	**--**
Methoxychlor	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**500**	**--**
pp-DDE	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--		**--**
pp-DDD	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**600**	**--**
pp-DDT	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--		**180**
PCBs													
Total PCBs	mg/kg	--	--	--	<0.1	<0.1	--	--	--	<0.1	--	**1**	**--**

TABLE NOTES:

Analytical results which exceed any of the Health-based Investigation Levels (HILs) are shown as **bold** text.

Analytical results which exceed any of the Ecological-based Investigation Levels (PILs) are shown as boxed text.

1 – Total Chromium analytical result includes chromium (III) and (VI).

TABLE 8 - Summary of Analytical Results (Soil)

Sample ID		BH204	BH204	BH205	BH205	BH206	BH206	BH207	BH207	BH208	BH208	Site Acceptance Criteria	
Analyte	Location	JL190717-14	JL190717-15	JL190717-16	JL190717-18	JL190717-19	JL190717-20	JL190717-21	JL190717-22	JL190717-24	JL190717-26	Health	Ecological
	Depth	0.2 – 0.3	0.6 – 0.7	0.05 – 0.15	0.6 – 0.7	0.05 – 0.15	0.7 – 0.8	0.05 – 0.15	0.5 – 0.6	0.05 – 0.15	0.5 – 0.6		
	Type	FILL	FILL	FILL	Sandy CLAY	TOPSOIL / FILL	SAND	TOPSOIL / FILL	Sandy CLAY	TOPSOIL / FILL	Sandy CLAY		
Asbestos													
Asbestos Detected	-	--	--	No	--	--	--	--	--	No	--	**0.04%**	**--**
Respirable Fibres	-	--	--	No	--	--	--	--	--	No	--	**0.001%**	**--**
Metals													
Arsenic	mg/kg	5	4	5	<4	5	<4	5	<4	6	<4	**500**	**100**
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	0.5	<0.4	<0.4	<0.4	0.7	<0.4	**150**	**--**
Chromium[1]	mg/kg	12	9	12	3	11	2	11	5	14	8	**500**	**190**
Copper	mg/kg	11	8	26	4	19	<1	28	<1	45	3	**30,000**	**35**
Lead	mg/kg	42	86	180	3	170	6	280	9	190	8	**1,200**	**1,100**
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	2	<0.1	0.1	<0.1	**120**	**--**
Nickel	mg/kg	2	3	3	<1	3	<1	3	1	6	2	**1,200**	**6**
Zinc	mg/kg	36	130	180	18	220	19	270	6	380	25	**60,000**	**95**
BTEX													
Benzene	mg/kg	<0.2	--	<0.2	<0.2	<0.2	--	<0.2	--	<0.2	--	**0.5**	**50**
Toluene	mg/kg	<0.5	--	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	**160**	**85**
Ethylbenzene	mg/kg	<1	--	<1	<1	<1	--	<1	--	<1	--	**55**	**70**
Total Xylenes	mg/kg	<2	--	<2	<2	<2	--	<2	--	<2	--	**40**	**45**
TRH													
TRH C_6 - C_{10} (F1)	mg/kg	<25	--	<25	<25	<25	--	<25	--	<25	--	**45**	**180**
TRH >C_{10} - C_{16} (F2)	mg/kg	<50	--	<50	<50	<50	--	<50	--	<50	--	**110**	**120**
TRH >C_{16}-C_{34} (F3)	mg/kg	<100	--	<100	<100	<100	--	<100	--	<100	--	**2,500**	**300**
TRH >C_{34}-C_{40} (F4)	mg/kg	<100	--	<100	<100	<100	--	<100	--	<100	--	**10,000**	**2,800**
PAHs													
Naphthalene	mg/kg	<1	--	<1	<1	<1	--	<1	--	<1	--	**3**	**170**
Benzo(a)pyrene	mg/kg	<0.05	--	0.1	<0.05	0.06	--	0.1	--	0.1	--	**--**	**0.7**
Benzo(a)pyrene TEQ	mg/kg	<0.5	--	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	**4**	**--**
Total PAHs	mg/kg	<0.05	--	1	<0.05	0.06	--	0.76	--	0.83	--	**400**	**--**
OCPs													
Heptachlor	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**10**	**--**
Aldrin	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**10**	**--**
Dieldrin	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--		
Endrin	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**20**	**--**
gamma-Chlordane	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**90**	**--**
alpha-chlordane	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--		**--**
Endosulfan I	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**400**	**--**
Endosulfan II	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--		**--**
HCB	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**15**	**--**
Methoxychlor	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**500**	**--**
pp-DDE	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--		**--**
pp-DDD	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**600**	**--**
pp-DDT	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--		**180**
PCBs													
Total PCBs	mg/kg	<0.1	--	<0.1	--	--	--	--	--	<0.1	--	**1**	**--**

TABLE NOTES:

Analytical results which exceed any of the Health-based Investigation Levels (HILs) are shown as **bold** text.

Analytical results which exceed any of the Ecological-based Investigation Levels (PILs) are shown as boxed text.

1 – Total Chromium analytical result includes chromium (III) and (VI).

9.2 WATER FIELD PARAMETERS

Field parameters (*i.*e. pH, electrical conductivity, dissolved oxygen, redox potential, temperature, odour and other notable observations) were recorded during the sampling of groundwater within the existing and recently installed groundwater wells. A summary of the field parameter information, along with the standing water level readings, is provided in **Table 9**.

Within the monitoring wells, pH was slightly to moderately acidic, while the electrical conductivity was relatively low. The dissolved oxygen results were relatively low, which is common for groundwater.

TABLE 9: Groundwater Field Data Results

Sample Identification			AC111116-01	AC111116-03	AC111116-04	AC111116-05	AC111116-06
Analyte	Units	LOR	BH107	GW01	GW02	GW03	BH102
Standing Water Level	m BGS	0.01	1.78	2.21	2.13	1.34	1.28
pH	pH units	0.01	4.88	6.18	6.09	6.47	5.86
Electrical Conductivity	µS/cm	0.01	1093	685	620	734	1048
Temperature	°C	0.1	22.5	21.7	22.5	25.0	22.0
Redox Potential	mV	1	-91.0	-107.5	-80.3	-69.8	-55.3
Dissolved Oxygen	mg/L	0.01	2.42	0.67	1.06	2.47	1.60

9.3 WATER ANALYTICAL RESULTS

Groundwater from the five monitoring wells were analysed for dissolved metals, TRH, BTEX, PAHs and Phenols. The laboratory results are provided in the laboratory reports in **Appendix I**, while the tabulated results are provided in **Table 10** and summarised below.

9.3.1 *Metals*

The concentration of dissolved metals in all samples was below the GAC with the exception of zinc for samples AC111116-01/02, AC111116-04 & AC111116-06. The concentrations of dissolved zinc was 34mg/L, 10mg/L and 25mg/L respectively. It is noted that the GAC for zinc provided in Table 5, and reiterated in Table 8, relates to soft water (approximately 30 mg/L CaCo3 or less) and the GAC increases with increasing water hardness as seen below.

Sample ID	Sample Concentration (µg/L)	'First Pass' GAC (µg/L)	Hardness (mg.$CaCO_3$/L)	Actual GAC (µg/L)
		Zinc		
AC111116-01	**34**	8	140	29.6
AC111116-04	10	8	150	31.4
AC111116-06	25	8	200	40.1

When taking into consideration hardness, only one sample (AC111116-01) exceeded the GAC. Based on the analytical results, GEE considers that the elevated zinc concentration at this location (BH107) does not pose a significant contamination issue for the proposed development because:

- The groundwater from the site was collected from a stratigraphy comprising sandstone and according to Hem (1989 – reference 16), the concentrations of the zinc is commensurate with naturally occurring background concentrations.
- The GAC is the expected water quality at the 'Point of use' or 'discharge' from groundwater into a surface body of water and the nearest water body is Wolli Creek, approximately 350m north of the site. Additionally, the concentrations were only marginally above the GAC and significant dilution is expected upon entering the nearest surface body of water,
- The concentrations of zinc were higher in the up-gradient well compared to the down-gradient well which suggests that the elevated metals are from off-site,
- No significant source of metal contamination was identified in the fill and natural soils across the site, and
- The concentrations detected are commensurate with metal concentrations within the groundwater across the Sydney region.

In summary the metals are not considered to be a groundwater contamination issue at the site.

9.3.2 *TRH and BTEX*

The concentration of TRH and BTEX in the groundwater was less than the GAC. However, given the concentrations and the hydrocarbon odour noted during sampling, it is likely that groundwater has been slightly impacted by TRH and BTEX, particularly at the north-eastern portion of the site. Nonetheless, given the analytical results, TRH and BTEX are not considered a groundwater contamination issue at the site.

9.3.3 *PAHs*

The concentration of PAHs in the groundwater was less than the GAC. This suggests that PAHs are not a groundwater contamination issue at the site.

9.3.4 *Phenols*

Phenols were water sampled from each well were all less than the GAC. These results suggest that Phenols do not pose a contamination issue for groundwater beneath the site.

TABLE 10 - Summary of Analytical Results (Groundwater)

Sample Date		11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	11/09/2016	**Groundwater Assessment Criteria (GAC) [1]**
Sample Identification		**AC111116-01**	**AC111116-02**	**AC111116-03**	**AC111116-04**	**AC111116-05**	**AC111116-06**	
Analyte	Units	BH107	Blind Replicate of '01'	GW01	GW02	GW03	BH102	
Dissolved Metals								
Arsenic	µg/L	<1	<1	<1	12	1	5	13
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
Chromium	µg/L	<1	<1	<1	<1	<1	<1	1
Copper	µg/L	<1	<1	<1	<1	<1	<1	1.4
Lead	µg/L	1	1	1	<1	<1	2	3.4
Mercury	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06
Nickel	µg/L	10	10	2	2	<1	6	11
Zinc	µg/L	**32**	**34**	3	**10**	3	**25**	8
PAHs								
Naphthalene	µg/L	<1	<1	<1	<1	<1	<1	16
Phenanthrene	µg/L	<1	<1	<1	<1	<1	<1	*2*
Anthracene	µg/L	<1	<1	<1	<1	<1	<1	*0.4*
Fluoranthene	µg/L	<1	<1	<1	<1	<1	<1	*1.4*
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1	<1	*0.2*
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5	<1	--
Total (+VE) PAHs	µg/L	NIL(+)VE	NIL(+)VE	NIL(+)VE	NIL(+)VE	NIL(+)VE	NIL(+)VE	--
BTEX								
Benzene	µg/L	<1	<1	1	<1	<1	<1	800
Toluene	µg/L	<1	<1	<1	<1	<1	<1	*180*
Ethylbenzene	µg/L	<1	<1	<1	<1	<1	<1	*80*
m+p-xylene	µg/L	<2	<2	<2	<2	<2	<2	200
o-xylene	µg/L	<1	<1	<1	<1	<1	<1	350
TRH								
vTPH C_6 - C_{10} (F1)	µg/L	<10	<10	130	130	<10	<10	1,000
TRH >C_{10} - C_{16} (F2)	µg/L	<50	<50	290	560	<50	<50	1,000
TRH >C_{16}-C_{34} (F3)	µg/L	<100	<100	<100	<100	<100	<100	--
TRH >C_{34}-C_{40} (F4)	µg/L	<100	<100	<100	<100	<100	<100	--
Phenols								
Total Phenolics	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	*0.32*
Other Tests								
Hardness	mg.CaCO3/L	140	140	160	150	330	200	--

Notes:

-- No Criteria Established / Not Analysed

LOR = Limit of Reporting

NL = Not Limiting

10 SITE CHARACTERISATION

A summary of the information obtained and results of this assessment is presented below.

10.1 SITE HISTORY AND POTENTIAL FOR CONTAMINATION

The historical information indicates that the site was originally part of a larger parcel of land (likely rural/residential) before being progressively subdivided between 1914 and 1940 while owned by NSW Realty Co Limited. Initially the southern part of the site (88 and 90 New Illawarra Road and 311A Bexley Road) was subdivided and sold as two allotments in 1918 to George and Annie Gibbons and has since been owned by various individuals. The allotments extended between New Illawarra Road to the west and Bexley Road to the east and were further subdivided in the late 1960s to create the residential allotment known as 311A Bexley Road (Lot 5 DP508629). Historical aerial photographs suggest that this part of the site has predominately been used for residential purposes (low density). However, the dwelling at No. 90 New Illawarra Road is also known to have been partly used for commercial purposes, including a Butchers in the 1970s and 1980s.

The central part of the site (94 New Illawarra Road and 311 Bexley Road) was subdivided by NSW Realty Co Limited and sold off in 1919 as two allotments which currently exist. Historical aerial photographs indicate that this part of the site has been occupied by residential dwellings (low density) and associated garages, sheds and pools.

The northern part of the site (including 307 – 309 Bexley Road and 96 New Illawarra Road) was sold by NSW Realty Co Limited in 1940 and subdivided into the existing allotments by 1954. 96 New Illawarra Road (Lot A in DP388204) was developed into a dwelling circa 1954, while the remaining part of the land was developed into a service station (including mechanical repair workshop) soon after (late 1950s).

Of particular significance to this investigation are the activities associated with the service station at the northern end of the site, specifically the storage and use of fuels and mechanical repair of vehicles.

10.2 SOIL ASSESSMENT

Soil conditions across the site were assessed at seventeen borehole locations positioned in accessible areas across the site and targeting areas of potential contamination. The

number of sampling points exceeds the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards, and it is the opinion of GEE that the number of sampling points was sufficient to support the planning proposal.

The majority of the boreholes drilled by GEE were dry during drilling and also upon completion. Exceptions included some seepage water encountered below 1.6m in borehole BH102 and slight seepage noted between a depth of 2.0m and 2.8m depth within borehole BH107.

The subsurface conditions, as observed in the boreholes, typically comprised fill material over sandy clay soil which was underlain by sandstone bedrock. The thickness of the topsoil and/or fill unit ranged from 0.3m to 2.7m depth while the depth to the bedrock formation ranged from 0.75m to 2.7m depth.

During the drilling of boreholes, there were no unusual odours (that could be potentially associated with contamination) noted. Additionally, no potentially Asbestos Containing Materials (ACM) was observed below ground during sampling and logging.

GEE submitted a total of 41 primary soil samples from the 17 boreholes to Envirolab for NATA accredited laboratory analysis of metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc), TRH, BTEX, PAHs, OCPs, PCBs and asbestos. The analytical results were compared against relevant set of ecological and health-based Site Acceptance Criteria (SAC) appropriate for the proposed land-use (high density residential).

In summary, the fill and natural soil was found to be free of significant contamination which would impact on the proposed future high density development of the site.

10.3 GROUNDWATER CONDITIONS

Groundwater conditions were assessed using three pre-existing monitoring wells (GW01 to GW03) and three recently installed monitoring wells (BH102, BH105, BH107).

The stabilised level of groundwater within the wells installed within BH102, BH107, GW01, GW02 and GW03 was measured on the 14th November 2016 (approximately 13 days after installation of the wells) at depths of 1.28m, 1.78m, 2.21m, 2.13m and 1.34m bgs respectively. The well within borehole BH105 was dry to a depth of 2.4m

bgs. Water within the wells was slightly to moderately acidic (4.5<pH<6.5) and low in conductivity.

The water encountered in the wells is considered to be perched water flowing along the soil/bedrock interface and such water is normally significantly influenced by rainfall events and therefore its presence can be intermittent. This is supported by the fact that the well installed within borehole BH105 was dry to a depth of 2.4m.

Taking into account the approximate surface elevation at each of the well locations, it is inferred that the perched water is following the regional topography and flowing in a northerly to north-easterly direction. Although the flow direction is expected to have been significantly altered by the presence of UST tankpit excavations in the northern end of the site.

To assess the presence of contamination within the groundwater, a sample of water was collected and submitted to Envirolab for NATA accredited analysis of dissolved metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury), TRH, BTEX, PAHs and Phenols. The analytical results were then compared against a set of Groundwater Assessment Criteria (GAC) considered appropriate for the environmental setting of the site. In summary so significant contamination was found.

11 CONCLUSION AND RECOMMENDATIONS

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by Mr Tony Soueid to undertake a preliminary and detailed Environmental Site Assessment (ESA) at 307 - 311 Bexley Road & 88 - 96 New Illawarra Road, Bexley North, New South Wales.

The ESA was required to support a planning proposal which relates to the proposed rezoning of the site to R4 – High Density Residential. The objective of this assessment was to address the requirements of Council's Contaminated Land Policy (reference 1) and the provisions of the *State Environmental Planning Policy No. 55 – Remediation of Land* (reference 2) by providing a preliminary assessment of contamination and in turn an assessment of the suitability of the site for the proposed land-use and possible constraints on future site development.

The scope of works completed for the ESA comprised a:

- ◊ A review of the previous investigation report,
- ◊ Review of the environmental and physical setting in which the site lies, including geology, hydrogeology and topography,
- ◊ Review of the history of the site using readily available records and historical aerial photographs,
- ◊ Detailed site inspection for potential sources of contamination, and
- ◊ A detailed sampling and analysis program to characterise potential soil and groundwater contamination across the site.

The detailed sampling and analysis program completed by GEE identified no significant soil or groundwater contamination associated with the site which would impact on the proposed future high density development of the site. Notwithstanding this, there is an operational petrol station located at the southern end of the site and it was impossible to investigate immediately adjacent and beneath the Underground Petroleum Storage System (UPSS).

Based on observations made during the field investigations, the sampling and analysis program conducted at the site (including that completed previously by STS), the proposed land-use and with respect to relevant statutory guidelines, GEE conclude that the site can be made suitable for the proposed land-use described in the planning proposal, subject to the excavation, removal and validation of the existing UPSS. In accordance with Council's Contaminated Lands Policy (reference 1) and SEPP 55

(reference 2), a Remedial Action Plan (RAP) should be prepared which details the methodology for the excavation, removal and validation of the existing UPSS.

12 GENERAL LIMITATIONS OF THIS REPORT

This report has been prepared in general accordance with guidelines endorsed by the NSW Office of Environment and Heritage, and the conclusions of this report are based on a limited scope of work described herein, which was considered appropriate based on the same regulatory guidelines.

It is the intention of GEE that the report reflect actual subsurface site conditions, and the contamination status, of the entire site (within the depths investigated). However, regardless of the level of investigation undertaken, there will always be uncertainty when dealing with land contamination. For instance, the sampling points (boreholes and/or testpits) represent a relatively small portion of the site, and ground conditions may vary between sampling locations. The cause of such variation may include, but are not limited to, complex geological settings, the fate and transport characteristics of certain chemicals, the distribution of existing contamination, physical limitations imposed by the location of utilities and other man-made structures, and the limitations of assessment technologies.

Furthermore, the laboratory analytical results contained in this report, upon which conclusions are drawn, relate only to a discrete sample submitted for analysis. Also, not all chemicals have been assessed as part of this investigation. The chemical analytes targeted by this investigation are based on either the site's history, or represent a suite of common soil contaminants.

This report is based on site conditions which existed at the time of the field investigation and subsurface conditions may change over time, either through natural processes, or via ongoing activities on the site. Should additional information become available regarding conditions at the site (such as during construction), including evidence of previously unknown sources of contamination, then additional advice should be sought from GEE.

Finally, this report has been prepared for use by the client who has commissioned the works in accordance with the project brief only. Any reliance assumed by third parties on this report shall be at their own risk. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by GEE.

13 REFERENCES

1. Bayside City Council, 2017: *Council Policy - Contaminated and Potentially Contaminated Land*. Adopted 28 July 2015 (reference C/POL/COR/045).
2. DUAP (1998): *State Environmental Planning Policy 55 – Remediation of Land. (Department of Urban Affairs and Planning: Sydney).*
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4. NEPM, 2013: *National Environment Protection (Assessment of Site Contamination) Measure 1999 - Schedule B(2) Guideline of Site Characterisation.* As amended 16 May 2013.
5. STS GeoEnvironmental Pty Ltd, 2016: *Preliminary Geotechnical Investigation for Tony Soueid, Bexley Road, Bexley North New South Wales.* Report No. 15/3507A Project No. 20749/6466C, Dated February 2016.
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9. Australian Standard AS4482.2 (1999). *Australian Standard Guide to the Sampling and Investigation of Potentially Contaminated Soil - Part 2: Volatile substances*.
10. NSW EPA, 1995: Environment Protection Authority NSW, 1995: *Contaminated Sites: Sampling Design Guidelines*, EPA NSW.
11. Australian Standard AS4482.1 – 2005 Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.
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13. NEPC, 2013: National Environment Protection Council (1999*).* National Environment Protection (Assessment of Site Contamination) Measure. *Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater.*
14. Friebel & Nadebaum (2011): *Technical Report No. 10 - Health screening levels for petroleum hydrocarbons in soil and groundwater Part 1: Technical development*

document. CRC for Contamination Assessment and Remediation of the Environment.

15. ANZECC/ARMCANZ, 2000: Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000: *Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy*. October 2000.
16. Hem JD. 1989. *Study and interpretation of the chemical characteristics of natural water.* 3rd edition. U.S. Geological Survey, Water-Supply Paper 2255, 263 pp.

FIGURES

1 – Site Location Map
2 – Site Plan
3 – UST Locations

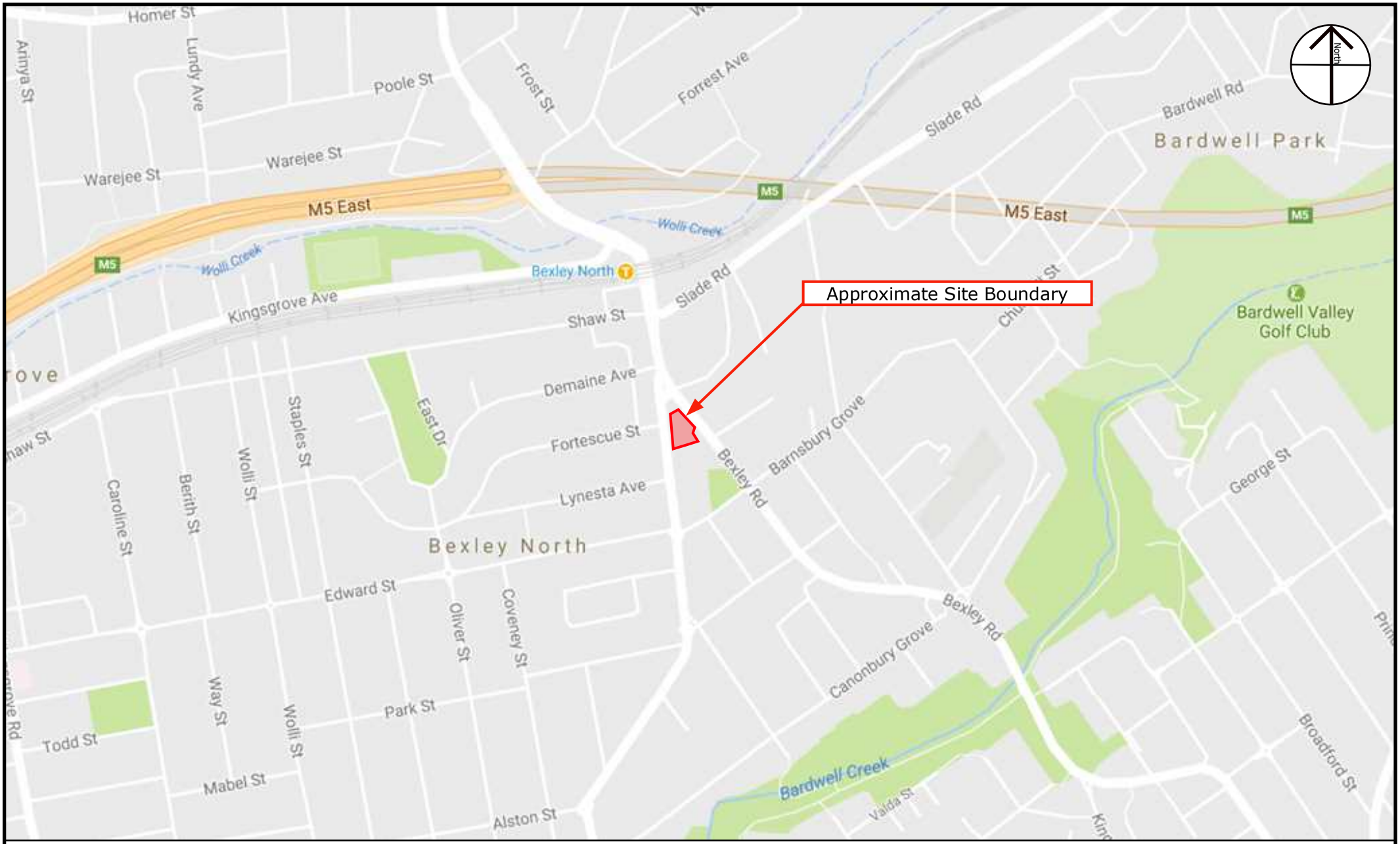
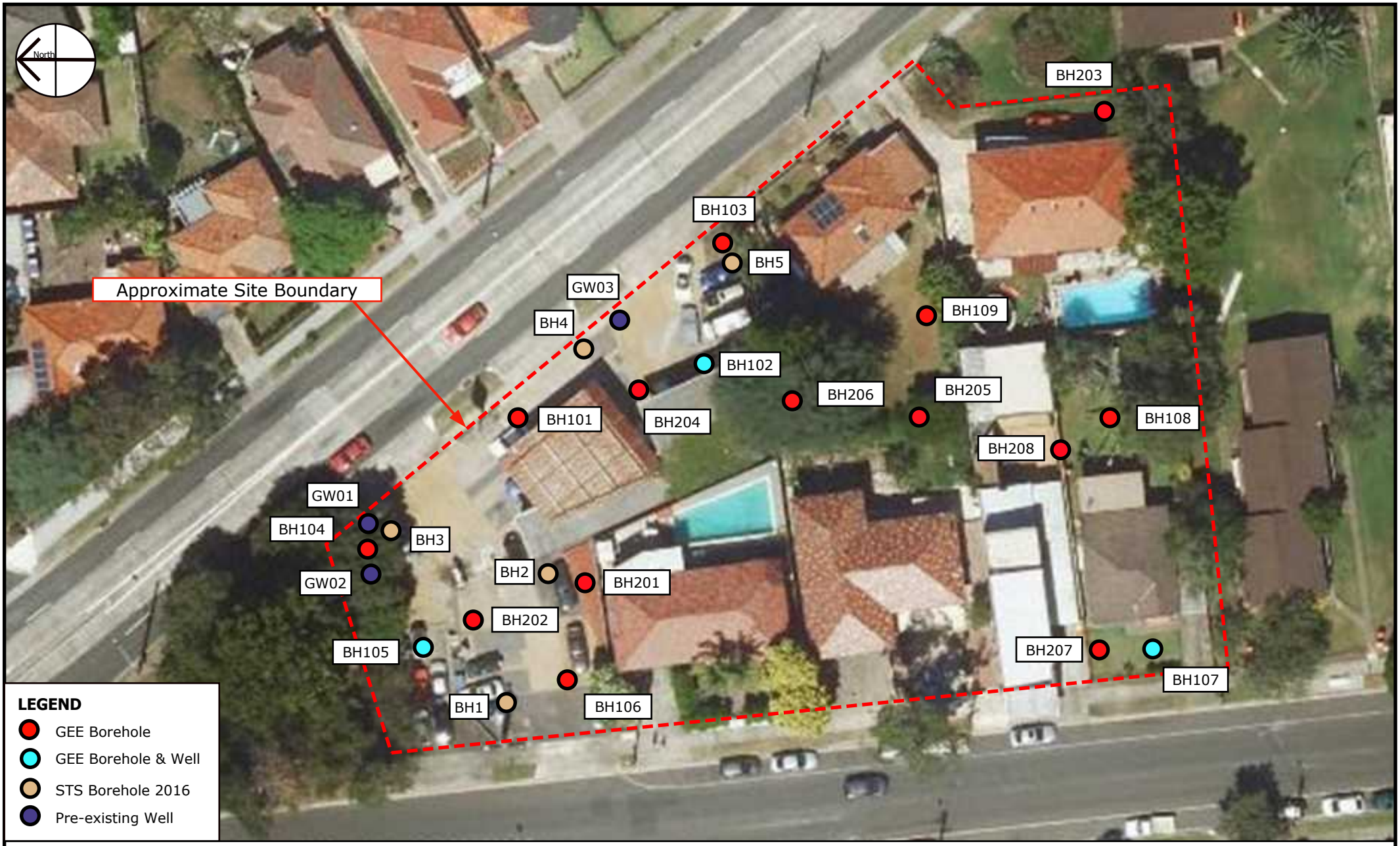


Image Source: ©2016 Google - Google Maps, retrieved 05/08/2016

geo-environmental ENGINEERING
82 BRIDGE STREET
LANE COVE NSW 2066
P - 61 (2) 9420 3361
E - info@geoenvironmental.com.au
www.geoenvironmental.com.au

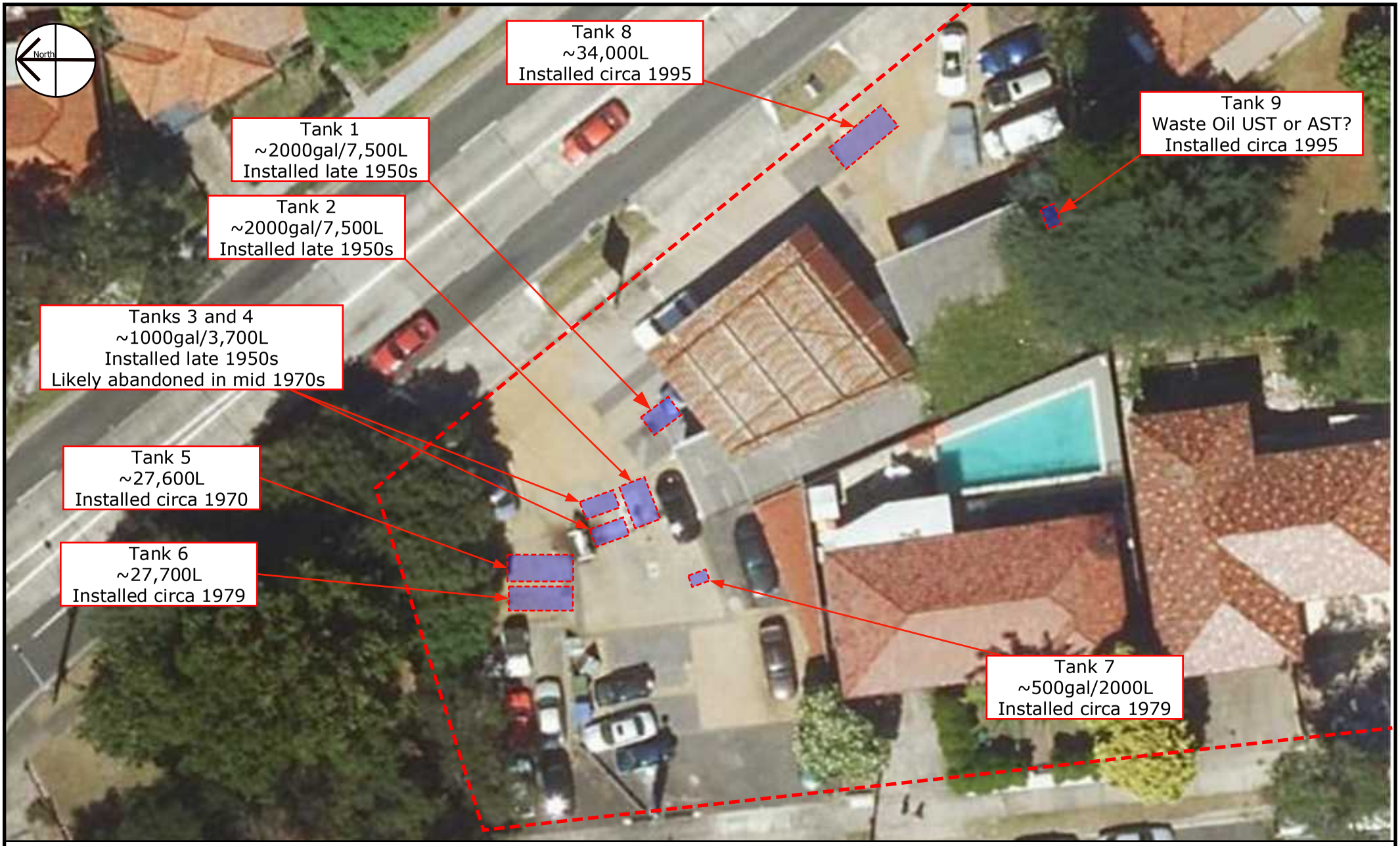
TITLE: SITE LOCATION MAP: 307-311 Bexley Rd & 88-96 New Illawarra Rd, Bexley North NSW	SCALE: **N.T.S**	DATE: **25 July 2017**	FIGURE No. **1**
	DRAWN: **A. Chiem**	JOB No.: **E16016BN**	REVISION: **A**



Aerial image: provided by SIXmaps (NSW LPI) - retrived 03/11/2016

geo-environmental ENGINEERING
82 BRIDGE STREET
LANE COVE NSW 2066
P - 61 (2) 9420 3361
E - info@geoenvironmental.com.au
www.geoenvironmental.com.au

TITLE: SITE PLAN 307-311 Bexley Rd & 88-96 New Illawarra Rd Bexley North NSW	SCALE: **N.T.S**	DATE: **19 Jul 2017**	FIGURE No. **2**
	DRAWN: **J. Long**	JOB No.: **E16016BN**	REVISION: **A**



Aerial image: provided by SIXmaps (NSW LPI) - retrived 03/11/2016

geo-environmental ENGINEERING
82 BRIDGE STREET
LANE COVE NSW 2066
P - 61 (2) 9420 3361
E - info@geoenvironmental.com.au
www.geoenvironmental.com.au

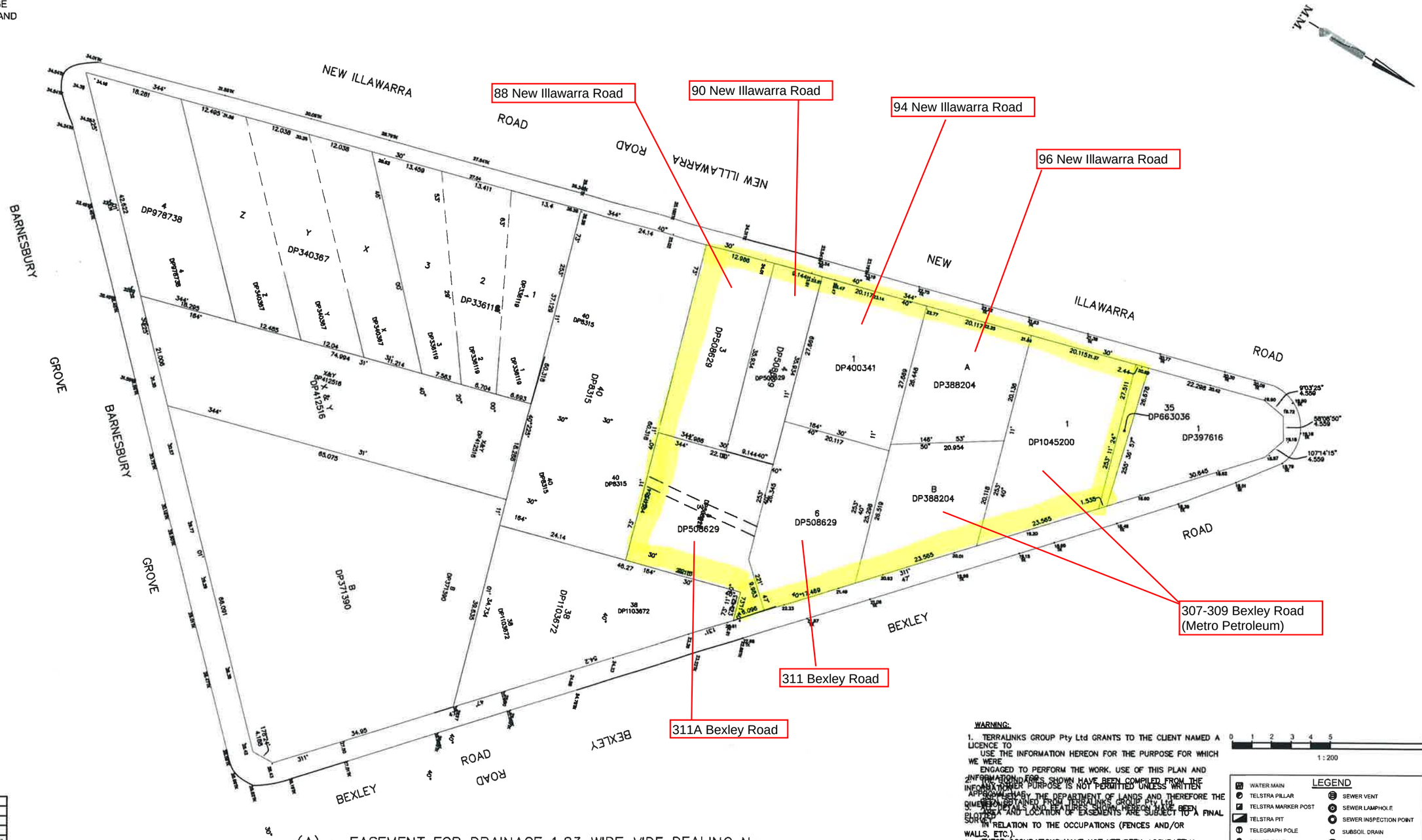
TITLE:	SCALE:	DATE:	FIGURE No.
UST Locations	N.T.S	21 Dec 2016	3
	DRAWN: A. Chiem	JOB No.: E16016BN	REVISION: A

APPENDIX A

SITE SURVEY

A1

L.G.A. : ROCKDALE
PARISH : ST GEORGE
COUNTY : CUMBERLAND



(A) ~ EASEMENT FOR DRAINAGE 1.83 WIDE VIDE DEALING No. J601625 AND J601626.

Rev.	Amendments	Date

PLAN SHOWING THE BOUNDARIES AND KERB LEVELS FOR No. 307–311A BEXLEY ROAD & No. 94–100 ILLAWARRA ROAD, BEXLEY NORTH FOR REZONING PURPOSES AND TO SUPPORT A D.A.

TERRALINKS
ABN 52 159 137 907
UNIT 16/429 THE BOULEVARDE, KIRRAWEE NSW 2232
c/– PO Box 559, SUTHERLAND NSW 1499
PH 1300 525 584 FAX (02) 9521 6315 MOB 0418 417 341
Email: mail@terralinks.com.au

JOB No.	YOUR REF:
4912	SOUEID
DRAWING No.	CLIENT:
4912CO.dwg	JS ARCHITECTS PTY LTD

SCALE: 1:200 (A1)	SURVEYED	DRAWN	CHECKED
DATUM: AHD	M.M.	M.M.	J.P.
SHEET: 1 OF 4	DATE: 18.05.19	DATE: 19.05.19	DATE: 19.05.19

JACE THOMAS PEARSON
SURVEYOR REGISTERED
UNDER SURVEYING & SPATIAL
INFORMATION ACT, 2002
IDENTIFICATION No. 1827

TOTAL AREA OF SITE
VIDE DP's: 3,774.9m²
BY CALC : 3,870.9m²

ORIGIN OF LEVELS :
SSM 112399 RL=22.32 (AHD) FOUND NEAR THE INTERSECTION OF NEW ILLAWARRA ROAD & FORTESCUE STREET.
ACCURACY OF ORIGIN : ± 0.01m

DIAL 1100 BEFORE YOU DIG
www.1100.com.au

WARNING:

1. TERRALINKS GROUP Pty Ltd GRANTS TO THE CLIENT NAMED A LICENCE TO USE THE INFORMATION HEREON FOR THE PURPOSE FOR WHICH WE WERE ENGAGED TO PERFORM THE WORK. USE OF THIS PLAN AND INFORMATION FOR ANY OTHER PURPOSE IS NOT PERMITTED UNLESS WRITTEN APPROVAL IS OBTAINED FROM TERRALINKS GROUP PTY LTD.
2. THE BOUNDARIES SHOWN HAVE BEEN COMPILED FROM THE DIMENSIONS, MARKS AND FEATURES SHOWN HEREON AND HAVE BEEN PLOTTED.
3. IN RELATION TO THE OCCUPATIONS (FENCES AND/OR WALLS, ETC.).
4. THESE OCCUPATIONS ARE CONSIDERED ACCEPTABLE TO A DEPTH OF 0.2m.
5. SERVICE STRUCTURES SHOWN HEREON ARE THOSE THAT WERE VISIBLE AT THE TIME OF SURVEY AND HAVE BEEN LOCATED BY FIELD SURVEY.
6. FURTHER SERVICES MAY BE PRESENT. PRIOR TO ANY CONSTRUCTION OR EXCAVATION ON SITE THE RELEVANT AUTHORITIES SHOULD BE CONTACTED.
7. THE CONTOUR INTERVAL IS 0.2 m.
8. THE ACCURACY OF LOCATION DATA IN NOT SUITABLE FOR SETTING OUT CONSTRUCTION COMMENCING.
9. THE CONTOURS HAVE BEEN DERIVED FROM INTERPOLATION METHODS USING COMPUTER SOFTWARE PROGRAM AND WHEREVER POSSIBLE SPOT LEVELS SHOULD BE USED IN PREFERENCE TO CONTOURS.
10. THE RIDGE HEIGHTS, ROOF LINE, GUTTER AND WINDOW SILL LEVELS FOR BOTH THE SUBJECT AND ADJOINING BUILDINGS HAVE BEEN DETERMINED USING INDIRECT SURVEY METHODS AND ARE APPROXIMATE ONLY.
11. THE MEASUREMENT OF ALL TREE TRUNK DIAMETERS WAS IN ACCORDANCE WITH AS4970-2009 PROTECTION OF TREES ON DEVELOPMENT SITES.
12. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

0 1 2 3 4 5 10m
1 : 200

LEGEND

WATER MAIN	SEWER VENT
TELSTRA PILLAR	SEWER LAMPHOLE
TELSTRA MARKER POST	SEWER INSPECTION POINT
TELSTRA PIT	SUBSOIL DRAIN
TELEGRAPH POLE	STORMWATER PIT
POWER POLE	STORMWATER GRATE
ELECTRICAL PILLAR	SURFACE INLET PIT
POWER LIGHT POLE	LINTEL-KERB INLET PIT
LIGHT POLE	LINTEL-KERB INLET PIT WITH GRATE
HYDRANT	STORMWATER PIPE INCLUDING PIPE SIZE
RECYCLED WATER	HEADWALL
WATER METER	CLOTHES LINE
STOP VALVE	TREE: Ø DIAMETER S SPREAD
WATER TAP	OVERHEAD ELECTRICITY LINE
GAS METER	OVERHEAD TELECOM LINE
GAS DIRECTION MARKER	SEWER LINE
GAS INSPECTION POINT	
SEWER MANHOLE	
STREET SIGN	
PRAM CROSSING	
VEHICLE CROSSING	

APPENDIX B

LOTSEARCH REPORT

Lotsearch

Environmental Risk and Planning Report

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Report Buffer: 1000m

Report Date: 13 Oct 2016 13:13:08

Table of Contents

Location Confidences

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

LC Code	Location Confidence
1	Georeferenced to the site location / premise or part of site
2	Georeferenced with the confidence of the general/approximate area
3	Georeferenced to the road or rail
4	Georeferenced to the road intersection
5	Feature is a buffered point
6	Land adjacent to Georeferenced Site
7	Georeferenced to a network of features

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Land and Property Information	13/10/2016	13/10/2016	Daily	-	-	-
Topographic Data	Land and Property Information	10/04/2015	01/04/2015	As required	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	10/10/2016	30/08/2016	Monthly	0	0	0
Contaminated Land: Records of Notice	Environment Protection Authority	10/10/2016	10/10/2016	Monthly	0	0	0
Former Gasworks	Environment Protection Authority	10/10/2016	10/05/2013	Monthly	0	0	0
National Waste Management Site Database	Geoscience Australia	06/07/2016	15/11/2012	Quarterly	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	20/09/2016	20/09/2016	Monthly	0	0	2
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	20/09/2016	20/09/2016	Monthly	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	20/09/2016	20/09/2016	Monthly	0	0	4
UPSS Environmentally Sensitive Zones	Department of Environment, Climate Change and Water (NSW)	14/04/2015	12/01/2010	As required	1	1	1
UBD Business to Business Directory 1991	Hardie Grant			Not required	1	3	3
UBD Business Directory 1991 Motor Garages/Service Stations	Hardie Grant			Not required	0	1	1
UBD Business Directory 1970	Hardie Grant			Not required	2	29	53
UBD Business Directory 1970 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	1	4	9
UBD Business Directory 1950	Hardie Grant			Not required	1	8	10
UBD Business Directory 1950 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	0	1	5
Points of Interest	Land and Property Information	10/04/2015	01/04/2015	Annually	0	1	45
Tanks (Areas)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	0
Tanks (Points)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	0
Major Easements	Land and Property Information	11/06/2014	11/06/2014	As required	0	0	8
State Forest	Land and Property Information	11/04/2016	23/01/2015	As required	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment and Heritage	11/04/2016	31/12/2015	Annually	0	0	1
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1	1	1
Groundwater Boreholes	NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology) 2015	21/03/2016	01/12/2015	Annually	0	0	21
Geological Units 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	2	-	3
Geological Structures 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	0	-	0
Naturally Occurring Asbestos Potential	NSW Department of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	0	0	0
Soil Landscapes	NSW Office of Environment and Heritage	12/08/2014		None planned	1	-	3
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	1	-	-
Dryland Salinity Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	0	0	0
Mining Subsidence Districts	Land and Property Information	13/10/2016	13/10/2016	As required	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	0	0	0
SEPP Strategic Land Use Areas	NSW Planning and Environment	06/07/2016	28/01/2014	Annually	0	0	0
Local Environmental Plan - Land Zoning	NSW Planning and Environment	03/10/2016	04/08/2016	Quarterly	1	8	66
Local Environmental Plan - Minimum Subdivision Lot Size	NSW Planning and Environment	03/10/2016	04/08/2016	Quarterly	1	-	-
Local Environmental Plan - Height of Building	NSW Planning and Environment	03/10/2016	04/08/2016	Quarterly	1	-	-
Local Environmental Plan - Floor Space Ratio	NSW Planning and Environment	03/10/2016	04/08/2016	Quarterly	1	-	-
Local Environmental Plan - Land Application	NSW Planning and Environment	03/10/2016	04/08/2016	Quarterly	1	-	-
Local Environmental Plan - Land Reservation Acquisition	NSW Planning and Environment	03/10/2016	04/08/2016	Quarterly	0	-	-
State Heritage Items	NSW Planning and Environment	03/10/2016	12/03/2015	Quarterly	0	0	0
Local Heritage Items	NSW Planning and Environment	03/10/2016	04/08/2016	Quarterly	0	0	10
Bushfire Prone Land	NSW Rural Fire Service	18/08/2016	12/08/2016	Quarterly	0	0	0
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment and Heritage	08/10/2014	11/10/2013	As required	1	1	6
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	0	0	0
ATLAS of NSW Wildlife	NSW Office of Environment and Heritage	13/10/2016	13/10/2016	Daily	-	-	-

Aerial Imagery 2015

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Scale: 0 25 50 100 Meters	Data Sources: Aerial Imagery © 2016 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 12October, 2016

Contaminated Land & Waste Management Facilities

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

List of NSW contaminated sites notified to EPA

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

Map Id	Site	Address	Suburb	Activity	EPA site management class	Status	Dist	Direction	LC
N/A	No records in buffer								

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

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

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

Contaminated Land & Waste Management Facilities

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Contaminated Land: Records of Notice

Record of Notices within the report buffer:

Map Id	Area No	Name	Address	Suburb	Notices	Distance	Direction	LC
N/A	No records in buffer							

Contaminated Land Records of Notice Data Source: Environment Protection Authority

Former Gasworks

Former Gasworks within the report buffer:

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

Former Gasworks Data Source: Environment Protection Authority

National Waste Management Site Database

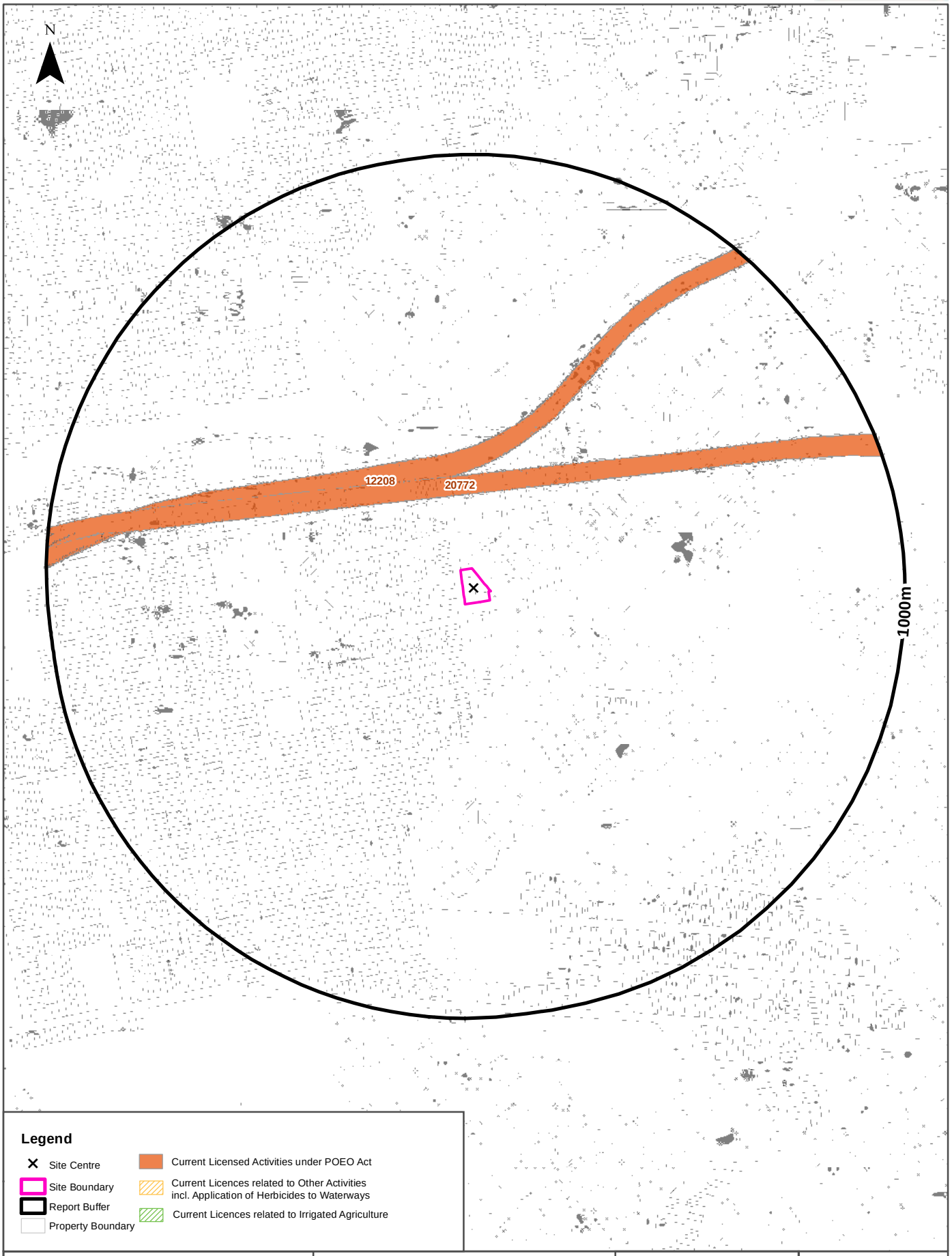
Sites on the National Waste Management Site Database within the report buffer:

Site Id	Owner	Name	Address	Suburb	Postcode	Landfill	Reprocess	Transfer	Distance	Direction	LC
N/A	No records in buffer										

Wate Management Facilities Data Source: Australian Governement Geoscience Australia

Current EPA Licensed Activities

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



EPA Activities

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Licensed Activities under the POEO Act 1997

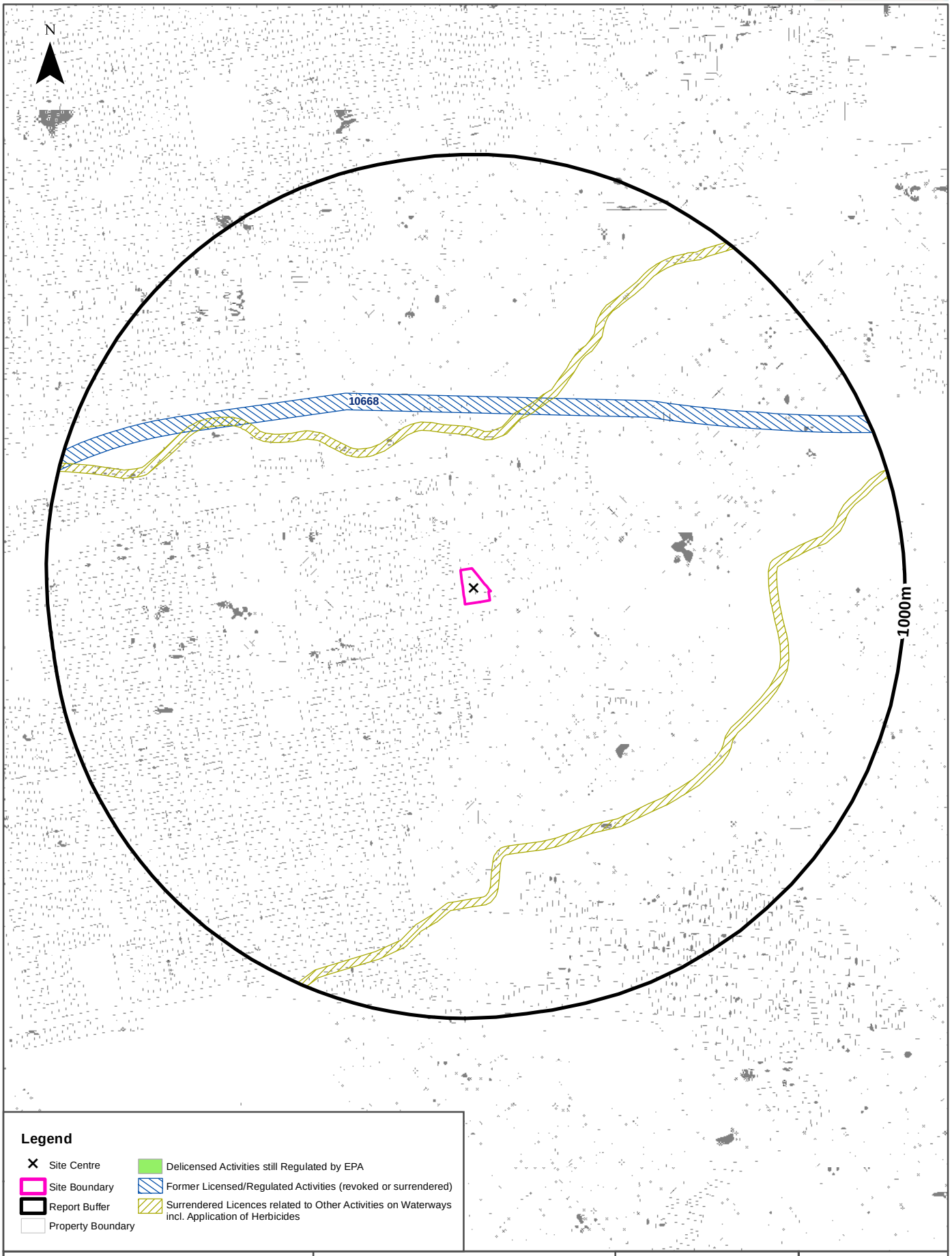
Licensed activities under the Protection of the Environment Operations Act 1997, within the report buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
20772	CPB CONTRACTORS PTY LIMITED		Between Beverly Hills and St Peters, BEVERLY HILLS, NSW 2209		Road construction	3	180m	North East
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	3	226m	North West

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



EPA Activities

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

Delicensed Activities Data Source: Environment Protection Authority

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

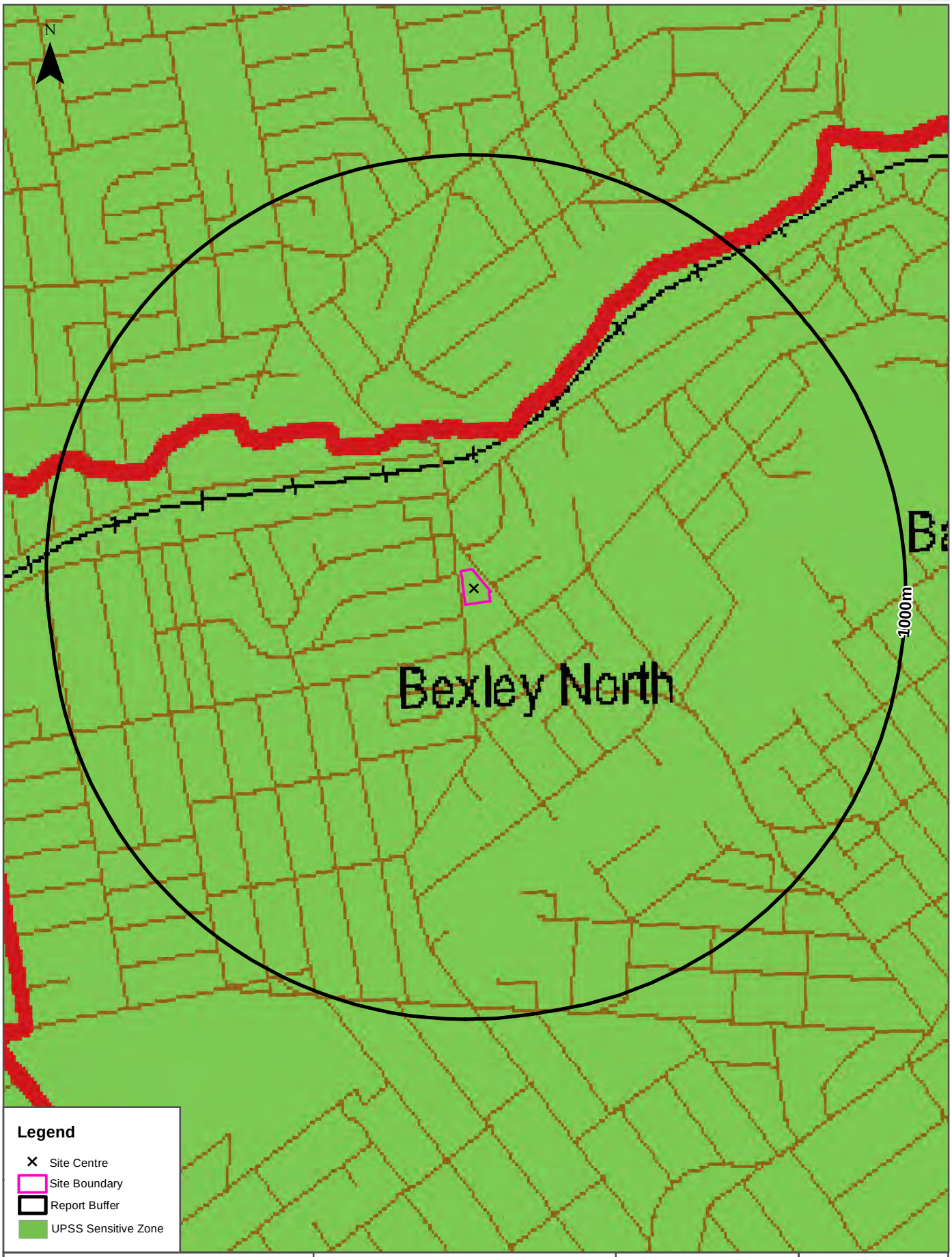
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the report buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	312m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	312m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	312m	-
10668	BILFINGER BERGER PROJECT INVESTMENTS PTY LTD	M5 EAST BETWEEN KINGS GEORGES RD, BEVERLY HILLS & GENERAL HOLMES DRIVE, KYEEMAGH, EARLWOOD, NSW 2206	Surrendered	05/06/2001	Road construction	3	376m	East

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



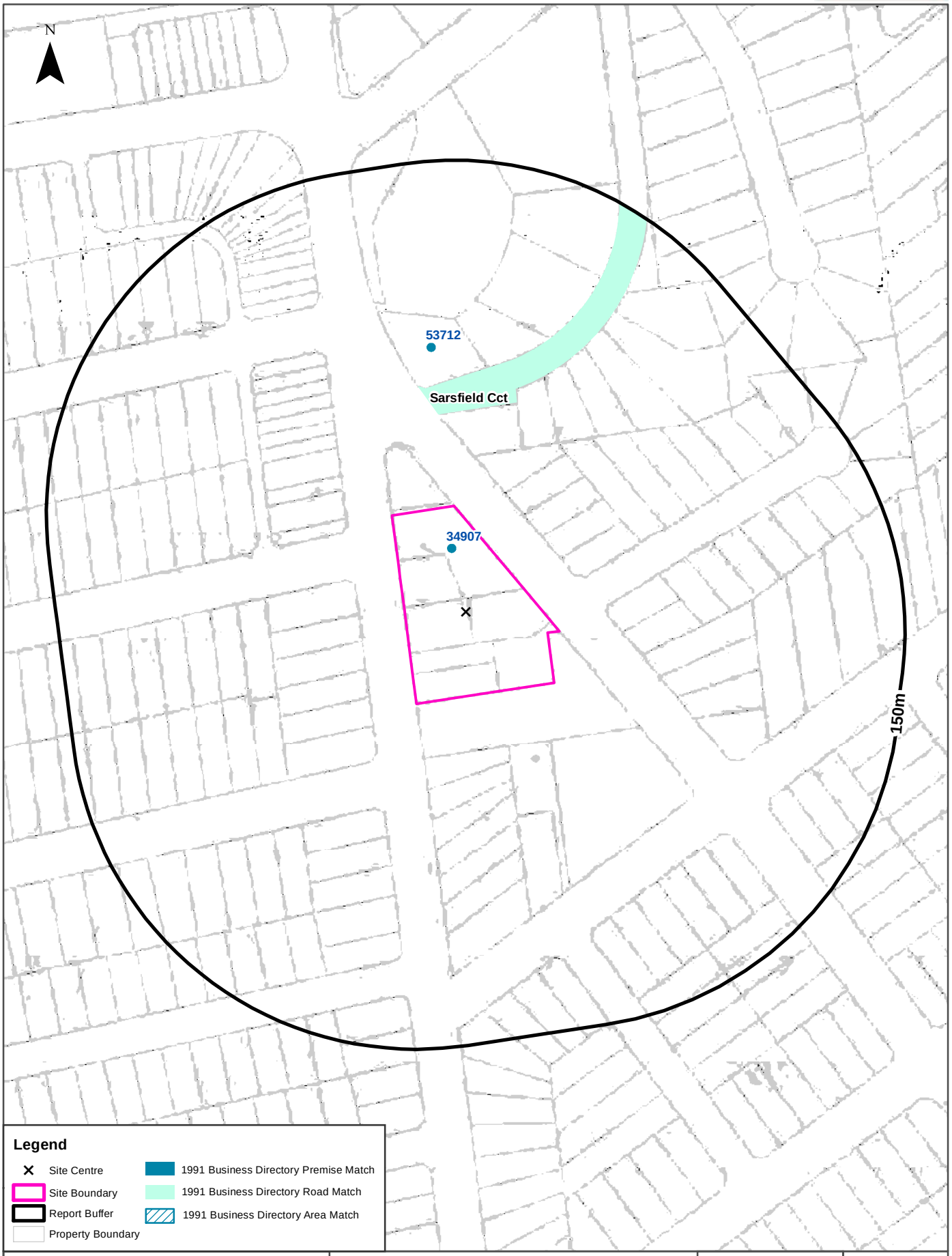
UPSS Data Source: Environment Protection Authority
© Dept of Environment, Climate Change & Water (NSW)

Coordinate System:
GDA 1994 MGA Zone 56

Date: 13October 2016

1991 Historical Business Directory Records

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2016

Coordinate System:
GDA 1994 MGA Zone 56

Date:
13 October 2016

Historical Business Directories

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

1991 Business to Business Directory Records

Records from the 1991 UBD Business to Business Directory within 150m of the site:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Auto Electricians	Caltex Bexley North Service Station	309 Bexley Rd, Bexley North 2207	34907	Premise Match	0m	Onsite
Bakers	Wilson's Cake Shoppe	Sarsfield Cr, Bexley North 2207	35381	Road Match	40m	North
Motor Garages & Service Stations	Esso Bexley North Service Station	320 Bexley Rd, Bexley North 2207	53712	Premise Match	67m	North

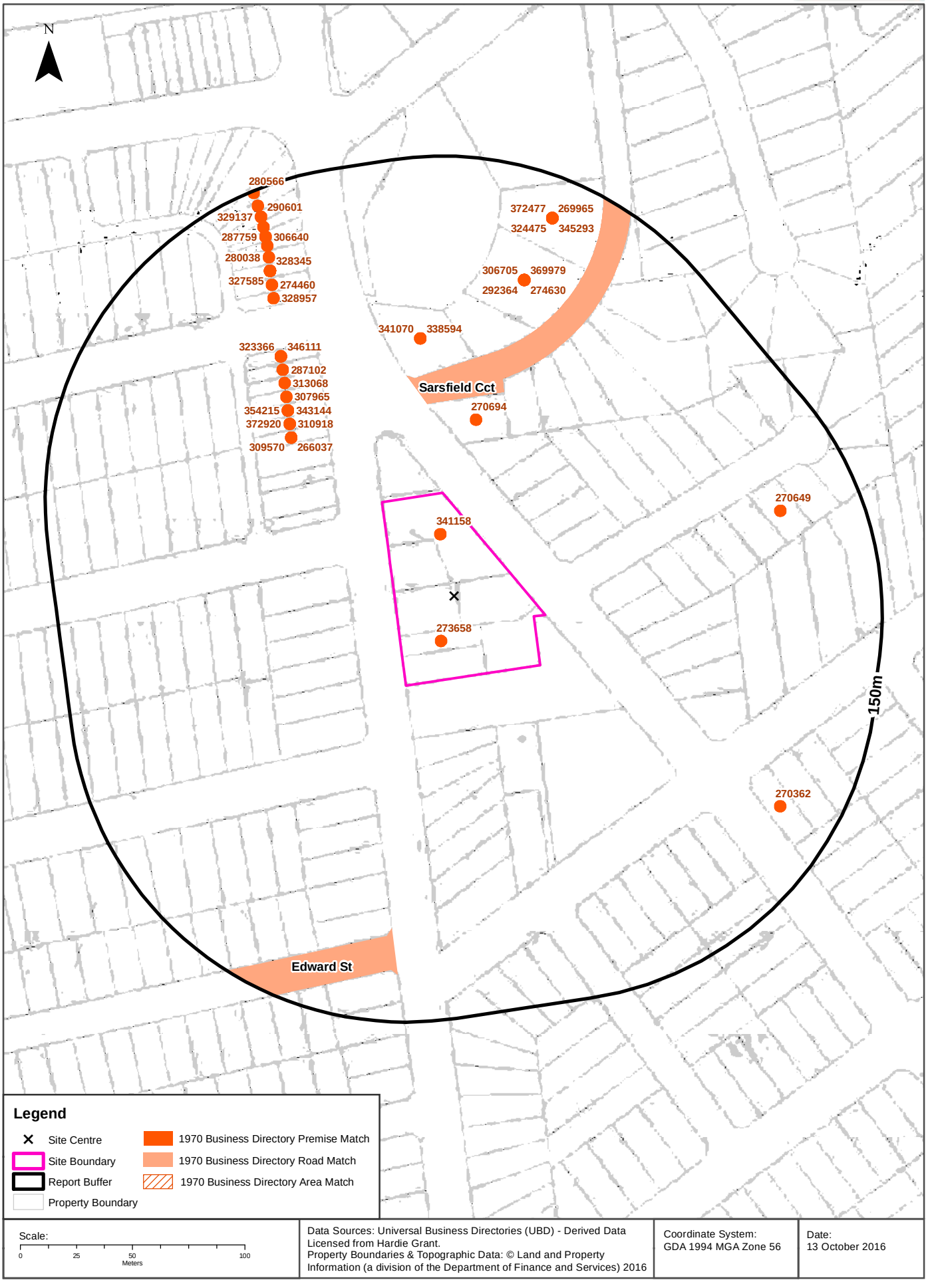
1991 Business Directory Motor Garages & Service Stations

Motor Garages & Service Stations from the 1991 UBD Business Directory within 1km of the site:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Motor Garages & Service Stations	Esso Bexley North Service Station	320 Bexley Rd, Bexley North 2207	53712	Premise Match	67m	North

1970 Historical Business Directory Records

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2016

Coordinate System:
GDA 1994 MGA Zone 56

Date:
13 October 2016

Historical Business Directories

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

1970 Business Directory Records

Records from the 1970 UBD Business Directory within 150m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
BUTCHERS-RETAIL (B860)	Gibbons, J., 90 New iilawarra Rd., Bexley North	273658	Premise Match	0m	Onsite
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Golden Fleece Service Station,309 Bexley Rd.BEXLEY NORTH	341158	Premise Match	0m	Onsite
BUILDERS & CONTRACTORS-(M.M.B.A.) (B796)	King, H E., 330 Bexley Rd., Bexley North NSW	270694	Premise Match	34m	North
BUTCHERS-RETAIL (B860)	Angus Steaks, Sarsfield Crct(off 336 Bexley Rd.), BexleyNorth	273076	Road Match	40m	North
HAIRDRESSERS (GENT.'S) (H070)	Bexley North Gentlemen's Hairdresser,Sarsfield Circuit,off 336 Bexley Rd.,Bexley North	313633	Road Match	40m	North
RESTAURANTS (R320)	Coffee Break Restaurant,Sarsfield Circuit (off 336 Bexley Rd.),Bexley North	356827	Road Match	40m	North
BEAUTY SALONS &/OR LADIES' HAIRDRESSERS (B260)	Florida Beauty Salon, Sarsfield Crct., off 336 Bexley Rd.,Bexley North	265897	Road Match	40m	North
ANIMAL & BIRD FOOD SUPPLIES (A375)	Pets' Food Fair, Sarsfield Crct, off 336 Bexley Rd, BexleyNorth	261580	Road Match	40m	North
MEDICAL PRACTITIONERS (M216)	Stuart,Kingston,Sarsfield Circuit,off 336 Bexley Rd.,Bexley North	328344	Road Match	40m	North
BEAUTY SALONS &/OR LADIES' HAIRDRESSERS (B260)	Janece Beauty Salon, 91 New Illawarra Rd., Bexley North	266037	Premise Match	48m	North West
FURNITURE-HOUSEHOLD-RETAILERS RETAILERS (F740)	Rigby,N.R.,91 New Illawarra Rd.,Bexley North	309570	Premise Match	48m	North West
WALLPAPER MERCHANTS (W035)	McKee,R.J.& Co.,93 New Illawarra Rd.,Bexley North	372920	Premise Match	52m	North West
GIFT SHOPS (G180)	McKee,R.J.ft Co.,93 New 11 lawarra Rd.,Bexley North	310918	Premise Match	52m	North West
MUSIC-SHEET &/OR RECORDDEALERS (M776)	Carter,P.,95 New Illawarra Rd.,Bexley North	343144	Premise Match	57m	North West
RADIO &/OR TELEVISION SALES & SERVICEMEN (R090)	Carter,P.,95 New Illawarra Rd.BEXLEY NORTH	354215	Premise Match	57m	North West
FRUITERERS/GREENGROCERS (F640)	Spasaro,Sammy,97 New Illawarra Rd.,Bexley North	307965	Premise Match	61m	North West
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Esso Servicenter,320 Bexley Rd.BEXLEY NORTH	341070	Premise Match	67m	North
MOTOR GARAGES & ENGINEERS (M6S6)	Shapiro,W. Sc A.,320 Bexley Rd.BEXLEY NORTH	338594	Premise Match	67m	North
GROCERS-RETAIL (G655)	Taylor,H. J.,99 New tllawarra Rd.,Bexley North	313068	Premise Match	67m	North West
DELICATESSENS (D080)	Andrew's Delicatessen,101 New Itlawarra Rd.,Bexley North	287102	Premise Match	72m	North West
PAINT,VARNISH,OILS/COLOUR MERCHANTS (P074)	Blackwell's Hardware,103 New Hlawarra Rd.,Bexley North	346111	Premise Match	77m	North West
GARDEN SUPPLIES-RETAIL (G060)	Blackwell's Hardware,103 New Illawarra Rd.,Bexley North	310256	Premise Match	77m	North West
LIME/CEMENT MERCHANTS (L490)	Blackwell's Hardware,103 New IMawarra Rd.,Bexley North	323366	Premise Match	77m	North West
HARDWARE DEALERS/IRONMONGERS (H230)	Blackwell's Hardware,103 New Ulawarra Rd.BEXLEY NORTH	314918	Premise Match	77m	North West
TOY DEALERS-RETAIL (T535)	Bexley North Hobby Centre,14 Sarsfield Circuit,BexleyNorth	369979	Premise Match	99m	North
FRUITERERS/GREENGROCERS (F640)	Bourke & Dennis,10 Sarsfield Crct.,Bexley North	306705	Premise Match	99m	North
BEAUTY SALONS &/OR LADIES' HAIRDRESSERS (B260)	Florida Keys Beauty Salon, 16 Sarsfield Crct., Bexley North	265898	Premise Match	99m	North
DRY CLEANERS,PRESSERS/DYERS (D710)	Kleenit Valet Service,18 Sarsfield Crct.,Bexley North	292364	Premise Match	99m	North
BUTCHERS-RETAIL (B860)	Stroud, G., 8 Sarsfield Circuit, Bexley North	274630	Premise Match	99m	North
MERCERS-MEN'S & BOYS' OUTFITTERS(M232)	Johnston,T.,305 Bexley Rd.,Bexley North	328957	Premise Match	101m	North West

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
BUTCHERS-RETAIL (B860)	Ron's Butchery, 303 Bexley Rd., Bexley North	274460	Premise Match	107m	North West
CLUBS & SPORTING BODIES (C487)	Bexley Bowling & Recreation Club, Edward St., Bexley North	284016	Road Match	108m	South West
BUILDERS & CONTRACTORS-(M.M.B.A.) (B796)	Hargreaves, CW., 13 Fowler Ave., Bexley North NSW	270649	Premise Match	112m	East
MEDICAL PRACTITIONERS (M216)	Boden,Betty,301 Bexley Rd.,Bexley North	326231	Premise Match	112m	North West
DENTISTS (D140)	Cotterell,F.H.,301 Bexley Rd.,Bexley North	288479	Premise Match	112m	North West
MEDICAL PRACTITIONERS (M216)	Mathers,P.,301 Bexley Rd.,Bexley North & Branch	327585	Premise Match	112m	North West
MEDICAL PRACTITIONERS (M216)	Stuart,Mary,301 & 446 Bexley Rd.,Bexley North	328345	Premise Match	112m	North West
CHEMISTS-PHARMACEUTICAL (C286)	Bateman's Pharmacy, Neville, 299 Bexley Rd., Bexley North	280038	Premise Match	118m	North West
BUILDERS & CONTRACTORS (B800)	Sadler, B., 24 Bamsberry Gr., Bexley North	270362	Premise Match	122m	South East
DELICATESSENS (D080)	McKenna's Delicacies,297a Bexley Rd.,Bexley North	287684	Premise Match	123m	North West
FRUITERERS/GREENGROCERS (F640)	Barbuto Bros.297 Bexley Rd.,Bexley North	306640	Premise Match	127m	North West
DELICATESSENS (D080)	Notaras,P.,297 Bexley Rd.,Bexley North	287759	Premise Match	127m	North West
OPTOMETRISTS-REGISTERED (O 280)	Andrews,Brian K.,32 Sarsfield Crct.,off 336 Bexley Rd.,Bexley North	345293	Premise Match	130m	North
BUILDERS & CONTRACTORS (B800)	Braeside Building Co. Pty. Ltd., 34 Sarsfield Circuit, BexleyNorth	269965	Premise Match	130m	North
BUILDERS & CONTRACTORS (B800)	Braeside Constructions Co. Pty. Ltd., 34 Sarsfield CircuitBexley North	269966	Premise Match	130m	North
HAIRDRESSERS (GENT.'S) (H070)	Meier,P.,22 Sarsfield Circuit,Bexley North	314187	Premise Match	130m	North
MANAGEMENT CONSULTANTS(M077)	Rosser,R. & Associates,26 Sarsfield Crct.,Bexley North	324475	Premise Match	130m	North
VENDING MACHINE MFR.&/OR DISTS. (V115)	Vendo (Aust.) Pty.Ltd.,38 Sarsfield Crct.,Bexley North	372477	Premise Match	130m	North
CAKE SHOPS & PASTRYCOOKS (C045)	Breit, AJ., 295 Bexley Rd., Bexley North	276375	Premise Match	131m	North West
DRAPERS-RETAIL (D540)	Shaw's Drapery & Mercery,293 Bexley Rd.,Bexley North	290601	Premise Match	136m	North West
MERCERS-MEN'S & BOYS' OUTFITTERS(M232)	Shaw's Drapery and Mercery,293 Bexley Rd.,Bexley North	329137	Premise Match	136m	North West
DELICATESSENS (D080)	Stone,L.A.,291 Bexley Rd.,Bexley North	287997	Premise Match	141m	North West
CHEMISTS-PHARMACEUTICAL (C286)	iderson, W., 289 Bexley Rd., Bexley North	280566	Premise Match	147m	North West

1970 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1970 UBD Business Directory within 1km of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Golden Fleece Service Station,309 Bexley Rd.BEXLEY NORTH	341158	Building Match	0m	Onsite
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Esso Servicenter,320 Bexley Rd.BEXLEY NORTH	341070	Building Match	67m	North
MOTOR GARAGES & ENGINEERS (M6S6)	Shapiro,W. Sc A.,320 Bexley Rd.BEXLEY NORTH	338594	Building Match	67m	North
DRY CLEANERS,PRESSERS/DYERS (D710)	Kleenit Valet Service,18 Sarsfield Crct.,Bexley North	292364	Building Match	99m	North
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Bexley North Service Station,Stade Rd.BEXLEY NORTH	340843	Road Match	268m	North
MOTOR GARAGES & ENGINEERS (M6S6)	BP Bexley North Service Station,Slade Rd.BEXLEY NORTH	337359	Road Match	268m	North
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Kingsland Auto Port,Bexley Rd.BEXLEY	341255	Road Match	900m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	Ampol Bexley North Service Station,272 Bexley Rd.BEXLEY NORTH	337197	Building Match	918m	South East
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Bexley Park Service Station,91-95 Stoney Creek Rd.,Bexley,2207BEXLEY	340844	Building Match	987m	South

1950 Historical Business Directory Records

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2016

Coordinate System: GDA 1994 MGA Zone 56

Date: 13 October 2016

Historical Business Directories

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

1950 Business Directory Records

Records from the 1950 UBD Business Directory within 150m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
BUTCHERS-RETAIL	Gibbon, J. S., 90 New Illawarra Rd., Bexley North	13538	Premise Match	0m	Onsite
MOTOR SERVICE STATIONS-PETROL, Etc.	Bexley North Filling Station, Bexley Rd., Bexley North	85794	Road Match	0m	East
BEAUTY SALONS &/OR LADIES' HAIRDRESSERS	Race, Mrs. A. I., Bexley Rd., Bexley North	7701	Road Match	0m	East
FRUITERERS & GREENGROCERS	Kavanagh, K. B., 97 New Illawarra Rd., Bexley North	50413	Premise Match	61m	North West
MILK BARS & CONFECTIONERS	Kavanagh, K. B., 97 New Illawarra Rd., Bexley North	76861	Premise Match	61m	North West
GROCERS-RETAIL	Taylor, H. J., 99 New Illawarra Rd., Bexley North	55839	Premise Match	67m	North West
HARDWARE DEALERS &/OR IRONMONGERS	Taylor, H. J., 99 New Illawarra Rd., Bexley North	61431	Premise Match	67m	North West
CARRIERS & CARTAGE CONTRACTORS	Roddan, J., 8 Fortescue St., Bexley	19679	Premise Match	100m	West
BAG & SACK MERCHANTS	Bates, W., 17 Barnesby Rd., Bexley North	4990	Premise Match	109m	East
CARRIERS & CARTAGE CONTRACTORS	Carroll, M. A., 1 Middleton Ave., North Bexley	18554	Premise Match	141m	South East

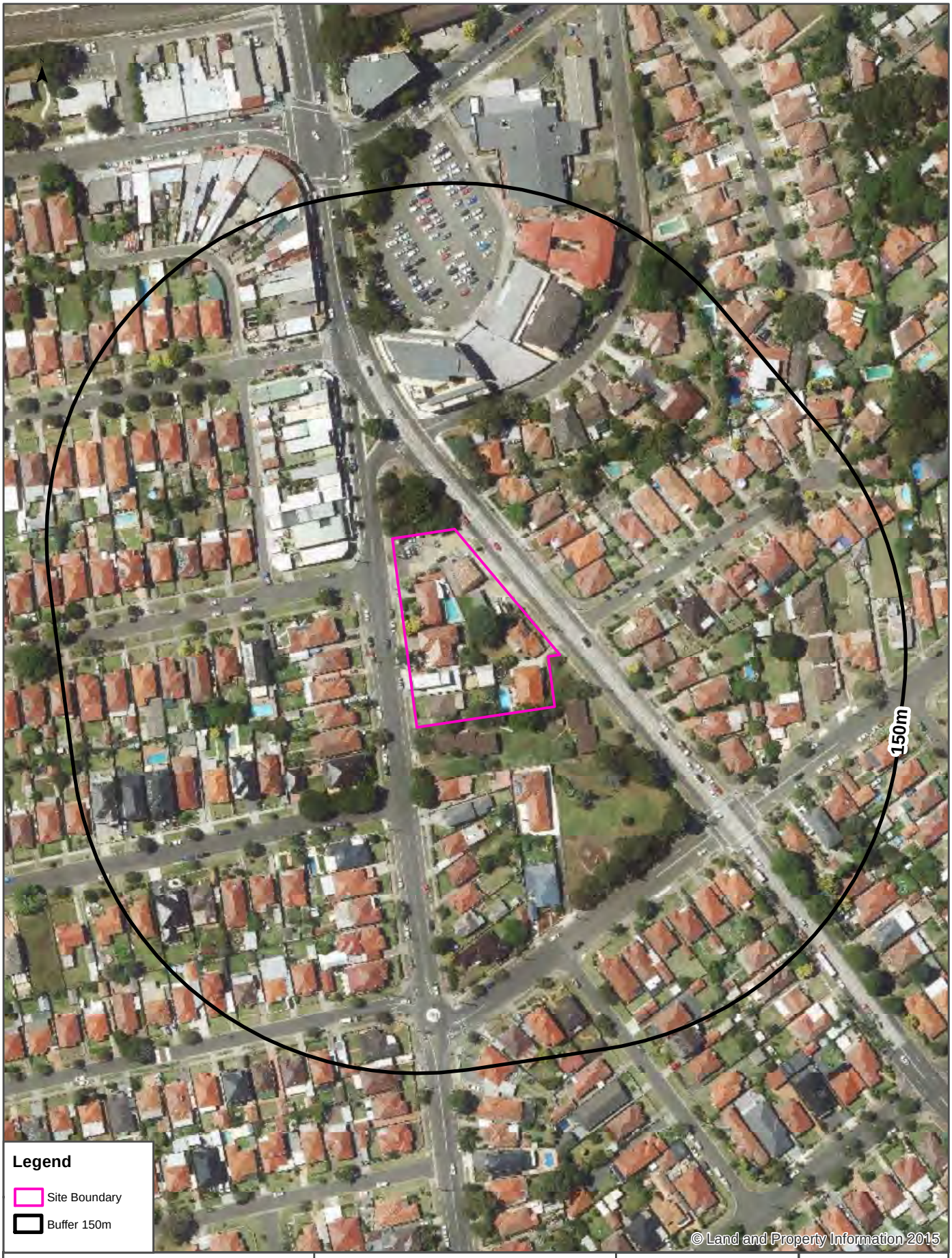
1950 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1950 UBD Business Directory within 1km of the site:

Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR SERVICE STATIONS-PETROL, Etc.	Bexley North Filling Station, Bexley Rd., Bexley North	85794	Road Match	0m	East
DRY CLEANERS, PRESSERS & DYERS	Murray, G. E. (Agent), 538 Homer St., Earlwood	35545	Premise Match	781m	North
DRY CLEANERS, PRESSERS & DYERS	Pigott, A. H. (Agent), 176 Stoney Creek Rd., Bexley	35592	Premise Match	968m	South
MOTOR GARAGES &/OR ENGINEERS	Skyway Motor (B. James), 107 Stoney Creek Rd., Bexley	84375	Premise Match	991m	South
MOTOR GARAGES &/OR ENGINEERS	Skyway Motors, 107 Stoney Creek Rd., Bexley	84376	Premise Match	991m	South

Aerial Imagery 2014

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Scale: 0 25 50 100 Meters	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 13October 2016

Aerial Imagery 2007

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Scale:
0 25 50 100
Meters

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Coordinate System:
GDA 1994 MGA Zone 56

Date: 12October, 2016

Aerial Imagery 2000

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Scale:	Data Sources: Aerial Imagery © 2016 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 12October, 2016

0 25 50 100
Meters

Aerial Imagery 1991

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System: GDA 1994 MGA Zone 56

Date: 12October 2016

Aerial Imagery 1982

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Aerial Imagery 1970

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Scale: 0 25 50 100 Meters	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 12October 2016

Aerial Imagery 1965

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Scale: 0 25 50 100 Meters	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 12October 2016

Aerial Imagery 1961

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System: GDA 1994 MGA Zone 56

Date: 12October 2016

Aerial Imagery 1955

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System: GDA 1994 MGA Zone 56

Date: 12October 2016

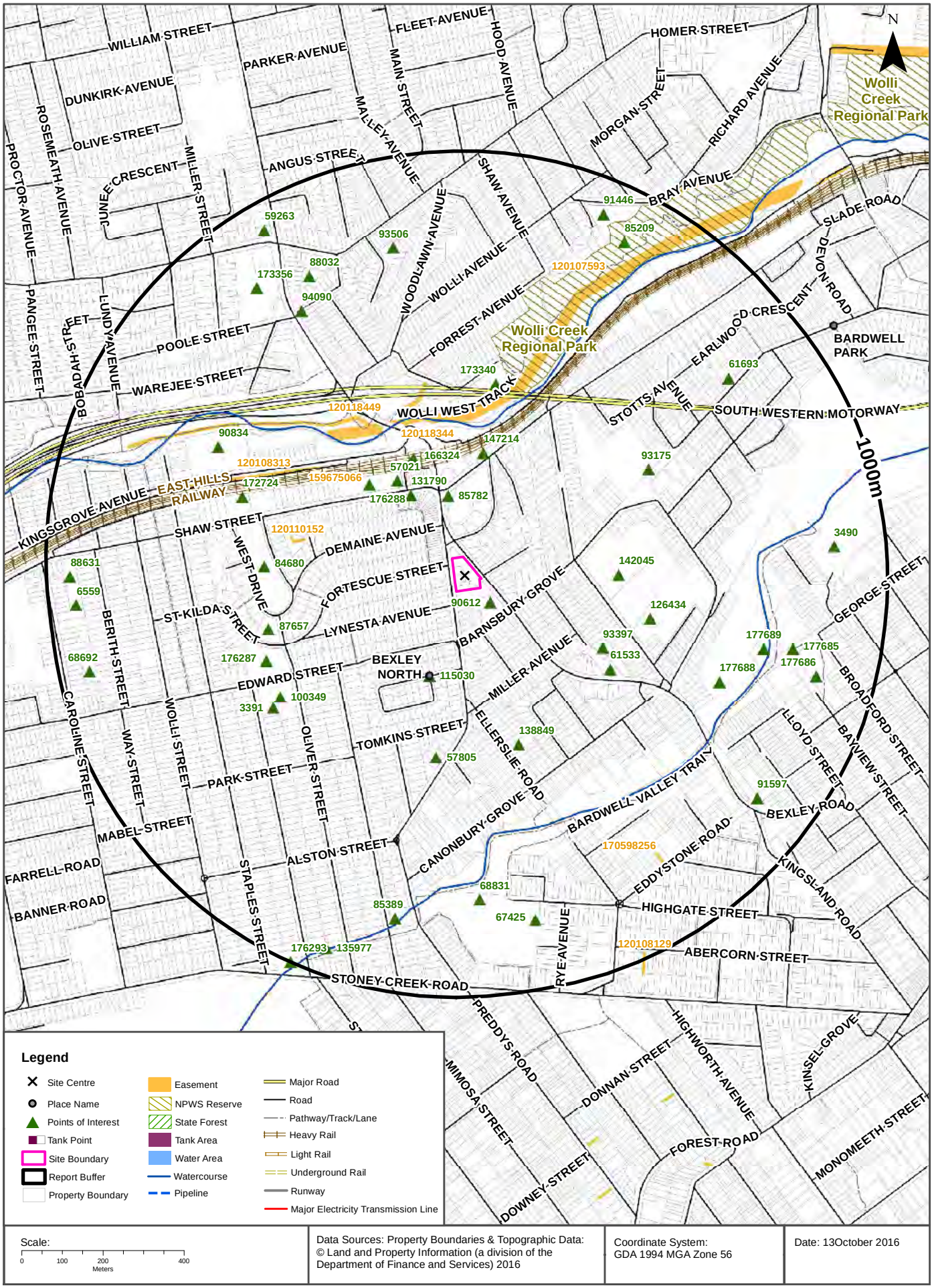
Aerial Imagery 1943

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Scale:	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 11October 2016

Topographic Features

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Topographic Features

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Points of Interest

What Points of Interest exist within the report buffer?

Map Id	Feature Type	Label	Distance	Direction
90612	Park	WHITBREAD PARK	43m	South East
85782	Park	NAIRN GARDENS	155m	North
131790	Post Office	BEXLEY NORTH POST OFFICE	186m	North West
115030	Suburb	BEXLEY NORTH	217m	South
57021	Library	BEXLEY NORTH LIBRARY	234m	North West
147214	Embassy	CONSULATE-GENERAL OF PANAMA	262m	North
166324	Railway Station	BEXLEY NORTH RAILWAY STATION	265m	North West
176288	Park	SHAW STREET RESERVE	273m	North West
93397	Park	Park	336m	South East
142045	Education Facility	THE SALVATION ARMY BOOTH COLLEGE	339m	East
61533	Place Of Worship	ANGLICAN CHURCH	377m	South East
138849	Retirement Village	BEXLEY GARDENS VILLAGE	396m	South
57805	Place Of Worship	CHURCH OF CHRIST	411m	South
126434	Primary School	BEXLEY NORTH PUBLIC SCHOOL	425m	East
173340	Park	ILLOURA RESERVE	434m	North
84680	Park	GILCHRIST PARK	462m	West
87657	Park	Park	470m	West
93175	Park	STOTTS RESERVE	493m	North East
176287	Park	GILCHRIST PARK	497m	South West
100349	Sports Field	BOWLING GREENS	504m	South West
3391	Club	BEXLEY BOWLING CLUB	533m	South West
172724	Community Facility	KINGSGROVE BEXLEY NORTH COMMUNITY CENTRE	537m	West
177688	Park	BARDWELL VALLEY PARKLANDS	633m	South East
90834	Park	KINGSGROVE AVENUE RESERVE	637m	North West
177689	Park	BARDWELL CREEK RESERVE	713m	East
94090	Park	Park	714m	North West
68831	Swimming Pool	BEXLEY SWIMMING CENTRE	761m	South
88032	Park	Park	780m	North West
93506	Park	Park	780m	North
177685	Lookout	VIEWING AREA	784m	East
61693	Place Of Worship	UNITING CHURCH	785m	North East
85389	Park	OSWALD SCHOLES RESERVE	818m	South
173356	Park	BEAUMONT PARK	822m	North West

Map Id	Feature Type	Label	Distance	Direction
67425	SES Facility	ROCKDALE SES	828m	South
177686	Park	BROADFORD STREET RESERVE	855m	East
91597	Park	BINNAMITTALONG NATIVE GARDENS	856m	South East
85209	Park	Park	872m	North East
3490	Club	BARDWELL VALLEY GOLF CLUB	873m	East
91446	Park	S J HARRISON PARK	913m	North
68692	Sports Centre	KINGSGROVE TENNIS CENTRE	922m	West
6559	Community Facility	SCOUT HALL	931m	West
59263	Place Of Worship	ANGLICAN CHURCH	933m	North West
135977	Retirement Village	JACINTA VILLA	933m	South
88631	Park	KOOKABURRA RESERVE	940m	West
176293	Park	HANNAH LAYCOCK RESERVE	998m	South West

Topographic Features

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Tanks (Areas)

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

Map Id	Tank Type	Status	Name	Capture Method	Feature Currency	Distance	Direction
N/A	No records in buffer						

Tanks (Points)

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

Map Id	Tank Type	Status	Name	Capture Method	Feature Currency	Distance	Direction
N/A	No records in buffer						

Major Easements

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120107593	Primary	Undefined		335m	North East
120118344	Primary	Undefined		348m	North
120110152	Primary	Undefined		365m	West
120118449	Primary	Undefined		369m	North West
159675066	Primary	Easement for Access		396m	West
120108313	Primary	Undefined	Variable	396m	West
170598256	Primary	Right of way	3m & Variable	785m	South East
120108129	Primary	Undefined		984m	South East

Topographic Features

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

State Forest

What State Forest exist within the report buffer?

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

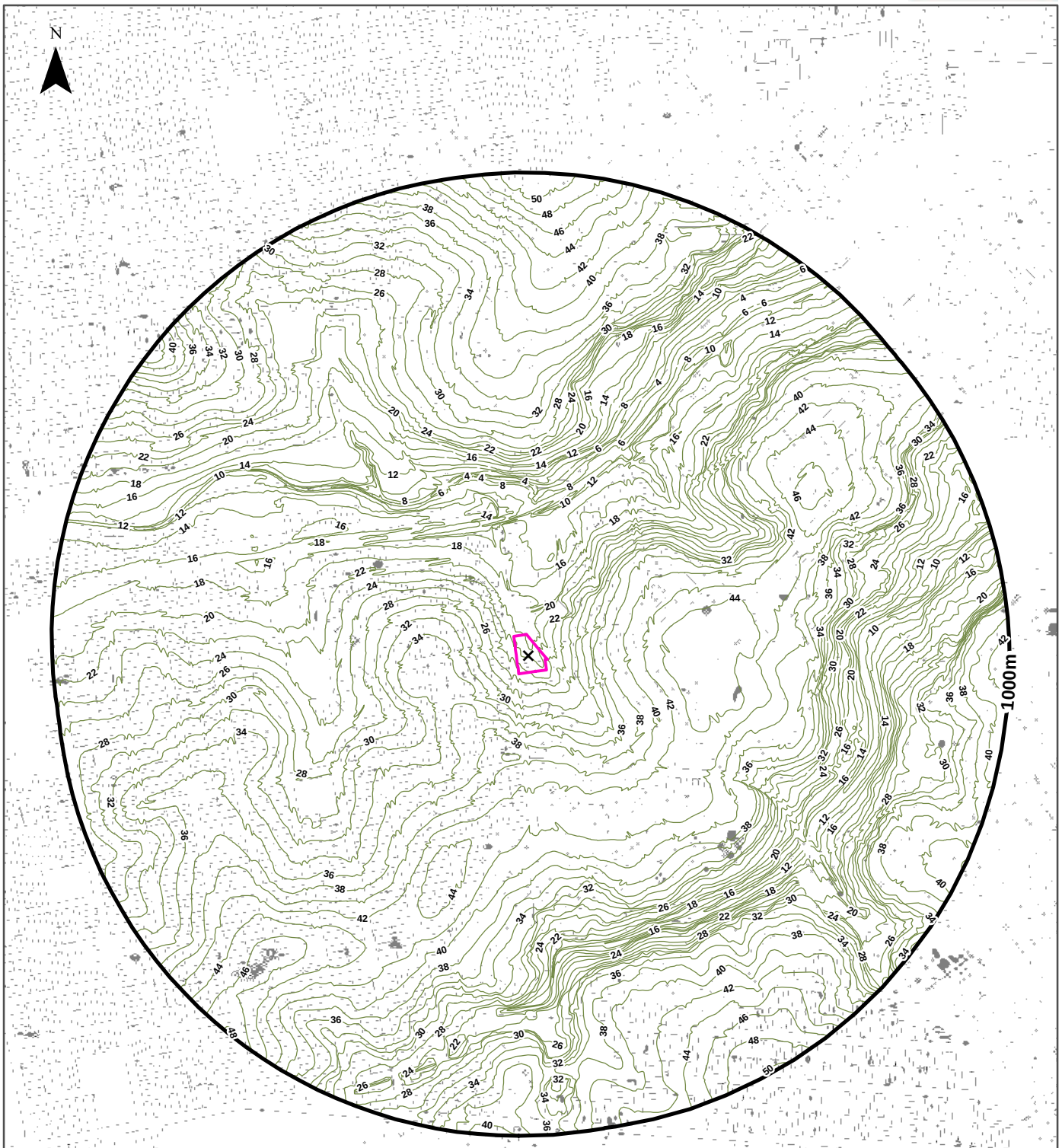
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the report buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N0644	REGIONAL PARK	Wolli Creek Regional Park	25/01/2001	420m	North East

Elevation Contours (m AHD)

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Legend

- Site Centre
- Elevation Contour (m AHD)
- Site Boundary
- Report Buffer
- Property Boundary

Accuracy & Currency: This contour data can be up to 0.4 of the contour interval out in height and must therefore not be used for any design or engineering works, but only as a general guide to topography. Gaps may occur along contour lines due to vertical topography, obscured topography in the source photography such as buildings, dense vegetation or dead ground, or the fact that original buildings have been replaced in the intervening thirty years since the original contour capture.

Scale: 0 100 200 400 Meters

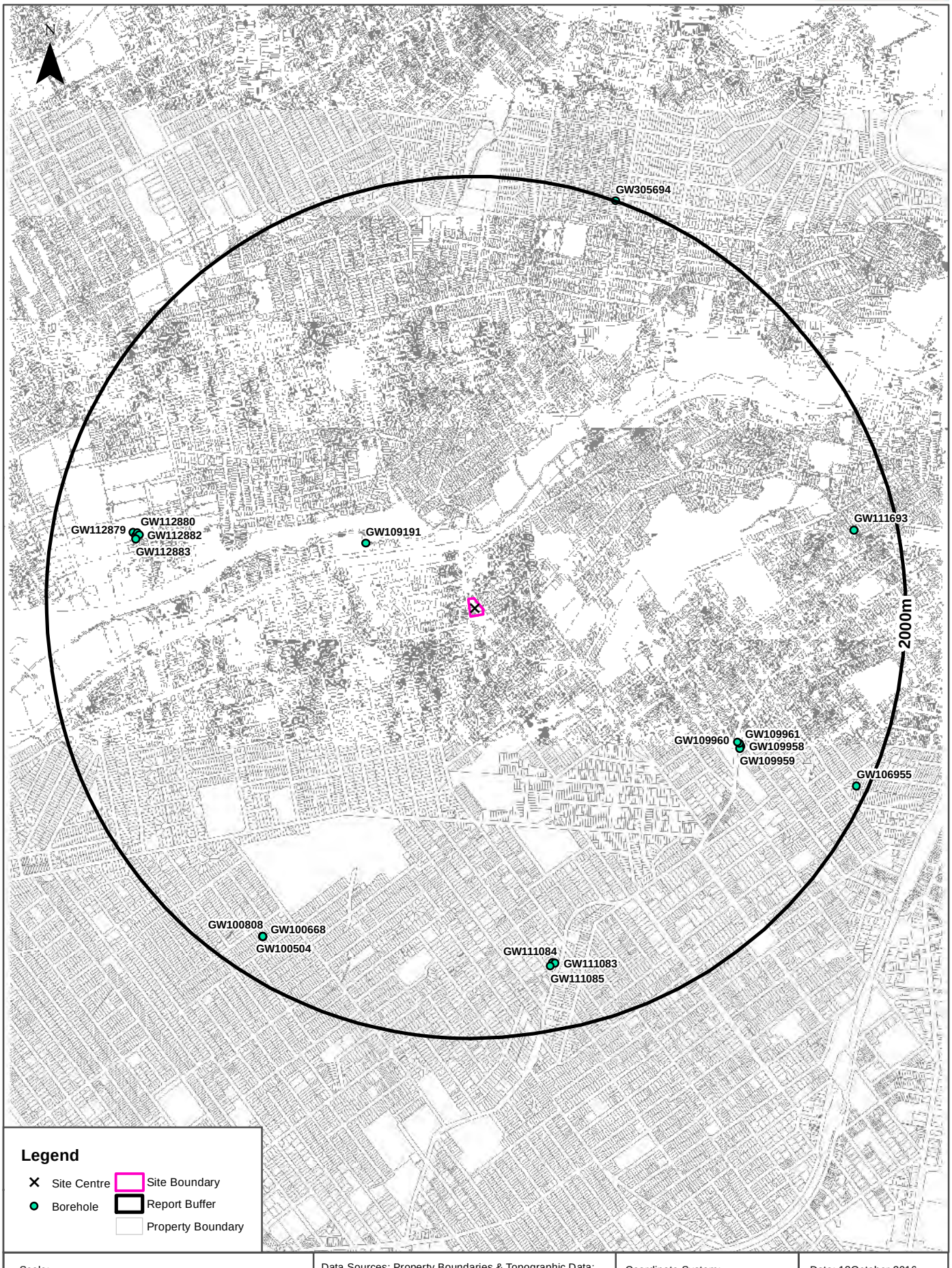
Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2016

Coordinate System: GDA 1994 MGA Zone 56

Date: 13October 2016

Groundwater Boreholes

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Hydrogeology & Groundwater

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the report buffer:

Description
Porous, extensive aquifers of low to moderate productivity

Groundwater Boreholes

Boreholes within 2km of the site:

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elev	Dist	Dir
GW109191	10BL601292, 10BL602310, 10WA114753	Bore	Other Govt	Recreation	Intertec Drilling Services	08/08/2008	186.00	186.00	3950	93.00	0.050		552m	North West
GW109960	10BL601848	Well	Private	Monitoring	HLA Enviroscience s	13/04/2007	8.00	8.00					1351m	South East
GW109961	10BL601848	Well	Private	Monitoring	HLA Enviroscience s	12/04/2007	5.80	5.80					1360m	South East
GW109958	10BL601848	Well	Private	Monitoring	HLA Enviroscience s	12/04/2007	5.20	5.20					1373m	South East
GW109959	10BL601848	Well	Private	Monitoring	HLA Enviroscience s	13/04/2007	5.90	5.90					1373m	South East
GW112882	10BL604145	Bore	Other Govt	Monitoring	SOILCHECK PTY LTD	12/07/2010	6.00	6.00					1589m	West
GW112880	10BL604145	Bore	Other Govt	Monitoring	SOILCHECK PTY LTD	12/07/2010	6.00	6.00					1598m	West
GW112883	10BL604145	Bore	Other Govt	Monitoring	SOILCHECK PTY LTD	12/07/2010	6.20	6.20					1601m	West
GW112881	10BL604145	Bore	Other Govt	Monitoring	SOILCHECK PTY LTD	12/07/2010	6.00	6.00					1603m	West
GW112879	10BL604145	Bore	Other Govt	Monitoring	SOILCHECK PTY LTD	12/07/2010	6.20	6.20					1618m	West
GW111084	10BL604064	Bore	Private	Monitoring	Numac Drilling Services Pty Ltd	19/04/2010	9.00	9.00					1685m	South
GW111083	10BL604064	Bore	Private	Monitoring	Numac Drilling Services Pty Ltd	19/04/2010	9.00	9.00					1688m	South
GW111085	10BL604064	Bore	Private	Monitoring	Numac Drilling Services Pty Ltd	19/04/2010	5.00	5.00					1698m	South
GW111693	10BL602861, 10WA109273	Spear	Private	Domestic		20/02/2009	8.85	8.85	good	5.49	1.000		1797m	East
GW100668	10BL157758, 10WA108384	Spear	Private	Domestic		09/10/1996	7.95	7.95	Good	5.45	1.000		1808m	South West

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elev	Dist	Dir
GW100580	10BL157928, 10WA108399	Spear	Private	Domestic	A Korkadis	11/03/1997	9.15	9.15	Good		1.000		1808m	South West
GW100068	10BL156735, 10WA108351	Spear	Private	Domestic	A Korkadis	20/06/1995	7.30	7.30	Good	4.27	1.000		1808m	South West
GW100504	10BL157928, 10WA108399	Bore			A Korkadis	11/03/1997	9.15						1808m	South West
GW100808	10BL156230, 10WA108335	Spear	Private	Domestic		01/01/1991	3.66	6.10	Other	1.52			1808m	South West
GW106955	10BL164738, 10WA108920	Spear	Private	Domestic		15/04/2005	4.20	4.20			1.000		1949m	South East
GW305694	30BL181476	Spear	Private	Domestic	Self Drilled	20/02/2003	5.00				0.300		1998m	North

Hydrogeology & Groundwater

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Driller's Logs

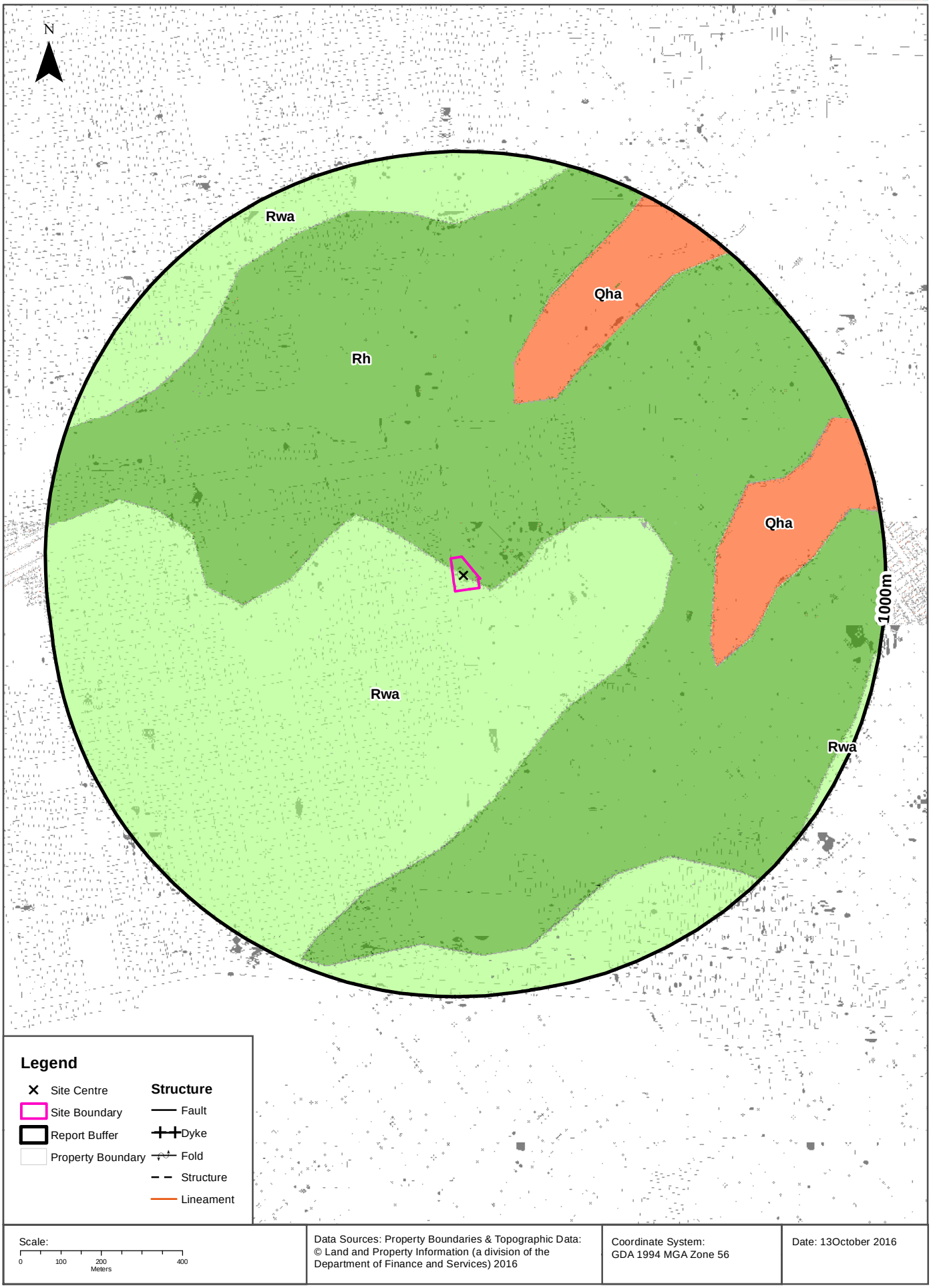
Drill log data relevant to the boreholes within 2km of the site:

Groundwater No	Drillers Log	Distance	Direction
GW109191	0.00m-1.00m SANDY CLAY 1.00m-4.00m CLAY 4.00m-7.00m SANDSTONE SOFT 7.00m-9.00m SANDSTONE L/BROWN 9.00m-9.50m SANDSTONE AND FINE QUARTZ 9.50m-31.00m SANDSTONE GREY 31.00m-40.00m SANDSTONE AND SHALE BEDDING 40.00m-41.00m SANDSTONE AND FINE QUARTZ 41.00m-131.00m SANDSTONE GREY 131.00m-135.50m SANDSTONE AND FINE QUARTZ 135.50m-148.00m SANDSTONE GREY 148.00m-159.00m SANDSTONE AND SHALE BEDDING 159.00m-186.00m SANDSTONE GREY	552m	North West
GW109960	0.00m-0.20m CONCRETE 0.20m-0.50m CONCRETE AND CLAYEY GRAVEL,SAND LOOSE,DARK BROWN 0.50m-1.00m CLAY,SOFT SIGHTLY MOIST,HIGH PLASTICITY,ORANGE BROWN 1.00m-2.50m CLAYEY SHALE,WEATHERED,STIFF,DRY,M/L/PLASTICITY,BROWN GREY 2.50m-4.00m SHALE,STIFF,WEATHERED,DRY,M/L/PLASTICITY,BROWN GREY 4.00m-6.00m CLAYEY SHALE,STIFF,WEATHERED,SOME IRONSTONE AND GRAVEL 6.00m-7.80m SANDY SHALE,VERY LOOSE,MOIST,M/L/ PLASTICITY,GREY 7.80m-8.00m CLAYEY SHALE VERY SOFT CLAY,SOME SHALE,DARK GREY BROWN	1351m	South East
GW109961	0.00m-0.20m CONCRETE 0.20m-0.40m GRAVELLY SAND,LOOSE,LOW PLASTICIY,DARK GREY 0.40m-1.70m CLAY.,EDOI, STOFF.SJA;E.DRU.M/L/PLASTICITY,ORANGE,BROWN,GREY 1.70m-2.50m CLAYEY SHALE,VERY STIFF,DRY,M/L/PLASTICITY,BROWN GREY 2.50m-4.00m SHALE, MEDIUM STIFF,WEATHERED,DRY, BROWN GREY 4.00m-5.60m CLAY,VERY SOFT,WEATHERED SHALE,DRY,GREY BROWN 5.60m-5.80m SHALE HARD DRY LOW PLASTICITY,GREY	1360m	South East
GW109958	0.00m-0.20m CONCRETE 0.20m-0.50m CLAYEY GRAVEL (FILL),MOIST, L/PLASTICITY,D/GREY, CLAY 0.50m-0.70m CLAYEY GRAVEL,STIFF,LOOSE SAND,MOIST,L/PLASTICITY 0.70m-1.50m CLAY,MEDIUM STIFF,LOOSE SAND,MOIST,HIGH PLASTICITY,ORANGE BROWN 1.50m-2.50m CLAYEY SHALE. WEATHERED,STIFF,MEDIUM LOW PLASTICITY,BROWN GREY 2.50m-4.00m SHALE.WEATHERED.STIFF,DRY,MEDIUM LOW PLASTICITY,BROWN GREY 4.00m-4.50m CLAY,SOFT,DRY,LOW PLASTICITY,BROWN,GREY 4.50m-5.20m CLAY,MEDIUM STIFF,SHALE MOIST,M/L/PLASTICITY,RED BROWN	1373m	South East
GW109959	0.00m-0.30m CONCRETE 0.30m-0.50m CONCRETE, GRAVEL,LOOSE SAND MOIST,L/PLASTICITY,DARK BROWN 0.50m-1.00m CLAYEY GRAVEL,LOOSE SAND,MOIST L/PLASTICITY,DARK BROWN 1.00m-3.00m CLAYEY SHALE,STIFF,WEATHERED SHALE,DRY,M/L/PLASTICITY 3.00m-3.50m SHALE,SOFT,WEATHERED SHALE,DRY,MEDIUM LOW PLASTICITY 3.50m-5.80m CLAYEY SHALE,STIFF,SOFT,WEATHERED,DRY,CLAY BECOMES SOFT 5.80m-5.90m CLAY VERY SOFT,SATURATED,MEDIUM LOW PLASTICITY,BROWN	1373m	South East
GW111084	0.00m-1.50m FILL 1.50m-6.00m CLAY L/BROWN STIFF 6.00m-8.00m SHALE L/GREY WEATHERED 8.00m-9.00m SHALE GREY WEATHERED,CLAY LENSES	1685m	South
GW111083	0.00m-1.50m FILL 1.50m-6.00m CLAY L/BROWN STIFF 6.00m-8.00m SHALE L/GREY WEATHERED 8.00m-9.00m CLAY LENSES	1688m	South
GW111085	0.00m-0.50m FILL 0.50m-3.00m CLAY L/BROWN STIFF 3.00m-4.00m SHALE GREY WEATHERED 4.00m-5.00m SHALE GREY WEATHERED WITH CLAY LENSES	1698m	South
GW111693	0.00m-8.85m UNCONSOLIDATED ALL SANDS	1797m	East
GW100068	0.00m-7.30m ALL SAND UNCONSOLIDATED SAND WITH SMALL SEASHELLS	1808m	South West
GW100580	0.00m-9.15m UNCONSOLIDATED ALL SAND WITH SMALL SEA SHELLS	1808m	South West
GW100668	0.00m-7.95m Unconsolidated all Sand with Small Seashells	1808m	South West

Groundwater No	Drillers Log	Distance	Direction
GW100808	0.00m-1.52m CLEAN YELLOW SAND 1.52m-1.72m SEA SHELL 1.72m-6.10m CLEAN YELLOW SAND, THEN GREYISH SMELLY MUD AT 6.10 metres	1808m	South West
GW106955	0.00m-2.60m Clay 2.60m-4.20m Sandy Clay	1949m	South East

Geology 1:100,000

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Geology

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

What are the Geological Units within the report buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qha	Silty to peaty quartz sand, silt, and clay. Ferruginous and humic cementation in places. Common shell layers				Quaternary		Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

Geological Structures

What are the Geological Structures onsite?

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

What are the Geological Structures within the report buffer?

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

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

Naturally Occurring Asbestos Potential

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Naturally Occurring Asbestos Potential

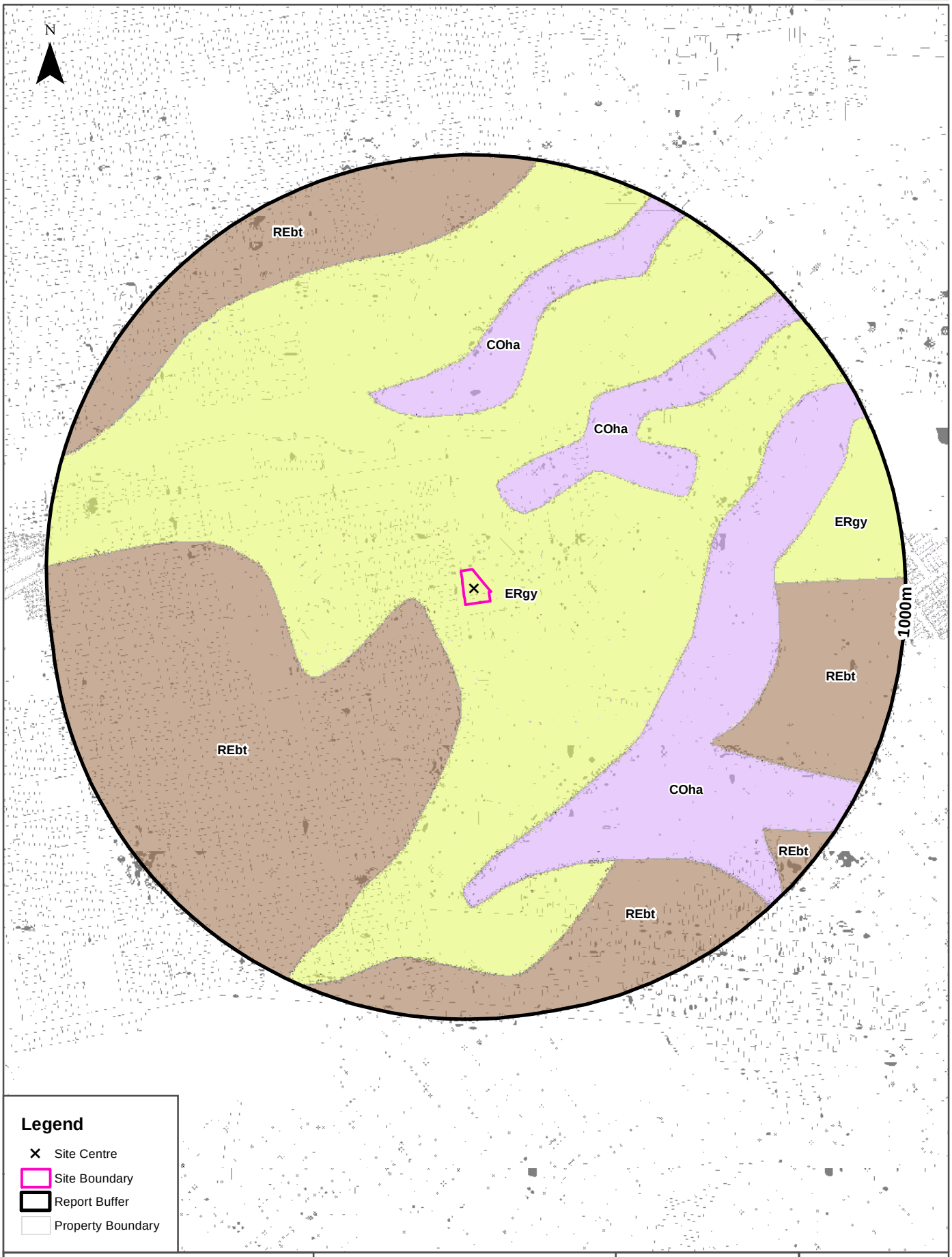
Naturally Occurring Asbestos Potential within the report buffer?

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

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

Soil Landscapes

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Soils

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Soil Landscapes

What are the onsite Soil Landscapes?

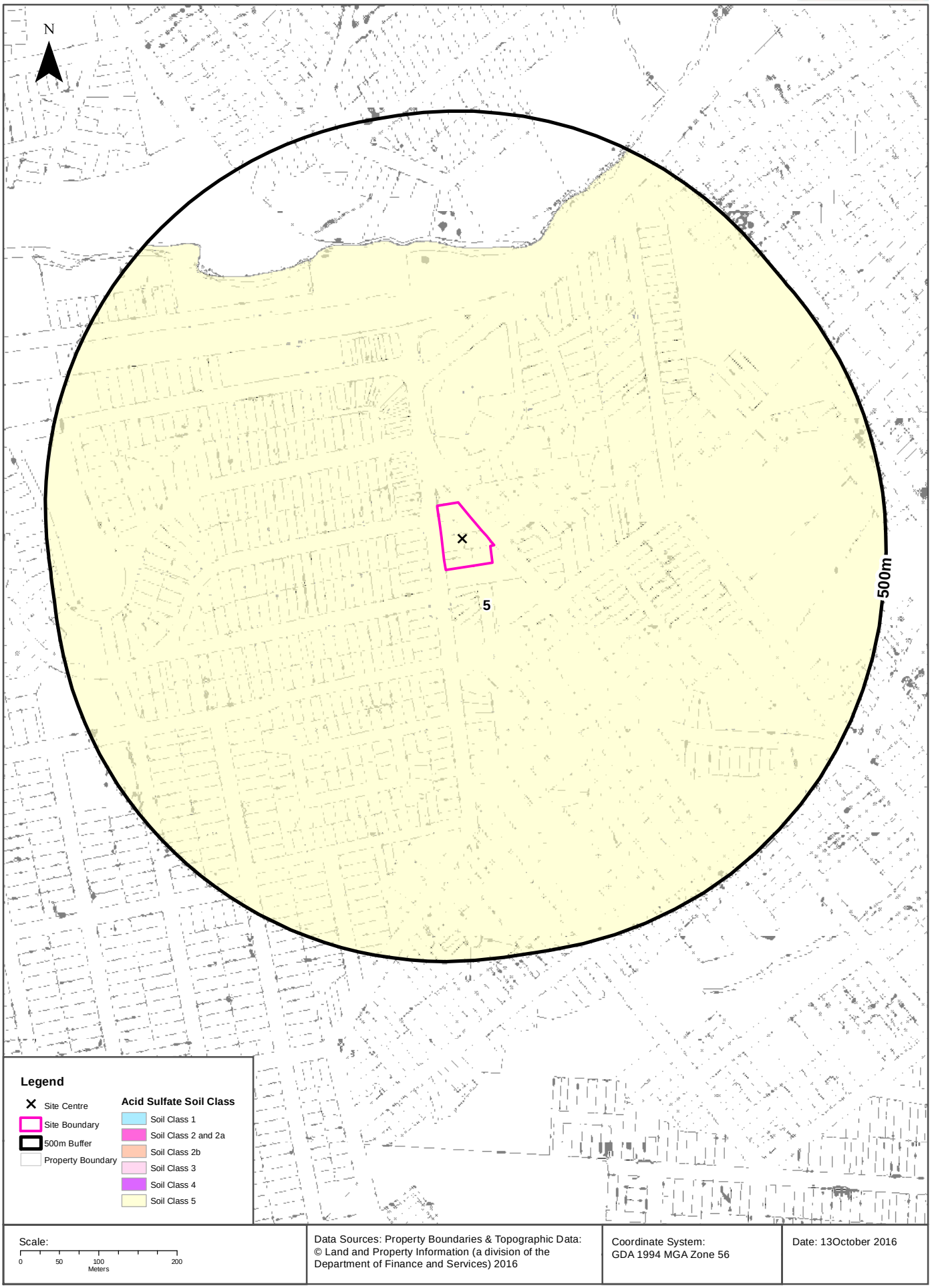
Soil Code	Name	Group	Process	Map Sheet	Scale
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000

What are the Soil Landscapes within the report buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000

Acid Sulfate Soils

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Standard Local Environmental Plan Acid Sulfate Soils

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Standard Local Environmental Plan Acid Sulfate Soils

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

Soil Class	Description	LEP
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Rockdale Local Environmental Plan 2011

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

Soil Class	Description	LEP	Distance	Direction
None				

Dryland Salinity

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Dryland Salinity

Is there Dryland Salinity data onsite?

No

Is there Dryland Salinity data within the report buffer?

No

What Dryland Salinity assessments are given?

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

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

Mining Subsidence Districts

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Mining Subsidence Districts

Mining Subsidence Districts within the report buffer?

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

Environmental Zoning

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

State Environmental Planning Policy Protected Areas

Are there any State Environmental Planning Policy Protected Areas onsite or within the report buffer?

Dataset	Onsite	Within Site Buffer	Distance
SEPP14 - Coastal Wetlands	No	No	N/A
SEPP26 - Littoral Rainforests	No	No	N/A
SEPP71 - Coastal Protection Zone	No	No	N/A

SEPP Protected Areas Data Source: NSW Department of Planning & Environment

State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the report buffer?

Map Id	Feature	Effective Date	Distance	Direction
N/A	No records within buffer			

SEPP Major Development Data Source: NSW Department of Planning & Environment

State Environmental Planning Policy Strategic Land Use Areas

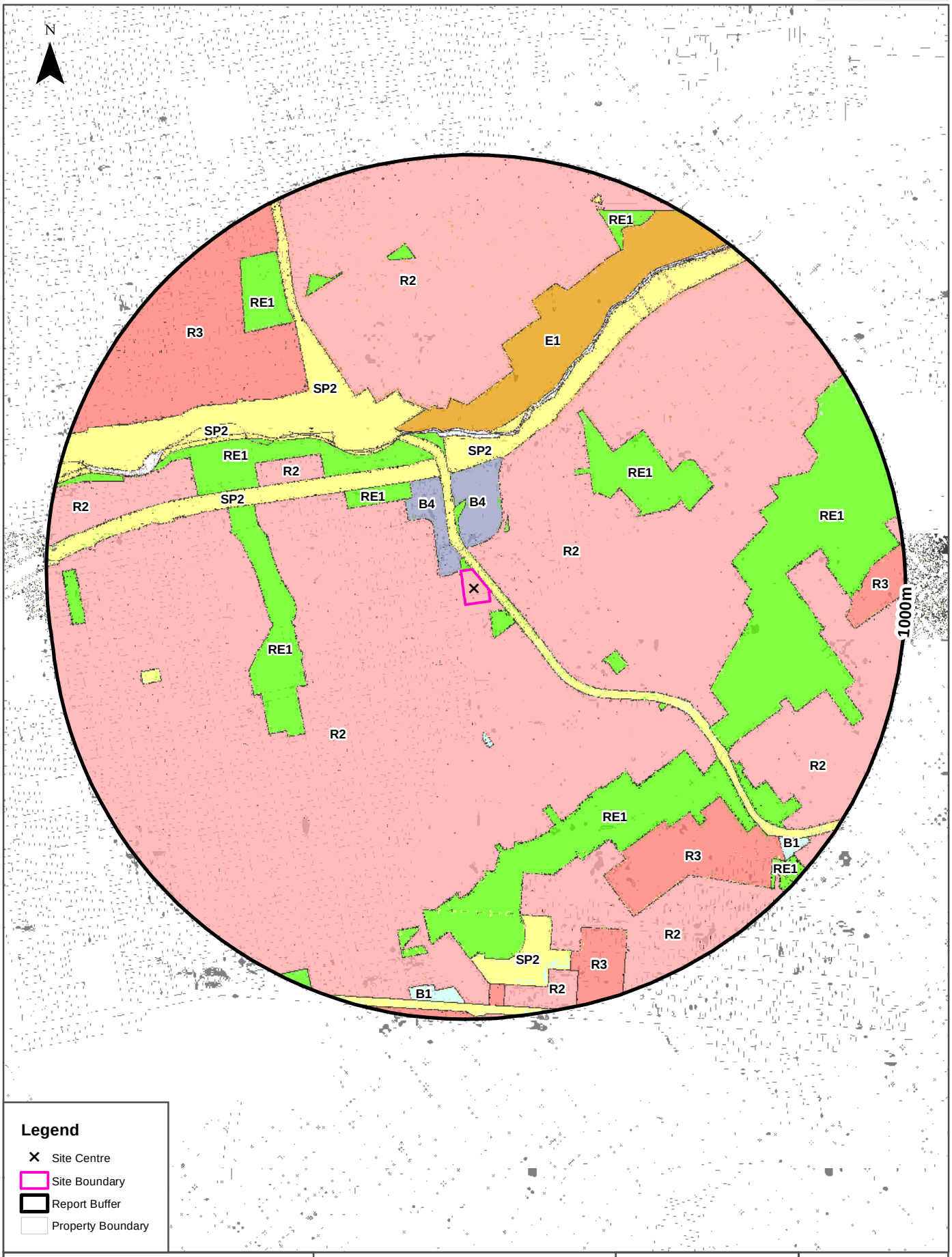
State Environmental Planning Policy Strategic Land Use Areas onsite or within the report buffer?

Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
No records within buffer						

SEPP Strategic Land Use Data Source: NSW Department of Planning & Environment

LEP Planning Zones

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2016
Planning: NSW Crown Copyright - Planning & Environment

Coordinate System: GDA 1994 MGA Zone 56

Date: 13October 2016

Local Environmental Plan

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Land Zoning

What Local Environmental Plan Land Zones exist within the report buffer?

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		0m	Onsite
SP2	Infrastructure	Classified Road	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		0m	East
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		1m	North West
B4	Mixed Use		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		2m	North West
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		20m	North East
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		24m	South East
B4	Mixed Use		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		52m	North
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		91m	North
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		119m	North East
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		214m	North West
SP2	Infrastructure	Railway	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		234m	West
SP2	Infrastructure	Railway	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		237m	North East
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		279m	North
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		305m	South East
B1	Neighbourhood Centre		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		309m	South
UL	Unzoned Land		Rockdale Local Environmental Plan 2011	11/07/2014	11/07/2014	15/04/2016	Amendment No 1	313m	North
UL	Unzoned Land		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		325m	North
SP2	Infrastructure	Railways	Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		329m	North
E1	National Parks and Nature Reserves		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		332m	North East
E1	National Parks and Nature Reserves		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		335m	North
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		336m	North East
SP2	Infrastructure	Drainage	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		348m	North West
SP2	Infrastructure	Classified Road	Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		353m	West
SP2	Infrastructure	Classified Road	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		356m	North West
UL	Unzoned Land		Rockdale Local Environmental Plan 2011	11/07/2014	11/07/2014	15/04/2016	Amendment No 1	368m	North East
R2	Low Density Residential		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		394m	North East
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		399m	North West
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		405m	West
UL	Unzoned Land		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		406m	North East
SP2	Infrastructure	Classified Road	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		434m	North West

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		477m	South East
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		511m	South
SP2	Infrastructure	Drainage	Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		543m	North West
RE1	Public Recreation		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		549m	North West
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		569m	East
R3	Medium Density Residential		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		571m	North West
SP2	Infrastructure	Drainage	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		600m	West
SP2	Infrastructure	Classified Road	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		612m	North West
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		641m	South East
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		660m	West
R3	Medium Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		674m	South East
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		678m	East
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		680m	South East
RE1	Public Recreation		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		722m	North West
SP2	Infrastructure	Telecommunications	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		755m	West
SP2	Infrastructure	Depot	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		759m	South
RE1	Public Recreation		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		761m	North West
RE1	Public Recreation		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		763m	North
UL	Unzoned Land		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		769m	West
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		784m	South
R3	Medium Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		816m	South
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		827m	South
RE1	Public Recreation		Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		849m	North
R3	Medium Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		856m	East
B1	Neighbourhood Centre		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		897m	South East
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		899m	South
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		913m	West
R3	Medium Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		915m	South
B1	Neighbourhood Centre		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		918m	South
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		920m	South East
SP2	Infrastructure	Drainage	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		931m	West
SP2	Infrastructure	Water Supply System	Canterbury Local Environmental Plan 2012	01/01/2013	01/01/2013	11/12/2015		934m	North
RE1	Public Recreation		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		957m	South West
SP2	Infrastructure	Classified Road	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		959m	South
R3	Medium Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		979m	South
R2	Low Density Residential		Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		986m	South

Local Environmental Plan

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Minimum Subdivision Lot Size

What are the onsite Local Environmental Plan Minimum Subdivision Lot Sizes?

Symbol	Minimum Lot Size	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
G	450 m2	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	15/04/2016		100

Maximum Height of Building

What are the onsite Local Environmental Plan Maximum Height of Buildings?

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
I	8.50 m	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	10/06/2016		100

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
D	0.50	LEP	05/12/2011	05/12/2011	15/04/2016		100

Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011		100

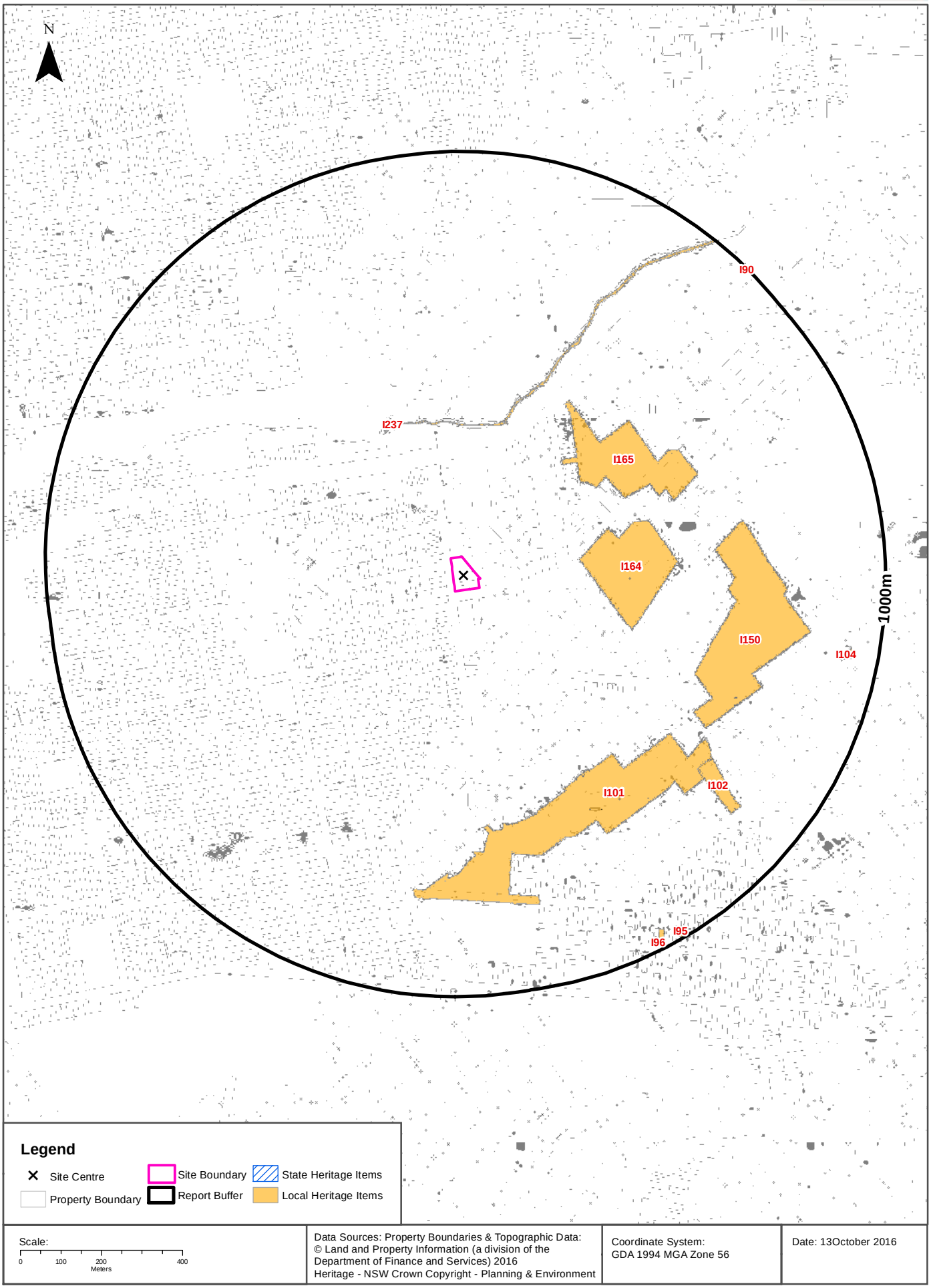
Land Reservation Acquisition

What are the onsite Local Environmental Plan Land Reservation Acquisitions?

Reservation	LEP	Published Date	Commenced Date	Currency Date	Amendment	Comments	Percentage of Site Area
No Data							

Heritage Items

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Heritage

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

State Heritage Items

What are the State Heritage Items located within the report buffer?

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

Local Heritage Items

What are the Local Heritage Items located within the report buffer?

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I164	Glendalough McIlveen Museum and Research Centre	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	248m	East
I237	Wolli Creek Valley	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	323m	North East
I165	Stotts Reserve	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	336m	North East
I101	Bardwell Creek Flora Reserve (south of Bexley Road)	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	520m	South East
I150	Bardwell Creek Flora Reserve (north of Bexley Road)	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	569m	East
I102	Former quarry	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	697m	South East
I104	Montrose (main house only)	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	902m	East
I96	Federation house	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	949m	South East
I95	Federation house	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	978m	South East
I90	Hillsdon's Nursery Cottage	Item - General	Local	Rockdale Local Environmental Plan 2011	05/12/2011	05/12/2011	05/12/2011	997m	North East

Natural Hazards

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Bushfire Prone Land

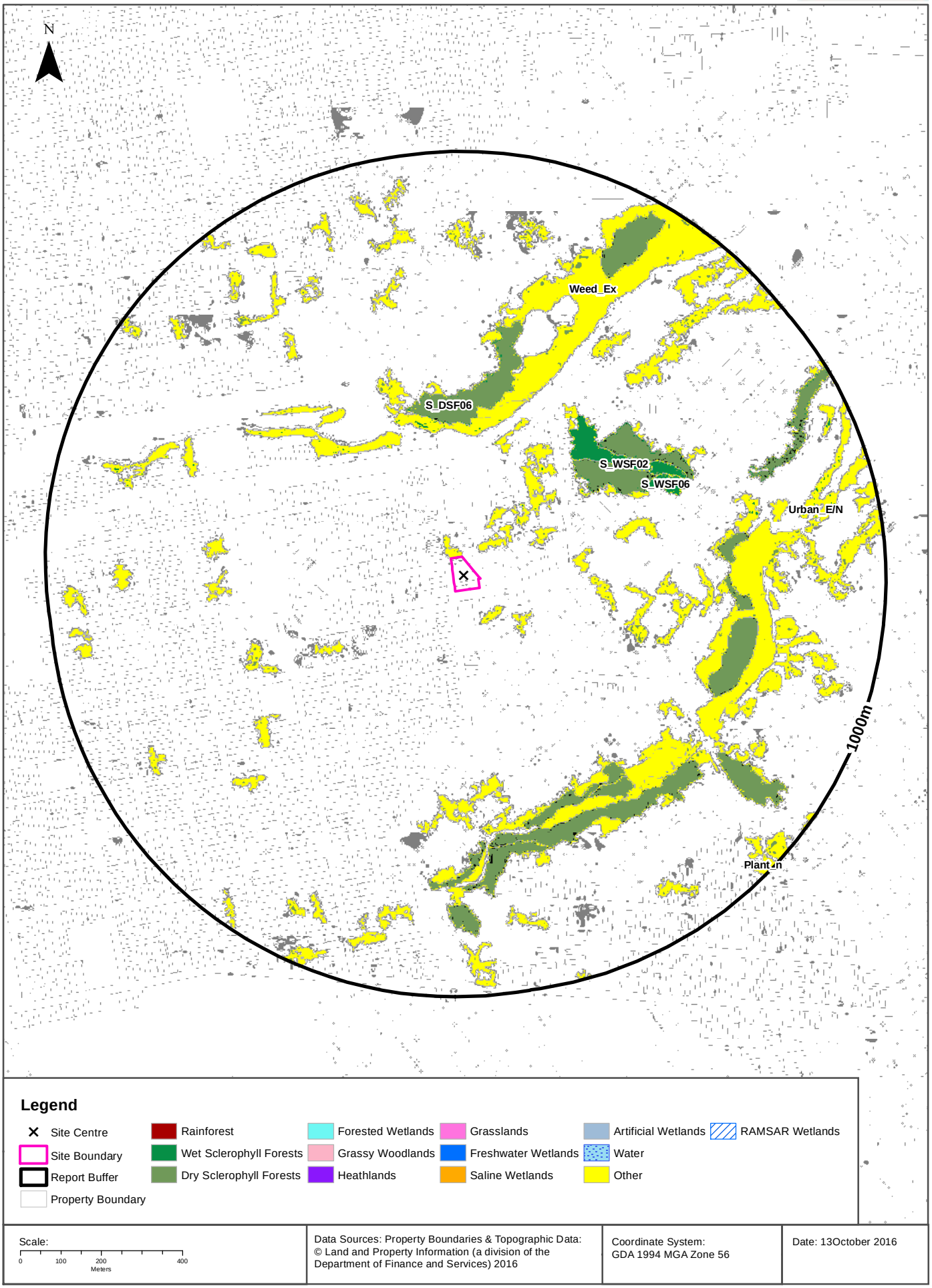
What are the nearest Bushfire Prone Land Categories that exist within the report buffer?

Bushfire Prone Land Category	Distance	Direction
No records within buffer		

Bushfire Prone Land Data Reference - NSW RFS GIS Data Set

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

Bexley Road & New Illawarra Road, Bexley North, NSW 2207



Ecological Constraints

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

Native Vegetation

What native vegetation exists within the report buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/ Native	0m	Onsite
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	296m	North
S_DSF06	S_DSF06: Coastal Sandstone Foreshores Forest			17: Pittosporum dominant	13: Weeds	3: High	A.costata/ E.piperita/ +/ - C.gummifera/ S.glomulifera/ E.resinifera	322m	North
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	20: Previously cleared 1943	3: High	E.saligna/ S.glomulifera	361m	North East
S_WSF06	S_WSF06: Coastal Shale-Sandstone Forest			11: Semi sheltered dry/mesic	13: Weeds	2: Moderate	E.resinifera/ S.glomulifera/ C.gummifera	457m	North East
Plant_n	Plant_n: Plantation (native and/or exotic)			00: Not assessed	00: Not assessed	0: Not assessed	Native or Exotic Plantations	636m	South East

RAMSAR Wetlands

What RAMSAR Wetland areas exist within the report buffer?

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

Ecological Constraints

Bexley Road & New Illawarra Road, Bexley North, NSW 2207

ATLAS of NSW Wildlife

Endangered &Vulnerable Species on the ATLAS of NSW Wildlife database, within 10km of the site?

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Amphibia	Hylidae	Litoria aurea	Green and Golden Bell Frog	No	Endangered, Protected	Vulnerable
Amphibia	Myobatrachidae	Crinia tinnula	Wallum Froglet	No	Vulnerable, Protected	
Amphibia	Myobatrachidae	Pseudophryne australis	Red-crowned Toadlet	No	Vulnerable, Protected	
Aves	Acanthizidae	Calamanthus fuliginosus	Striated Fieldwren	No	Endangered, Protected	
Aves	Accipitridae	Hieraaetus morphnoides	Little Eagle	No	Vulnerable, Protected	
Aves	Accipitridae	Lophoictinia isura	Square-tailed Kite	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Accipitridae	Pandion cristatus	Eastern Osprey	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Anatidae	Stictonetta naevosa	Freckled Duck	No	Vulnerable, Protected	
Aves	Ardeidae	Botaurus poiciloptilus	Australasian Bittern	No	Endangered, Protected	Endangered
Aves	Artamidae	Artamus cyanopterus cyanopterus	Dusky Woodswallow	No	Vulnerable, Protected	
Aves	Burhinidae	Burhinus grallarius	Bush Stone-curlew	No	Endangered, Protected	
Aves	Burhinidae	Esacus magnirostris	Beach Stone-curlew	No	Critically Endangered Species, Protected	
Aves	Cacatuidae	Callocephalon fimbriatum	Gang-gang Cockatoo	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Cacatuidae	Calyptorhynchus lathami	Glossy Black-Cockatoo	No	Vulnerable, Protected, Category 2 Sensitive Species	
Aves	Cacatuidae	Lophochroa leadbeateri	Major Mitchell's Cockatoo	No	Vulnerable, Protected, Category 2 Sensitive Species	
Aves	Charadriidae	Charadrius leschenaultii	Greater Sand-plover	No	Vulnerable, Protected	V,C,J,K
Aves	Charadriidae	Charadrius mongolus	Lesser Sand-plover	No	Vulnerable, Protected	E,C,J,K
Aves	Ciconiidae	Ephippiorhynchus asiaticus	Black-necked Stork	No	Endangered, Protected	
Aves	Columbidae	Ptilinopus superbus	Superb Fruit-Dove	No	Vulnerable, Protected	
Aves	Diomedeidae	Diomedea exulans	Wandering Albatross	No	Endangered, Protected	E,J
Aves	Estrildidae	Stagonopleura guttata	Diamond Firetail	No	Vulnerable, Protected	
Aves	Falconidae	Falco subniger	Black Falcon	No	Vulnerable, Protected	
Aves	Haematopodidae	Haematopus fuliginosus	Sooty Oystercatcher	No	Vulnerable, Protected	
Aves	Haematopodidae	Haematopus longirostris	Pied Oystercatcher	No	Endangered, Protected	
Aves	Laridae	Onychoprion fuscata	Sooty Tern	No	Vulnerable, Protected	
Aves	Laridae	Sternula albifrons	Little Tern	No	Endangered, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Meliphagidae	Anthochaera phrygia	Regent Honeyeater	No	Critically Endangered Species, Protected	Critically Endangered
Aves	Meliphagidae	Epthianura albifrons	White-fronted Chat	No	Vulnerable, Protected	
Aves	Meliphagidae	Epthianura albifrons	White-fronted Chat population in the Sydney Metropolitan Catchment Management Area	No	Endangered Population, Vulnerable, Protected	

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Aves	Petroicidae	Petroica boodang	Scarlet Robin	No	Vulnerable, Protected	
Aves	Petroicidae	Petroica phoenicea	Flame Robin	No	Vulnerable, Protected	
Aves	Psittacidae	Glossopsitta pusilla	Little Lorikeet	No	Vulnerable, Protected	
Aves	Psittacidae	Lathamus discolor	Swift Parrot	No	Endangered, Protected, Category 3 Sensitive Species	Critically Endangered
Aves	Psittacidae	Neophema pulchella	Turquoise Parrot	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Rostratulidae	Rostratula australis	Australian Painted Snipe	No	Endangered, Protected	Endangered
Aves	Scolopacidae	Calidris alba	Sanderling	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Scolopacidae	Calidris ferruginea	Curlew Sandpiper	No	Endangered, Protected	CE,C,J,K
Aves	Scolopacidae	Calidris tenuirostris	Great Knot	No	Vulnerable, Protected	CE,C,J,K
Aves	Scolopacidae	Limicola falcinellus	Broad-billed Sandpiper	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Scolopacidae	Limosa limosa	Black-tailed Godwit	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Scolopacidae	Xenus cinereus	Terek Sandpiper	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Strigidae	Ninox strenua	Powerful Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Tytonidae	Tyto novaehollandiae	Masked Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Mammalia	Balaenidae	Eubalaena australis	Southern Right Whale	No	Endangered, Protected	Endangered
Mammalia	Dasyuridae	Dasyurus viverrinus	Eastern Quoll	No	Endangered, Protected	Critically Endangered
Mammalia	Dugongidae	Dugong dugon	Dugong	No	Endangered, Protected	
Mammalia	Molossidae	Mormopterus norfolkensis	Eastern Freetail-bat	No	Vulnerable, Protected	
Mammalia	Otariidae	Arctocephalus pusillus doriferus	Australian Fur-seal	No	Vulnerable, Protected	
Mammalia	Peramelidae	Perameles nasuta	Long-nosed Bandicoot population in inner western Sydney	No	Endangered Population, Protected	
Mammalia	Phascolarctidae	Phascolarctos cinereus	Koala	No	Vulnerable, Protected	Vulnerable
Mammalia	Pteropodidae	Pteropus poliocephalus	Grey-headed Flying-fox	No	Vulnerable, Protected	Vulnerable
Mammalia	Vespertilionidae	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Myotis macropus	Southern Myotis	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Scoteanax rueppellii	Greater Broad-nosed Bat	No	Vulnerable, Protected	
Reptilia	Cheloniidae	Chelonia mydas	Green Turtle	No	Vulnerable, Protected	Vulnerable
Flora	Asteraceae	Senecio spathulatus	Coast Groundsel	No	Endangered, Protected	
Flora	Campanulaceae	Wahlenbergia multicaulis	Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	No	Endangered Population	
Flora	Casuarinaceae	Allocasuarina diminuta subsp. mimica	Allocasuarina diminuta subsp. mimica L.A.S.Johnson population in the Sutherland and Liverpool local government areas	No	Endangered Population	
Flora	Convolvulaceae	Wilsonia backhousei	Narrow-leafed Wilsonia	No	Vulnerable, Protected	
Flora	Dilleniaceae	Hibbertia stricta subsp. furcatula		No	Endangered, Protected	
Flora	Elaeocarpaceae	Tetratheca juncea	Black-eyed Susan	No	Vulnerable, Protected	Vulnerable
Flora	Ericaceae	Epacris purpurascens var. purpurascens		No	Vulnerable, Protected	
Flora	Ericaceae	Leucopogon exolasius	Woronora Beard-heath	No	Vulnerable, Protected	Vulnerable

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Flora	Fabaceae (Faboideae)	Pultenaea pedunculata	Matted Bush-pea	No	Endangered, Protected	
Flora	Fabaceae (Mimosoideae)	Acacia bynoeana	Bynoe's Wattle	No	Endangered, Protected	Vulnerable
Flora	Fabaceae (Mimosoideae)	Acacia prominens	Gosford Wattle, Hurstville and Kogarah Local Government Areas	No	Endangered Population	
Flora	Fabaceae (Mimosoideae)	Acacia pubescens	Downy Wattle	No	Vulnerable, Protected	Vulnerable
Flora	Fabaceae (Mimosoideae)	Acacia terminalis subsp. terminalis	Sunshine Wattle	No	Endangered, Protected	Endangered
Flora	Juncaginaceae	Maundia triglochinoides		No	Vulnerable, Protected	
Flora	Lobeliaceae	Hypsela sessiliflora		No	Endangered, Protected, Category 3 Sensitive Species	Extinct
Flora	Myrtaceae	Callistemon linearifolius	Netted Bottle Brush	No	Vulnerable, Protected, Category 3 Sensitive Species	
Flora	Myrtaceae	Eucalyptus nicholii	Narrow-leaved Black Peppermint	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Eucalyptus scoparia	Wallangarra White Gum	No	Endangered, Protected	Vulnerable
Flora	Myrtaceae	Melaleuca deanei	Deane's Paperbark	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Syzygium paniculatum	Magenta Lilly Pilly	No	Endangered, Protected	Vulnerable
Flora	Orchidaceae	Caladenia tessellata	Thick Lip Spider Orchid	No	Endangered, Protected, Category 2 Sensitive Species	Vulnerable
Flora	Poaceae	Deyeuxia appressa		No	Endangered, Protected	Endangered
Flora	Proteaceae	Grevillea beadleana	Beadle's Grevillea	No	Endangered, Protected, Category 3 Sensitive Species	Endangered
Flora	Proteaceae	Persoonia hirsuta	Hairy Geebung	No	Endangered, Protected, Category 3 Sensitive Species	Endangered
Flora	Proteaceae	Persoonia nutans	Nodding Geebung	No	Endangered, Protected	Endangered
Flora	Rhamnaceae	Pomaderris prunifolia	P. prunifolia in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	No	Endangered Population	
Flora	Thymelaeaceae	Pimelea curviflora var. curviflora		No	Vulnerable, Protected	Vulnerable

Data does not include records not defined as either endangered or vulnerable, and category 1 sensitive species are also excluded. NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained 13/10/2016

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APPENDIX C

HISTORICAL TITLE SEARCH RESULTS

Summary of Owners Report

LPI Sydney

Address: - 88, 90, 94, 96 New Illawarra Road & 311 Bexley Road, Bexley North

Description: - Lot A D.P. 388204, Lot 1 D.P. 400341 & Lots 3, 4, 6 D.P. 508629

As regards Lot A D.P. 388204

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1940)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
5.3.1940 (1940 to 1948)	Francis Baines (Married Woman)	Vol 2055 Fol 231 Now Vol 5248 Fol 180
19.8.1948 (1948 to 1953)	Thomas Baines (Carpenter) (Application by Transmission not investigated)	Vol 5248 Fol 180
15.12.1953 (1953 to 1954)	Ann Josh (Married Woman) (Application by Transmission not investigated)	Vol 5248 Fol 180 Now Vol 6755 Fol 208
12.1.1954 (1954 to 1954)	Victor Charles Hood (Building Contractor) Fred Ward (Building Contractor)	Vol 6755 Fol 208
8.12.1954 (1954 to 1960)	John Lionel Lavender (Motor Mechanic) Greta Eileen Lavender (Married Woman)	Vol 6755 Fol 208 Now Vol 6935 Fol 113
23.9.1960 (1960 to 1984)	Edward Lewis Andrew Anderson (Civil Engineer)	Vol 6935 Fol 113
10.9.1984 (1984 to 1986)	John Joseph Quinn Gloria Muriel Quinn	Vol 6935 Fol 113
22.8.1986 (1986 to Date)	# Samih Ali Ghoniem # Mariam Mahmoud Ghoniem Now # Samih Ali Ghunaim # Mariam Mahmoud Ghunaim	Vol 6935 Fol 113 Now A/388204

# Denotes current registered proprietor

Easement & Leases: -NIL

As regards Lot 1 D.P. 400341

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1919)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
3.9.1919 (1919 to 1953)	Thomas Baines (Poultry Farmer)	Vol 2055 Fol 231 Now Vol 5248 Fol 201
15.12.1953 (1953 to 1954)	Ella Moon (Married Woman) (Application by Transmission not investigated)	Vol 5248 Fol 201 Now Vol 6755 Fol 206
12.2.1954 (1954 to 1956)	Frank Hennah (Taxi Proprietor) Mary Ann Hennah (Married Woman)	Vol 6755 Fol 206
1.5.1956 (1956 to 1993)	John Albert Monahan (Builder) Ida Laura Monahan (Married Woman)	Vol 6755 Fol 206 Now 1/400341
30.3.1993 (1993 to 2008)	Ida Laura Monahan (Widow)	1/400341
13.5.2008 (2008 to 2013)	Ali Fadel Ibrahim Mustapha Fadel	1/400341
28.10.2013 (2013 to Date)	# Abdellatif Ibrahim Mahmoud Meqdadi	1/400341

# Denotes current registered proprietor

Easement & Leases: -NIL

Search Lot 3 D.P. 508629

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1918)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
12.4.1918 (1918 to 1977)	George Gibbons (Sugar Boiler) Annie Elizabeth Gibbons (Married Woman)	Vol 2055 Fol 231 Now Vol 9792 Fol 73
12.7.1977 (1977 to 1977)	Annie Elizabeth Gibbons (Widow)	Vol 9792 Fol 73
29.9.1977 (1977 to 1990)	John Angelo Popovich (Railway Employee) Anica Popovich	Vol 9792 Fol 73 Now 3/508629
24.12.1990 (1990 to 1998)	Yuet Kwong	3/508629
1.7.1998 (1998 to 2004)	Joseph Awada Nariman Awada	3/508629
3.3.2004 (2004 to Date)	# Nariman Awada	3/508629

# Denotes current registered proprietor

Easement & Leases: -NIL

Search Lot 4 D.P. 508629

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1918)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
12.4.1918 (1918 to 1938)	George Gibbons (Sugar Boiler) Annie Elizabeth Gibbons (Married Woman)	Vol 2055 Fol 231 Now Vol 2847 Fol 78
5.10.1938 (1938 to 1981)	John Spencer Gibbons (Butcher)	Vol 2847 Fol 78 Now Vol 9792 Fol 74
10.3.1981 (1981 to 1987)	Michael Paul Sergis (Butcher)	Vol 9792 Fol 74
4.6.1987 (1987 to 1998)	Chris Stavropoulos Maria Stavropoulos	Vol 9792 Fol 74 Now 4/508629
25.2.1998 (1998 to Date)	# Emmanuel Zoumas # Patty Zoumas	4/508629

# Denotes current registered proprietor

Easement: -NIL

Leases:

- 25.9.1991 Z945041 – expired or surrendered not investigated

---

Search Lot 6 D.P. 508629

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1919)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
3.9.1919 (1919 to 1953)	Thomas Baines (Poultry Farmer)	Vol 2055 Fol 231 Now Vol 5248 Fol 201
15.12.1953 (1953 to 1954)	Ella Moon (Married Woman) (Application by Transmission not investigated)	Vol 5248 Fol 201 Now Vol 6755 Fol 206
12.2.1954 (1954 to 1957)	Frank Hennah (Taxi Proprietor) Mary Ann Hennah (Married Woman)	Vol 6755 Fol 206 Now Vol 7339 Fol 235
12.9.1957 (1957 to 1962)	John Inman Bale (Pilot) Joy Elaine Bale (Married Woman)	Vol 7339 Fol 235
16.10.1962 (1962 to 1964)	Peter William Davis (Service Station Manager)	Vol 7339 Fol 235 Now Vol 9792 Fol 76
20.8.1964 (1964 to 1967)	Robert Raymond Giddins (Printer) Patricia June Giddins (Married Woman)	Vol 9792 Fol 76
9.5.1967 (1967 to 1970)	Geoffrey Evans Mulcahy (Clerk) Helen Margaret Mulcahy (Married Woman)	Vol 9792 Fol 76
5.8.1970 (1970 to 1985)	Ivan Pavlakovic (Butcher) Wanda Dragan (Married Woman)	Vol 9792 Fol 76
15.3.1985 (1985 to 2007)	Enrique Cavanna Guadalupe Cavanna	Vol 9792 Fol 76 Now 6/508629
8.2.2007 (2007 to Date)	# Andrew Marshall Hunter # Allyn Hector George Marshall	6/5086259

# Denotes current registered proprietor

Search continued as regard Lot 6 D.P. 508629

Easement & Leases: -NIL

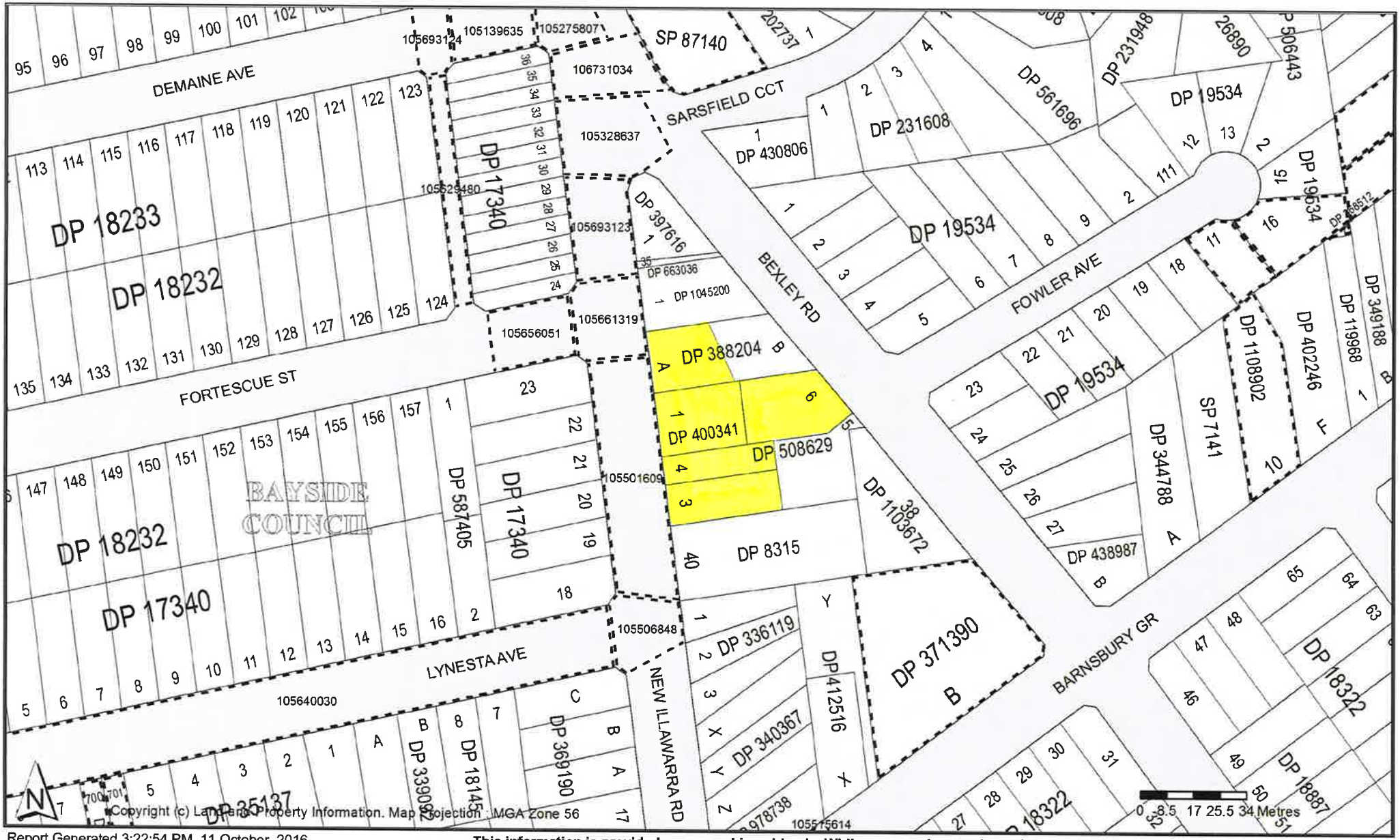
Yours Sincerely
James McDonnell
12 October 2016

Land & Property Information

Cadastral Records Enquiry Report

Requested Parcel : Lot 1 DP 400341 **Identified Parcel** : Lot 1 DP 400341

Locality : BEXLEY NORTH **LGA** : BAYSIDE **Parish** : ST GEORGE **County** : CUMBERLAND



Report Generated 3:22:54 PM, 11 October, 2016

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:05AM

FOLIO: A/388204

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6935 FOL 113

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
12/12/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: A/388204

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:17 AM	-	-

VOL 6935 FOL 113 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LOT A IN DEPOSITED PLAN 388204
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP388204

FIRST SCHEDULE

SAMIH ALI GHUNAIM
MARIAM MAHMOUD GHUNAIM
AS JOINT TENANTS (CN Y414549)

SECOND SCHEDULE (1 NOTIFICATION)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:08AM

FOLIO: 1/400341

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 7339 FOL 219

Recorded	Number	Type of Instrument	C.T. Issue
26/11/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
19/4/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
30/3/1993	I223060	REQUEST	
30/3/1993	I223061	NOTICE OF DEATH	EDITION 1
13/5/2008	AD949119	TRANSFER	
13/5/2008	AD949120	MORTGAGE	EDITION 2
27/8/2013	AH974939	CAVEAT	
28/10/2013	AI116829	WITHDRAWAL OF CAVEAT	
28/10/2013	AI116830	DISCHARGE OF MORTGAGE	
28/10/2013	AI116831	TRANSFER	
28/10/2013	AI116832	MORTGAGE	EDITION 3

*** END OF SEARCH ***

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TRANSFER

New South Wales
Real Property Act 1900

AD949119D

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the R(by this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

STAMP DUTY

Office of State Revenue use only

Office of State Revenue
NSW Treasury
Client No: 92046394 1529
Duty: $2 Trans No: 1948914
Asst details:

(A) FOLIO OF THE REGISTER: 1/400341

(B) LODGED BY

Document Collection Box	Name, Address or DX, Telephone, and LLPN if any	CODES
231	LLPN: 123835G CSB Reference: 82178406	T TW (Sheriff)

(C) TRANSFEROR: Ida Laura MONAHAN

(D) CONSIDERATION: The transferor acknowledges receipt of the consideration of $ 600,000.00 and as regards

(E) ESTATE: the above folio of the Register transfers to the transferee an estate in fee simple

(F) SHARE TRANSFERRED:

(G) Encumbrances (if applicable):

(H) TRANSFEREE: Ali FADEL and Ibrahim Mustapha FADEL

(I) TENANCY: Joint Tenants

DATE 24/4/08

(J) I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness:

Name of witness: Alan JOHN A. MONAHAN
Address of witness: 41 WABASH AVE CROMER NSW 2099

Certified correct for the purposes of the Real Property Act 1900 by the transferor.

Signature of transferor: I. L. Monahan

Certified correct for the purposes of the Real Property Act 1900 by the person whose signature appears below.

Signature:

Signatory's name: Nancy Wahlquist
Signatory's capacity: transferee's licensed conveyancer

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/400341

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:17 AM	3	28/10/2013

LAND

LOT 1 IN DEPOSITED PLAN 400341
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP400341

FIRST SCHEDULE

ABDELLATIF IBRAHIM MAHMOUD MEQDADI (T AI116831)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AI116832 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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09792073

CERTIFICATE OF TITLE

NEW SOUTH WALES

REAL PROPERTY ACT, 1900, as amended.

Application No. 3427
Prior Title Volume 2847 Folio 78

Vol. 9792 Fol. 73

ID 1st Edition issued 28-8-1964

Fol. 73
Vol. 9792
(Page 1)

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

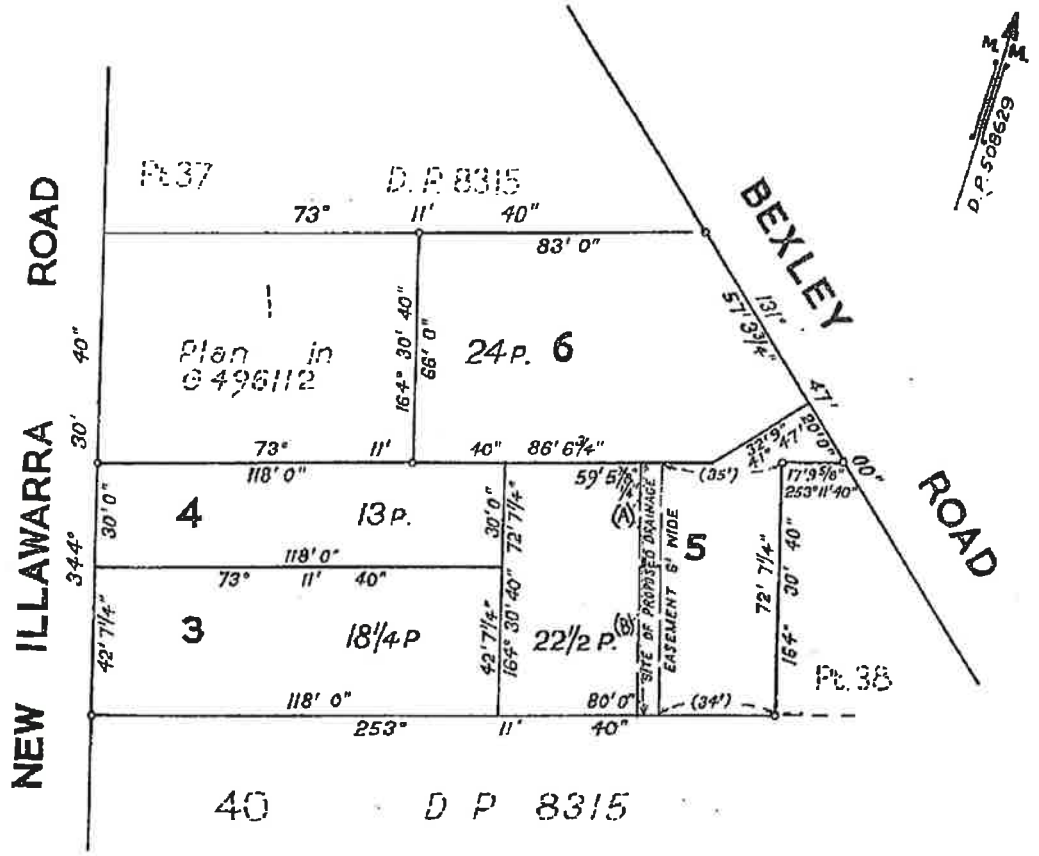
CANCELLED

Witness R B Latta

Registrar General

SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 3 in Deposited Plan 508629 at Bexley North in the Municipality of Rockdale Parish of St.George and County of Cumberland being part of Portion 142 granted to James Chandler on 19-10-1831.

FIRST SCHEDULE (continued overleaf)

~~GEORGE GIBBONS, of Bexley, Sugar Boiler, and ANNIE ELIZABETH GIBBONS, his wife, as Joint Tenants.~~

Registrar General

SECOND SCHEDULE (continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) above referred to.
2. Covenant created by Transfer No.A375153.

Registrar General

ST 1508 V. C. N. BLIGHT, GOVERNMENT PRINTER

Vol. 9792 Fol 73

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~Annie Elizabeth Gibbons of Bexley North, Widow~~	Notice of Death	Q274551	------	~~12-7-1977~~	
John Angelo Popovich of Bexley North, Railway Employee and Anica Popovich, his wife, as joint tenants.	Transfer	Q361858	------	29-9-1977.	

CANCELLED

SEE AUTO FOLIO

Q274551 2
Q361858 6
9 MK

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
M Mortgage	Q361859 P	------	to N.S.W. Permanent Building Society Limited.	29-9-1977.				

(Page 2 of 2 pages)

FORM No. 62

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:09AM

FOLIO: 3/508629

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9792 FOL 73

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
20/9/1988	X787012	MORTGAGE	EDITION 1
3/2/1989	Y140914	DISCHARGE OF MORTGAGE	EDITION 2
24/12/1990	Z416227	DISCHARGE OF MORTGAGE	
24/12/1990	Z416228	TRANSFER	EDITION 3
1/7/1998	5095443	TRANSFER	
1/7/1998	5095444	MORTGAGE	EDITION 4
18/9/2001	7949894	DISCHARGE OF MORTGAGE	
18/9/2001	7949895	MORTGAGE	EDITION 5
3/7/2003	9757197	DISCHARGE OF MORTGAGE	
3/7/2003	9757198	MORTGAGE	EDITION 6
3/3/2004	AA465966	TRANSFER	EDITION 7
26/8/2004	AA908893	DISCHARGE OF MORTGAGE	
26/8/2004	AA908894	MORTGAGE	EDITION 8
26/8/2005	AB723682	DISCHARGE OF MORTGAGE	
26/8/2005	AB723683	MORTGAGE	EDITION 9
6/6/2014	AI640087	DISCHARGE OF MORTGAGE	
6/6/2014	AI640088	MORTGAGE	EDITION 10

*** END OF SEARCH ***

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New South Wales
Real Property Act 19(

5095443 B

nly

Instructions for filling out this form are available from the Land Titles Office

Office of State Revenue use only

(A) **LAND TRANSFERRED**
If appropriate, specify the share or part transferred.

FOLIO IDENTIFIER 3/508629

(B) **LODGED BY**

LTO Box	Name, Address or DX and Telephone
205	Reference (15 character maximum): AWADA / SR6G.

$2.00

(C) **TRANSFEROR** YUET KWONG

(D) acknowledges receipt of the consideration of $215,000.00
and as regards the land specified above transfers to the transferee an estate in fee simple.

(E) Encumbrances (if applicable): 1. ..... 2. ..... 3. .....

(F) **TRANSFEREE**

(G)

T TS (s713 LGA) TW (Sheriff)	JOSEPH AWADA and NARIMAN AWADA TENANCY: JOINT TENANTS

DUTY - S - 4 - STAMP
050598 8304 04 00226903/03

(H) We certify this dealing correct for the purposes of the Real Property Act 1900. DATE 23/6/98

Signed in my presence by the transferor who is personally known to me.

Signature of Witness

Joannis Theodorakis
Name of Witness (BLOCK LETTERS)

3709 Forest Rd Bexley 2207
Address of Witness

BY HER ATTORNEY KITTY YUEN LING TSANG PURSUANT TO POWER OF ATTORNEY BOOK 4060 NO. 423

Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Signature of Transferee

If signed on the transferee's behalf by a solicitor or licensed conveyancer, show the signatory's full name in block letters.
Joseph Alphonse, Solicitor for Transferee

Checked by (LTO use) .....

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 3/508629

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:18 AM	10	6/6/2014

LAND

LOT 3 IN DEPOSITED PLAN 508629
AT BEXLEY NORTH
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP508629

FIRST SCHEDULE

NARIMAN AWADA (T AA465966)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 A375153 COVENANT
3 AI640088 MORTGAGE TO ARAB BANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

[redacted]

IFICATE OF TITLE

NEW SOUTH WALES

ERTY ACT, 1900, as amended.

Application No. 3427
Prior Title Volume 5005 Folio 46

Vol. 9792 Fol. 74

ID

1st Edition issued 28-8-1964

Vol. 9792 Fol. 74

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

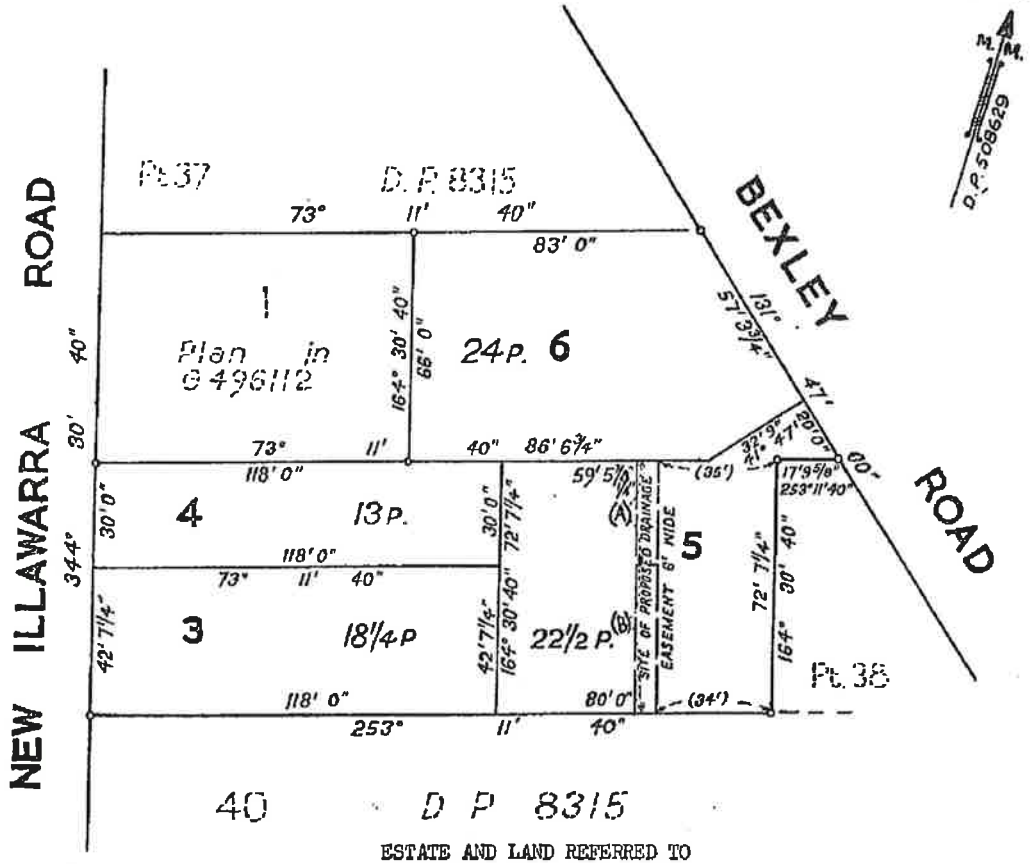
Witness R B Latta

CANCELLED
Jawatson
Registrar General.

(Page 1) Vol.

PLAN SHOWING LOCATION OF LAND

SEE AUTO FOLIO



S

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 4 in Deposited Plan 508629 at Bexley North in the Municipality of Rockdale Parish of St.George and County of Cumberland being part of Portion 142 granted to James Chandler on 19-10-1831.

FIRST SCHEDULE (continued overleaf)

~~JOHN SPENCER GIBBONS, of Bexley, Hatcher.~~

Jawatson
Registrar General

SECOND SCHEDULE (continued overleaf)

GRY 1. Reservations and conditions, if any, contained in the Crown Grant(s) above referred to.
CV 2. Covenant created by Transfer No.A375153.P

Jawatson
RegistrarGeneral

Vol. 9792 Fol 74

(Page 2 of 2 pages)

BY I. BOOK V. C. N. BLIGHT, GOVERNMENT PRINTER

S332659
W907583
-4-
X499338
38

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~Michael Paul Sergi of Parramatta, Butcher~~	~~Transfer~~	~~S332659~~	~~-----~~	~~10-3-1981~~	
Chris Stavropoulos and Maria Stavropoulos as joint tenants by Transfer W907583. Registered 4-6-1987.					

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
~~W907584 Mortgage to St. George Building Society Ltd. Registered 4-6-1987.~~						Discharged	X499337	
MW X499338			Mortgage to Westpac Savings Bank Limited. Registered 29-4-1988.					

FORM No. 62

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:11AM

FOLIO: 4/508629

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9792 FOL 74

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
25/9/1991	Z945041	LEASE	EDITION 1
18/12/1995	O776720	DISCHARGE OF MORTGAGE	EDITION 2
4/2/1998	3772590	REQUEST	EDITION 3
25/2/1998	3819466	TRANSFER	
25/2/1998	3819467	MORTGAGE	EDITION 4
2/2/2005	AB260653	DISCHARGE OF MORTGAGE	
2/2/2005	AB260654	MORTGAGE	EDITION 5

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 4/508629

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:19 AM	5	2/2/2005

LAND

LOT 4 IN DEPOSITED PLAN 508629
AT BEXLEY NORTH
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP508629

FIRST SCHEDULE

EMMANUEL ZOUMAS
PATTY ZOUMAS
AS JOINT TENANTS (T 3819466)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 A375153 COVENANT
3 AB260654 MORTGAGE TO BANK OF CYPRUS AUSTRALIA PTY LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

[redacted]

IFICATE OF TITLE

NEW SOUTH WALES — ERTY ACT, 1900, as amended.

09792076

Application No. 3427
Prior Title Volume 7339 Folio 235

Vol. 9792 Fol. 76

ID 1st Edition issued 28-8-1964

(Page 1) Vol. 9792 Fol. 76

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

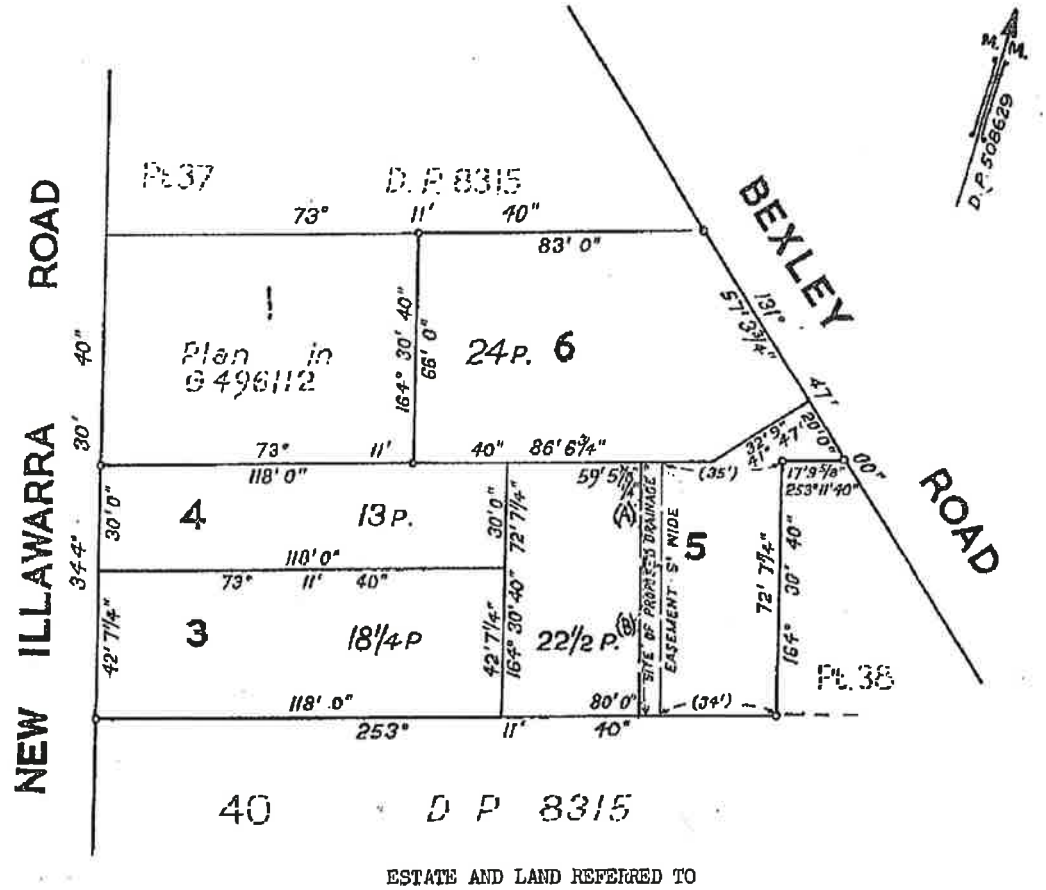
Witness R B Latta

CANCELLED Jawatson
Registrar General.

REGISTRAR GENERAL NEW SOUTH WALES

PLAN SHOWING LOCATION OF LAND

SEE AUTO FOLIO



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 6 in Deposited Plan 508629 at Bexley North in the Municipality of Rockdale Parish of St.George and County of Cumberland being part of Portion 142 granted to James Chandler on 19-10-1831.

FIRST SCHEDULE (continued overleaf)

~~PETER WILLIAM DAVIS, of Bexley North, Service Station Manager.~~

Jawatson
Registrar General

SECOND SCHEDULE (continued overleaf)

GRY 1. Reservations and conditions, if any, contained in the Crown Grant(s) above referred to.
AA 2. Conditions created by Transfer No.4489100.
~~3. Mortgage No. J184262 to St.George & Cronulla Permanent Co-operative Building and Investment Society Limited Entered 8-11-1962.~~ Discharged J749114

Jawatson
Registrar General

ST 1808 V. C. N. BLIGHT, GOVERNMENT PRINTER

Vol. 9792 Fol 76

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~Robert Raymond Giddins of Bexley North, Printer and Patricia June Giddins his wife as joint tenants~~					
~~Geoffrey Grant Hardcastle of Bexley North Clerk and Helen Margaret Hallette of The Dock Spinster as Joint Tenants~~	~~Transfer~~	~~J749115~~	~~20.8.1964~~	~~28.9.1964~~	
~~Ivan Pavlakovic Butcher and Wanda Dragan Married Woman both of Kurnell as joint tenants~~	~~Transfer~~	~~K680073~~	~~4-5-1967~~	~~25-5-1967~~	
Enrique Cavanna and Guadalupe Cavanna as joint tenants by Transfer V605643. Registered 15-3-1985	~~Transfer~~	~~L845022~~	~~6-5-1970~~	~~11-8-1970~~	

~~CANCELLED~~

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
~~Mortgage~~	~~J749116~~	~~17.8.1964~~	~~to Bank of New South Wales Savings Bank Limited~~	~~28.9.1964~~		~~Discharged~~	~~K680072~~	
~~Mortgage~~	~~K680074~~	~~9-5-1967~~	~~To N.S.W. Permanent Building Society Limited~~	~~25-5-1967~~		Discharged	L845023	
~~Mortgage~~	~~L845042~~	~~6-5-1970~~	~~to United Dominion Corporation (Australia) Limited~~	~~11-8-1970~~		Discharged	Q603521	
V605644 Mortgage to Commonwealth Savings Bank of Australia. Registered 15-3-1985								

MC

(Page 2 of 2 pages)

FORM No. 62

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:12AM

FOLIO: 6/508629

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9792 FOL 76

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
15/2/2001	7414145	DISCHARGE OF MORTGAGE	
15/2/2001	7414146	MORTGAGE	EDITION 1
23/8/2002	8893262	DISCHARGE OF MORTGAGE	
23/8/2002	8893263	MORTGAGE	EDITION 2
8/2/2007	AC923918	DISCHARGE OF MORTGAGE	
8/2/2007	AC923919	TRANSFER	
8/2/2007	AC923920	MORTGAGE	EDITION 3
29/10/2012	AH327660	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 6/508629

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:20 AM	3	8/2/2007

LAND

LOT 6 IN DEPOSITED PLAN 508629
AT BEXLEY NORTH
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP508629

FIRST SCHEDULE

ANDREW MARSHALL HUNTER
ALLYN HECTOR GEORGE MARSHALL
AS JOINT TENANTS (T AC923919)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
* 2 CONDITION(S) CREATED BY A489100
3 AC923920 MORTGAGE TO WESTPAC BANKING CORPORATION

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

Summary of Owners Report

LPI **Sydney**

Address: - 307-309 Bexley Road, Bexley North

Description: - Lot B D.P. 388204. Lot 1 D.P. 1045200 & Lot 35 D.P. 663036

As regards Lot B D.P. 388204

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1940)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
5.3.1940 (1940 to 1948)	Francis Baines (Married Woman)	Vol 2055 Fol 231 Now Vol 5248 Fol 181
19.8.1948 (1948 to 1953)	Thomas Baines (Carpenter) (Application by Transmission not investigated)	Vol 5248 Fol 181
15.12.1953 (1953 to 1954)	Ann Josh (Married Woman) (Application by Transmission not investigated)	Vol 5248 Fol 181 Now Vol 6755 Fol 208
12.1.1954 (1954 to 1954)	Victor Charles Hood (Building Contractor) Fred Ward (Building Contractor)	Vol 6755 Fol 208
12.5.1954 (1954 to 1995)	H.C. Sleigh Limited	Vol 6755 Fol 208 Now B/388204
25.8.1995 (1995 to 1995)	Caltex Oil (Australia) Pty Limited	B/388204
15.12.1995 (1995 to 1996)	Daniel Anthony Ishkhanian	B/388204
18.3.1996 (1996 to 2002)	Michael Lambrou Gina Lambrou	B/388204
6.3.2002 (2002 to 2007)	Oriental Pacific Holdings Pty Limited	B/388204
13.2.2007 (2007 to Date)	# Mtanios Soueid # Nazah Soueid	B/388204

# Denotes current registered proprietor

Easement: -NIL

Leases: -

- 24.10.2002 8909096 – Michael Hanna & Raed Hanna – expired not investigated

As regards Lot 1 D.P. 1045200

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1940)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
5.3.1940 (1940 to 1948)	Francis Baines (Married Woman)	Vol 2055 Fol 231 Now Vol 5248 Fol 181
19.8.1948 (1948 to 1953)	Thomas Baines (Carpenter) (Application by Transmission not investigated)	Vol 5248 Fol 181
15.12.1953 (1953 to 1955)	Thomas Richard Baines	Vol 5248 Fol 181 Now Vol 6755 Fol 207
7.4.1955 (1955 to 1995)	H.C. Sleigh Limited	Vol 6755 Fol 207
25.8.1995 (1995 to 1995)	Caltex Oil (Australia) Pty Limited	Vol 6755 Fol 207
15.12.1995 (1995 to 1996)	Daniel Anthony Ishkhanian	Vol 6755 Fol 207
18.3.1996 (1996 to 2002)	Michael Lambrou Gina Lambrou	Vol 6755 Fol 207
6.3.2002 (2002 to 2007)	Oriental Pacific Holdings Pty Limited	Vol 6755 Fol 207 Now 1/1045200
13.2.2007 (2007 to Date)	# Mtanios Soueid # Nazah Soueid	1/1045200

# Denotes current registered proprietor

Easement: -NIL

Leases: -

- 24.10.2002 8909096 – Michael Hanna & Raed Hanna – expired not investigated

As regards Lot 35 D.P. 663036

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1919)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
3.9.1919 (1919 to 1953)	Thomas Baines (Poultry Farmer)	Vol 2055 Fol 231 Now Vol 5214 Fol 43
24.9.1953 (1953 to 1955)	Thomas Richard Baines (Application by Transmission not investigated)	Vol 5214 Fol 43
7.4.1955 (1955 to 1995)	H.C. Sleigh Limited	Vol 5214 Fol 43 Now Vol 7516 Fol 93
25.8.1995 (1995 to 1995)	Caltex Oil (Australia) Pty Limited	Vol 7516 Fol 93
15.12.1995 (1995 to 1996)	Daniel Anthony Ishkhanian	Vol 7516 Fol 93 Now 35/663036
18.3.1996 (1996 to 2002)	Michael Lambrou Gina Lambrou	35/663036
6.3.2002 (2002 to 2007)	Oriental Pacific Holdings Pty Limited	35/663036
13.2.2007 (2007 to Date)	# Mtanios Soueid # Nazah Soueid	35/663036

# Denotes current registered proprietor

Easement: -NIL

Leases: -

- 24.10.2002 8909096 – Michael Hanna & Raed Hanna – expired not investigated

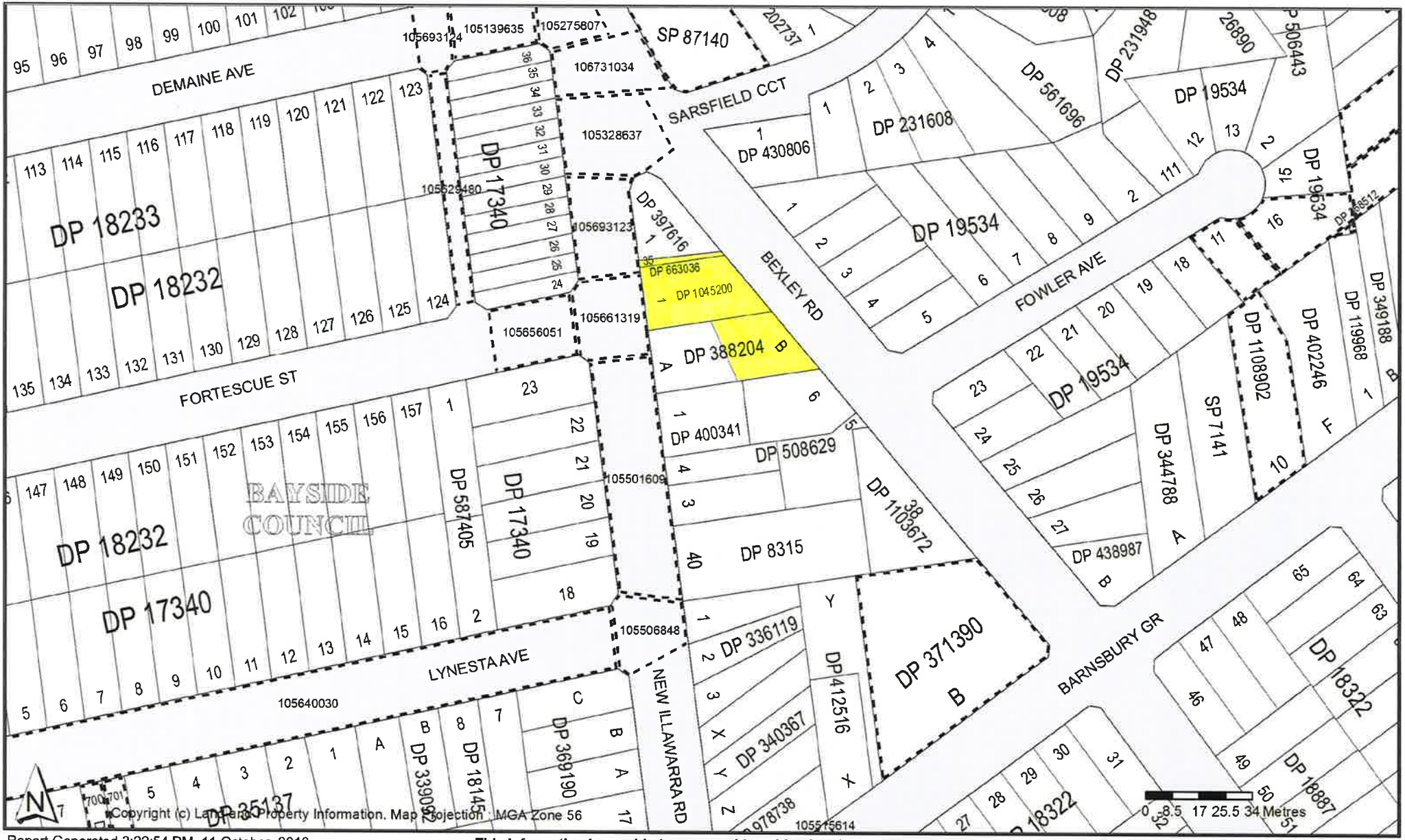
Yours Sincerely
James McDonnell
12 October 2016

Land & Property Information

Cadastral Records Enquiry Report

Requested Parcel : Lot 1 DP 400341 **Identified Parcel** : Lot 1 DP 400341

Locality : BEXLEY NORTH **LGA** : BAYSIDE **Parish** : ST GEORGE **County** : CUMBERLAND



Report Generated 3:22:54 PM, 11 October, 2016

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:06AM

FOLIO: B/388204

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6883 FOL 200

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
11/12/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
25/8/1995	O303685	TRANSFER	EDITION 1
15/12/1995	O759266	TRANSFER	
15/12/1995	O759267	MORTGAGE	EDITION 2
18/3/1996	2002531	DISCHARGE OF MORTGAGE	
18/3/1996	2002532	TRANSFER	EDITION 3
11/8/1999	6078476	MORTGAGE	EDITION 4
6/3/2002	8371897	DISCHARGE OF MORTGAGE	
6/3/2002	8371898	TRANSFER	EDITION 5
24/10/2002	8909096	LEASE	EDITION 6
22/8/2003	9686994	SURRENDER OF LEASE	EDITION 7
22/8/2003	9686995	CAVEAT	
13/2/2007	AC931082	WITHDRAWAL OF CAVEAT	
13/2/2007	AC931083	TRANSFER	
13/2/2007	AC931084	MORTGAGE	EDITION 8
28/1/2011	AG26267	WRIT	
3/2/2011	AG39059	CAVEAT	
4/2/2011	AG36189	WRIT	
5/8/2011	AG411526	APPLICATION TO CANCEL RECORDING OF WRIT	
5/8/2011	AG411531	APPLICATION TO CANCEL RECORDING OF WRIT	
10/8/2011	AG423258	WITHDRAWAL OF CAVEAT	

END OF PAGE 1 - CONTINUED OVER

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:06AM

FOLIO: B/388204 PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
13/6/2012	AG840133	REJECTED - LEASE	
14/9/2015	AJ810379	DISCHARGE OF MORTGAGE	
14/9/2015	AJ810380	MORTGAGE	EDITION 9

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: B/388204

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:17 AM	9	14/9/2015

LAND

LOT B IN DEPOSITED PLAN 388204
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP388204

FIRST SCHEDULE

MTANIOS SOUEID
NAZAH SOUEID
AS JOINT TENANTS (T AC931083)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AJ810380 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:04AM

FOLIO: 1/1045200

First Title(s): OLD SYSTEM
Prior Title(s): VOL 6755 FOL 207

Recorded	Number	Type of Instrument	C.T. Issue
11/9/2002	DP1045200	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
24/10/2002	9068724	DEPARTMENTAL DEALING	FOLIO CREATED EDITION 1
22/8/2003	9686994	SURRENDER OF LEASE	EDITION 2
22/8/2003	9686995	CAVEAT	
13/2/2007	AC931082	WITHDRAWAL OF CAVEAT	
13/2/2007	AC931083	TRANSFER	
13/2/2007	AC931084	MORTGAGE	EDITION 3
28/1/2011	AG26267	WRIT	
3/2/2011	AG39059	CAVEAT	
4/2/2011	AG36189	WRIT	
5/8/2011	AG411526	APPLICATION TO CANCEL RECORDING OF WRIT	
5/8/2011	AG411531	APPLICATION TO CANCEL RECORDING OF WRIT	
10/8/2011	AG423258	WITHDRAWAL OF CAVEAT	
13/6/2012	AG840133	REJECTED - LEASE	
14/9/2015	AJ810379	DISCHARGE OF MORTGAGE	
14/9/2015	AJ810380	MORTGAGE	EDITION 4

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/1045200

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:16 AM	4	14/9/2015

LAND

LOT 1 IN DEPOSITED PLAN 1045200
AT BEXLEY NORTH
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1045200

FIRST SCHEDULE

MTANIOS SOUEID
NAZAH SOUEID
AS JOINT TENANTS (T AC931083)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AJ810380 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:02AM

FOLIO: 35/663036

First Title(s): OLD SYSTEM
Prior Title(s): VOL 7516 FOL 93

Recorded	Number	Type of Instrument	C.T. Issue
15/3/1996		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
18/3/1996	2002531	DISCHARGE OF MORTGAGE	
18/3/1996	2002532	TRANSFER	EDITION 1
11/8/1999	6078476	MORTGAGE	EDITION 2
6/3/2002	8371897	DISCHARGE OF MORTGAGE	
6/3/2002	8371898	TRANSFER	EDITION 3
24/10/2002	8909096	LEASE	EDITION 4
22/8/2003	9686994	SURRENDER OF LEASE	EDITION 5
22/8/2003	9686995	CAVEAT	
13/2/2007	AC931082	WITHDRAWAL OF CAVEAT	
13/2/2007	AC931083	TRANSFER	
13/2/2007	AC931084	MORTGAGE	EDITION 6
28/1/2011	AG26267	WRIT	
3/2/2011	AG39059	CAVEAT	
4/2/2011	AG36189	WRIT	
5/8/2011	AG411526	APPLICATION TO CANCEL RECORDING OF WRIT	
5/8/2011	AG411531	APPLICATION TO CANCEL RECORDING OF WRIT	
10/8/2011	AG423258	WITHDRAWAL OF CAVEAT	
13/6/2012	AG840133	REJECTED - LEASE	
14/9/2015	AJ810379	DISCHARGE OF MORTGAGE	
14/9/2015	AJ810380	MORTGAGE	EDITION 7

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 35/663036

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:16 AM	7	14/9/2015

LAND

LOT 35 IN DEPOSITED PLAN 663036
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP663036

FIRST SCHEDULE

MTANIOS SOUEID
NAZAH SOUEID
AS JOINT TENANTS (T AC931083)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 A489100 COVENANT
3 AJ810380 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

Summary of Owners Report

LPI **Sydney**

Address: - 311A Bexley Road, Bexley North

Description: - Lot 5 D.P. 508629

As regards the part tinted yellow on attached cadastral

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1919)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
3.9.1919 (1919 to 1953)	Thomas Baines (Poultry Farmer)	Vol 2055 Fol 231 Now Vol 5248 Fol 201
15.12.1953 (1953 to 1954)	Ella Moon (Married Woman) (Application by Transmission not investigated)	Vol 5248 Fol 201 Now Vol 6755 Fol 206
12.2.1954 (1954 to 1956)	Frank Hennah (Taxi Proprietor) Mary Ann Hennah (Married Woman)	Vol 6755 Fol 206 Now Vol 7339 Fol 235
12.9.1957 (1957 to 1962)	John Inman Bale (Pilot) Joy Elaine Bale (Married Woman)	Vol 7339 Fol 235
16.10.1962 (1962 to 1963)	Peter William Davis (Service Station Manager)	Vol 7339 Fol 235
22.5.1963 (1963 to 1981)	James George Gibbons (Master Butcher) Lurline Jeanette Gibbons (Married Woman)	Vol 7339 Fol 235 Now Vol 9792 Fol 75

As regards the part tinted pink on attached cadastral

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1918)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
12.4.1918 (1918 to 1938)	George Gibbons (Sugar Boiler) Annie Elizabeth Gibbons (Married Woman)	Vol 2055 Fol 231 Now Vol 2847 Fol 78
5.10.1938 (1938 to 1963)	John Spencer Gibbons (Butcher)	Vol 2847 Fol 78
17.10.1963 (1963 to 1981)	James George Gibbons (Master Butcher) Lurline Jeanette Gibbons (Married Woman)	Vol 2847 Fol 78 Now Vol 9792 Fol 75

As regards the part tinted purple on attached cadastral

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
11.5.1910 (1910 to 1913)	Edgar Lucas (Solicitor)	Vol 2055 Fol 231
20.2.1913 (1913 to 1914)	Heinrich George Menkens (Commercial Broker)	Vol 2055 Fol 231
31.1.1914 (1914 to 1918)	N.S.W. Realty Co Limited	Vol 2055 Fol 231
12.4.1918 (1918 to 1963)	George Gibbons (Sugar Boiler) Annie Elizabeth Gibbons (Married Woman)	Vol 2055 Fol 231 Now Vol 2847 Fol 78
17.10.1963 (1963 to 1981)	James George Gibbons (Master Butcher) Lurline Jeanette Gibbons (Married Woman)	Vol 2847 Fol 78 Now Vol 9792 Fol 75

Search continued as regards the whole of the subject land

Date of Acquisition and Term held	Registered Proprietor(s) & occupations where available	Reference to title at acquisition and sale
15.7.1981 (1981 to 1986)	Frank Xavior Camilleri Eleonora Camilleri	Vol 9792 Fol 75
13.8.1986 (1986 to 2002)	Fat Tsang Yuet Kwong Tsang	Vol 9792 Fol 75 Now 5/508629
1.10.2002 (2002 to 20.10)	Wo Tsang Yuet Kwong Tsang	5/508629
21.4.2010 (2010 to 2012)	Yuet Kwong Tsang	5/508629
28.8.2012 (2012 to Date)	# Harrijanto Rusli # Sui Jun Han	5/508629

# Denotes current registered proprietor

Easement:

- 16.7.1963 J601625 – Easement for Drainage
- 27.5.19363 J601626 – Easement for Drainage

Leases: -NIL

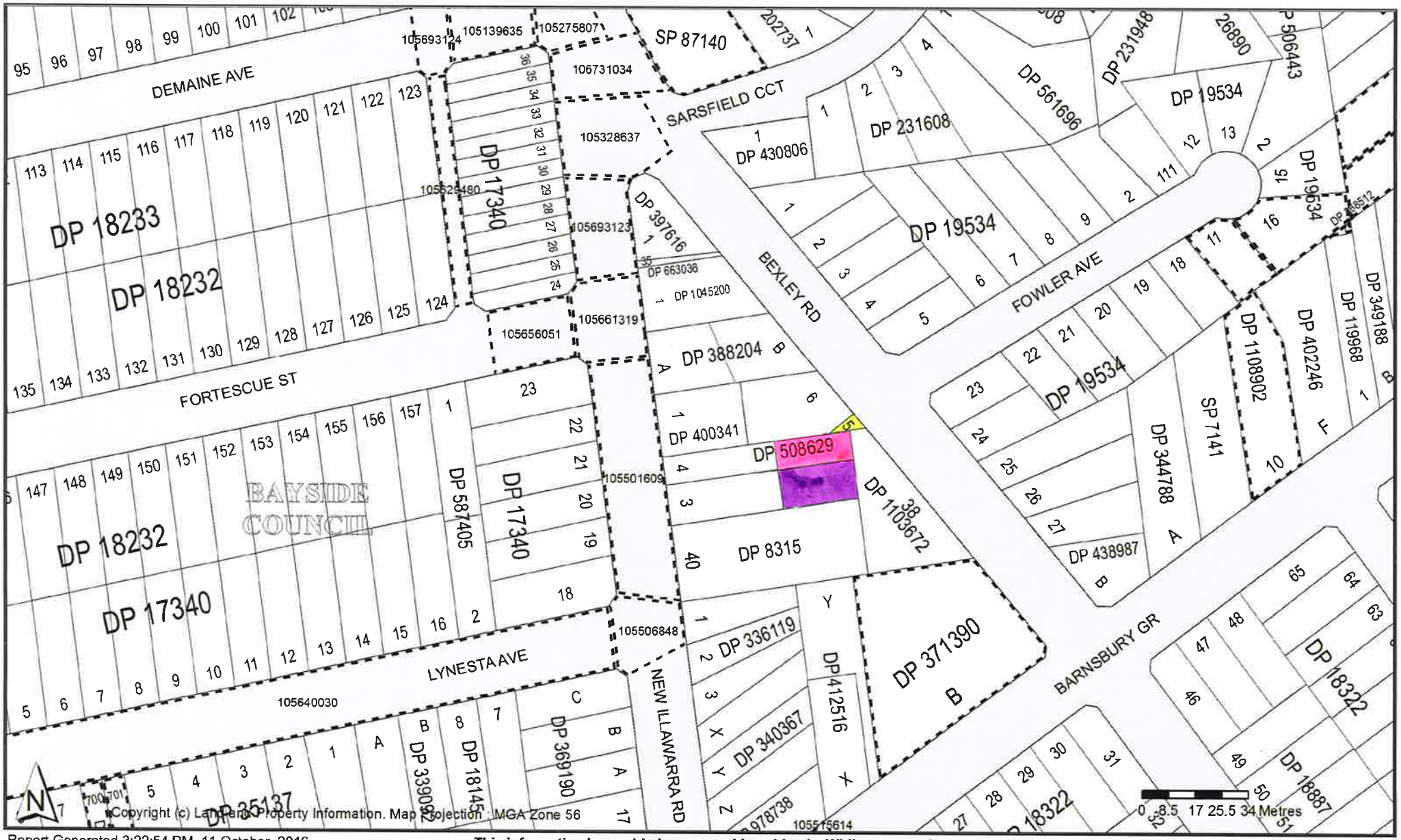
Yours Sincerely
James McDonnell
12 October 2016

Land & Property Information

Cadastral Records Enquiry Report

Requested Parcel : Lot 1 DP 400341 **Identified Parcel** : Lot 1 DP 400341

Locality : BEXLEY NORTH **LGA** : BAYSIDE **Parish** : ST GEORGE **County** : CUMBERLAND



Report Generated 3:22:54 PM, 11 October, 2016

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

Form 1

OFFICE USE OLY

PLAN OF

Subdivision of Lots A & B on T.C. 718333 & Lot 2 on T.C. 496112

Mun. ~~Shire City~~ of Rockdale

Town or Locality Bexley North

Parish of St. George

County of Cumberland Scale 40 feet to an inch

DP508629

Registered: 7.6.64

C.A.: 122/63 of 22-11-1962

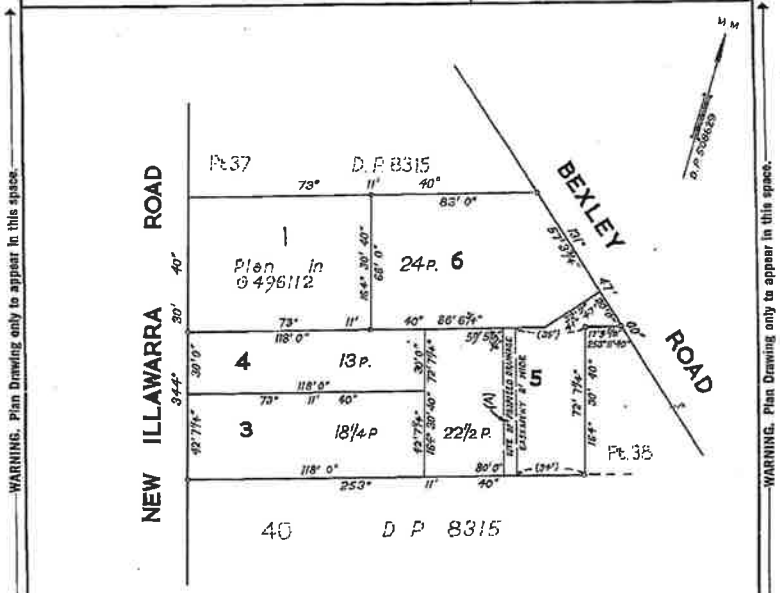
Title System: Torrens

Purpose: Subdivision

Ref. Map: Bexley

Last Plan: C 718333 (Pt.) & 496112 (Pt.) (D.P. 8315)

WARNING. Plan Drawing only to appear in this space.



WARNING. Plan Drawing only to appear in this space.

Signatures, Seals and Statements of Dedications and Easements.

It is intended to transfer and grant to the Council of the Municipality of Rockdale an easement for drainage purposes over that part of Lot 5 marked "Site of proposed Drainage Easement 6" wide."

J. A. Gibbons
L. J. Gibbons
P. Davis.

I certify that this plan has been compiled from the information shown on D.P. 8315 & Plans in T.C. 718333 & T.C. 496112 & is accurate.

Surveyor registered under the Surveyors Act, 1929, as amended. I hereby certify that the survey represented in this plan is accurate and has been made * (1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on

Signature

Surveyor registered under Surveyors Act, 1929, as amended.

Datum Line of Azimuth.

Approved by Council. I hereby certify that the requirements of the Local Government Act, 1919 (other than the requirements for registration of plans), have been complied with by the applicant in relation to the proposed subdivision set out hereon.

Subdivision No. 122/63 Date 22/11/62

Council Clerk

* Strike out (1) or (2) Insert date of survey.

M.R.D. A

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 508629

FEET	INCHES	METRES
-	7 1/4	0.184
6	-	1.829
17	9 5/8	5.426
20	-	6.096
30	-	9.144
32	9	9.982
34	-	10.363
35	-	10.668
42	7 1/4	12.986
57	3 3/4	17.469
59	5 1/4	18.117
66	-	20.117
72	7 1/4	22.130
80	-	24.384
83	-	25.298
86	6 3/4	26.384
118	-	35.966

AC	RD	P	SQ M
-	-	10	328.6
-	-	14 1/4	461.6
-	-	22 1/2	969.1
-	-	24	607

I, Jack Hayward Watson, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 11th day of March, 1976.

[redacted]IFICATE OF TITLE

NEW SOUTH WALES

ERTY ACT, 1900, as amended.

09792075

Application No. 3427
Prior Titles Volume 2847 Folio 78
Volume 5005 Folio 46
Volume 7339 Folio 235

Vol. 9792 Fol. 75

ID 1st Edition Issued 28-8-1964

(Page 1) Vol. 9792 Fol. 75

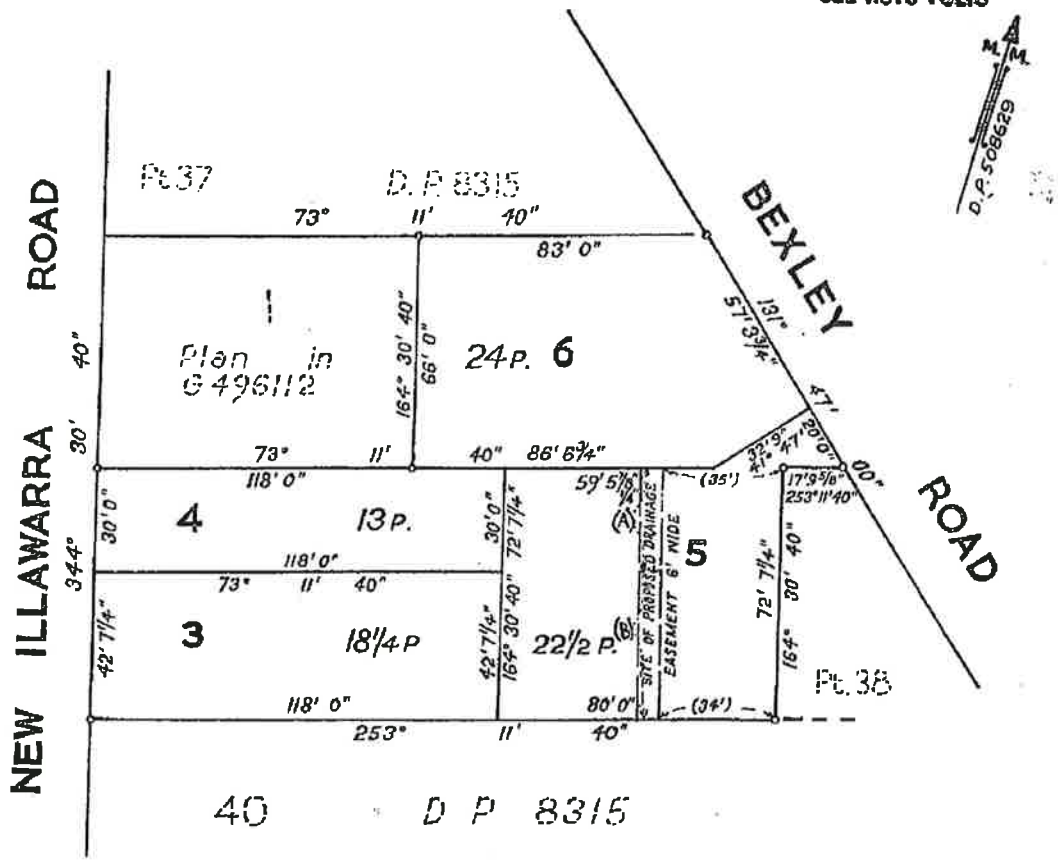
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness R B Latta

CANCELLED
Registrar General.

PLAN SHOWING LOCATION OF LAND

SEE AUTO FOLIO



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 5 in Deposited Plan 508629 at Bexley North in the Municipality of Rockdale Parish of St.George and County of Cumberland being part of Portion 142 granted to James Chandler on 19-10-1831.

FIRST SCHEDULE (continued overleaf)

~~JAMES GEORGE GIBBONS, of Bexley North, Master Butcher, and LURLINE JEANETTE GIBBONS, his wife, as Joint Tenants~~

Registrar General

SECOND SCHEDULE (continued overleaf)

GRN 1. Reservations and conditions, if any, contained in the Crown Grant(s) above referred to.
CV 2. Covenant created by Transfer No.A375153P affecting part.
AA 3. Conditions created by Transfer No.A489100 affecting part.
ED(A) 4. Easement for Drainage created by Transfer No. J601625P affecting the piece of land 6 feet wide designated (A) shown in the plan hereon.
ED(B) 5. Easement for Drainage created by Transfer No. J601626P affecting the piece of land 6 feet wide designated(B) shown in the plan hereon.

RegistrarGeneral

Vol. 9792 Fol 75

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~Frank Xavior Camilleri and Eleonora Camilleri as joint tenants by Transfer S573912. Registered 15-7-1981.~~ Fat Tsang and Yuet Kwong Tsang as joint tenants by Transfer W451774. Registered 13-8-1986					

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	~~Signature of~~ Registrar General	CANCELLATION		
~~Mortgage~~	~~K294072~~	~~20.1.1969~~	~~to Commonwealth Savings Bank of Australia~~	~~25.1.1969~~				
~~Mortgage~~	~~S304594~~		~~to Australia and New Zealand Banking Group Limited~~	~~31-3-1981~~		Discharged	S218622	
~~S573913 Mortgage to Bank of New South Wales Savings Bank Limited. Registered 15-7-1981.~~						Discharged	S573911	
~~T216683 Mortgage to Bank of New South Wales. Registered 2-9-1982.~~						Discharged	T216682	
~~T460686 Mortgage to Westpac Banking Corporation. Registered 21-3-1983.~~						Discharged	W451773	
~~V152957 Mortgage to Westpac Banking Corporation. Registered 13-6-1984.~~						Discharged	W451772	
~~V673396 Caveat by F.C.A. Finance Pty. Limited. Registered 19-4-1985.~~						Discharged	W451771	
						Withdrawn	W276370	

(Page 2 of 2 pages)

FORM No. 62

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/10/2016 8:12AM

FOLIO: 5/508629

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9792 FOL 75

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
1/10/2002	8816233	TRANSFER	EDITION 1
21/4/2010	AF445124	NOTICE OF DEATH	EDITION 2
28/8/2012	AH201497	TRANSFER	
28/8/2012	AH201498	MORTGAGE	EDITION 3
29/10/2012	AH327660	DEPARTMENTAL DEALING	
31/10/2012	AH332938	DISCHARGE OF MORTGAGE	
31/10/2012	AH332939	MORTGAGE	EDITION 4

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

Level 4, 122 Castlereagh Street, Sydney 2000 - DX 1078 SYDNEY
PHONE: (02) 9261 5211 FAX: (02) 9264 7752
www.hazlett.com.au

Hazlett® INFORMATION SERVICES

Licence: 98M111
Edition: 0011

TRANSFER

New South Wales
Real Property Act 1900

8816233Y

RELODGED
STAMP DUTY
23 SEP 2002
TIME: 11:00

PRIVACY NOTE: this information is legally required and will be

Office of State Revenue use only

NEW SOUTH WALES DUTY
29-07-2002 0001060373-002
SECTION 18(2)
DUTY $ **********2.00

(A) TORRENS TITLE

If appropriate, specify the part transferred
~~One undivided half share~~ in 5/508629

(B) LODGED BY

Delivery Box	Name, Address or DX and Telephone	CODES
W	WILLIAM CHAN & CO Suite 207, 661 George Street, Sydney Reference (optional):	T TW (Sheriff)

(C) TRANSFEROR

FAT TSANG YUET KWONG TSANG

(D) CONSIDERATION The transferor acknowledges receipt of the consideration of $ 1:00 and as regards

(E) ESTATE the land specified above transfers to the transferee an estate in fee simple.

(F) SHARE TRANSFERRED

(G) Encumbrances (if applicable): 1. 2. 3.

(H) TRANSFEREE

WO TSANG AND YUET KWONG TSANG

TENANCY: JOINT TENANTS

(I)

DATE ...../...../.....
dd mm yyyy

(J) I certify that the transferor, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this transfer in my presence.

Signature of witness: X

Name of witness: JENNY LIU FUNG YING TSANG

Address of witness: 10A. EDWARD STREET, WILLOUGHBY N.S.W. 2068

Certified correct for the purposes of the Real Property Act 1900 by the transferor.

Signature of transferor: X

I certify that the transferee, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this transfer in my presence.

RELODGED
30 SEP 2002
TIME: 12.30

Signature of witness:

Name of witness: JENNY LIU FUNG YING TSANG

Address of witness: 10A, EDWARD STREET, WILLOUGHBY N.S.W. 2068

Certified correct for the purposes of the Real Property Act 1900 by the transferee.

Signature of transferee: Wo Tsang X

If signed on the transferee's behalf by a solicitor, licensed conveyancer or barrister, insert the signatory's full name and capacity below:

NOS Lodged

ALL HANDWRITING MUST BE IN BLOCK CAPITALS.

A set of notes on this form (01T-2) is available from Land and Property Information NSW.

Filed with DP 816233

Our Ref: 8816233

B

Land and Property Information
www.lpi.nsw.gov.au
1 Prince Albert Road
Queens Square
SYDNEY NSW 2000
GPO Box 15
SYDNEY NSW 2001
DX 17 SYDNEY
T (61 2) 9228 6666
F (61 2) 9233 4357

YUET KWONG TSANG
10 EDWARD STREET
WILLOUGHBY 2068

11 SEP 2002

NOTICE OF SEVERANCE OF JOINT TENANCY

Section 12A and Section 97 (5) Real Property Act, 1900

I am writing to you concerning your land at BEXLEY NORTH
Register Folio 5/508629
which you own with FAT TSANG as joint tenants.

Dealing No. 8816233 (copy enclosed) has been lodged in this Office and will be registered in thirty (30) days from the date of this letter.

The effect of registration of this dealing will be that the joint tenancy will be severed and you will then own the land as tenant in common with WO TSANG

The register folio for your land will then show that you hold a **half share** and WO TSANG holds a **half share** in the land as tenants in common.

What the change means:

The difference between owning the land as joint tenants instead of tenants in common is what happens to one of the owner's share in the land after he or she dies. When land is held as joint tenants and an owner dies, that person's interest in the land automatically passes to the other owner(s). When land is held by tenants in common, and an owner dies, his or her share in the land passes to the people named in his or her will as beneficiaries or, if there is no will, it goes to their next of kin.

You will need to think about what will happen to your share in the land after you die. You will need to make a will so that you can say who will get your share. If you already have a will, you will need to check that it says who will get your share in the land.

over.....

Right to change ownership from joint tenants to tenants in common.

Under the law in New South Wales, a joint tenant can register a document at the Land Titles Office which changes the ownership from joint tenants to tenants in common . In most cases a joint tenant can make this change with or without the agreement of the other joint tenant(s). In other cases, a joint tenant cannot make this change without agreement of the other joint tenant(s). Instances where a joint tenant cannot make this change are where he or she:

* is a trustee: or

* has made an agreement not to change the tenancy

Should you consult a Solicitor?0

If any of the following circumstances apply, you should see a Solicitor:

* You and the other owner(s) own the land as trustees: or

* You and the other owner(s) had an agreement not to change the ownership from joint tenants to tenants in common, or you had an agreement that said that it would be changed in a different way to how it was done; or

* You contributed a bigger share to the purchase of the land or its improvements than the other owner(s); or

* You have any doubts about what is in this notice.

If you have not lodged a court order stopping me from registering the dealing severing the joint tenancy within 30 days from the date of this letter, I will register it and the joint tenancy will then be severed as set out in this letter.

If you have any general questions about this notice, please telephone the Client Services at the Land and Property Information New South Wales on (02) 9228-6713.

Yours faithfully,

WARWICK WATKINS
Registrar General.
Per: O_

Film (2) 8816233

DAMMHOLZ & CO. (HAYMARKET OFFICE)
SOLICITORS
ABN 70 200 622 953

HUGO AHWEE
2nd FLOOR
661 GEORGE STREET
SYDNEY NSW 2000
AUSTRALIA

TEL : (02) 9211 2032
FAX : (02) 92110750

Your Ref: 8816230-33

Our Ref: HA

5 September 2002

New South Wales
Land Title Office
Queens Square
Sydney

Dear Sirs

Re: Transfer severing tenancy
Your ref: 8816230-33

Fil

We refer to your enclosed requisition.

We submit the following replies:

a. The address of Yuet Kwong Tsang Fat Tsang is 10 Edward Street, Willoughby.

b. Statement of n legal imediment to transfer.

Yours faithfully
DAMMHOLZ & CO

Film
PP/6233

I, Fat Tsang of 10 Edward Street Willoughby
DO SOLEMNLY AND SINCERELY DECLARE AS FOLLOWS:

1. That I am living at the above address.
2. That I did transfer my one half share in 10 Edward Street, Willoughby to Kevin Tim Yung Tsang.
3. That I did transfer my one half share in 311A Bexley Road, Bexley to Wo Tsang.
4. That the folio identifier in 2 above is 102/857628.
5. That the folio identifier in 3 above is 5/508629.
6. That I am of sound mind and I have no legal impediment to the above transfers.

AND I MAKE THIS SOLEMN DECLARATION conscientiously believing the contents to be true and by virtue of the Oaths Act 1900.

MADE AND SUBSCRIBED BY
Fat Tsang, the said Declarant
at Sydney this 2nd day
of September 2002.

曾 法

.....

Before me:

.....
MICHAEL JOSEPH WAKIM
a Justice of the Peace

Film
8816233

DAMMHOLZ & CO. (HAYMARKET OFFICE)
SOLICITORS
ABN 70 200 622 953
(PREVIOUSLY WILLIAM CHAN & CO)

HUGO AHWEE
2nd FLOOR
661 GEORGE STREET
SYDNEY NSW 2000
AUSTRALIA

TEL : (02) 9211 2032
FAX : (02) 9211 0750

Your Ref:

Our Ref:

17 September 2002

Land Title Office
Sydney

Dear Sirs

Re: Your File Ref No 8816230-33
(A) 102/857628
Fat TSang transfer of ½share to Kevin Tsang
(B) 5/508629
Fat Tsang transfer of ½ share to Wo Tsang

We have been instructed by both transferors and transferees that they do not wish to sever the Joint Tenancy.

We would be pleased if we could uplift both Transfers for amendment and to be marked by the Office of State Revenue.

Yours faithfully
DAMMHOLZ & CO
per:

Req:R563442 /Doc:DL AF445124 /Rev:27-Apr-2010 /Sts:NO.OK /Pgs:ALL /Prt:12-Oct-2016 11:19 /Seq:1 of 1
Ref:PSH-GROLLY-Bexley_North /Src:H

Form: 02ND
Release: 4.0
www.lands.nsw.gov.au

NOTICE OF DEATH

New South Wales
Section 101 Real Property Act 1900

AF445124V

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the Registrar General to collect the information required by this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

(A) **TORRENS TITLE**

5/508629

(B) **REGISTERED DEALING**

Number	Torrens Title

(C) **LODGED BY**

Document Collection Box	Name, Address or DX, Telephone, and Customer Account Number if any	CODE
WS	~~Yuet Kwong TSANG~~ MELISSA TSANG ~~10 Edward Street, Willoughby NSW 2068~~ POB N136 (mobile) 0412 686 086 BEXLEY NORTH NSW 2207 Reference:	ND

(D) **DECEASED JOINT TENANT**

See Instructions for Completion: Instruction (D) regarding discrepancies in the name

Wo TSANG

(E) **SURVIVING JOINT TENANT**

Yuet Kwong TSANG

(F) I, the abovementioned surviving joint tenant, apply to be registered as proprietor of the interest of the deceased joint tenant (who died on 18 January 2007 as stated in the copy of death certificate No. 104340/2007 accompanying this application) in the above land.

DATE 21 April 2010

(G) I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness: M.Tsang

Name of witness: Melissa TSANG
Address of witness: 311a Bexley Road
Bexley North NSW 2207

Certified correct for the purposes of the Real Property Act 1900 by the surviving joint tenant.

Signature of surviving joint tenant: 鄭月

(H) *This section is to be completed where a notice of sale is required and the relevant data has been forwarded to LPI through eNOS.*

The applicant certifies that the eNOS data relevant to this dealing has been submitted and stored under eNOS ID No. [ ] Full name: Signature:

1003 ALL HANDWRITING MUSTBE IN BLOCK CAPITALS.
LAND AND PROPERTY MANAGEMENT AUTHORITY

Office use only—
Evidence sighted and returned:
04

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 5/508629

SEARCH DATE	TIME	EDITION NO	DATE
12/10/2016	8:19 AM	4	31/10/2012

LAND

LOT 5 IN DEPOSITED PLAN 508629
AT BEXLEY NORTH
LOCAL GOVERNMENT AREA ROCKDALE
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP508629

FIRST SCHEDULE

HARRIJANTO RUSLI
SUI JUN HAN
AS JOINT TENANTS (T AH201497)

SECOND SCHEDULE (6 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 A375153 COVENANT AFFECTING PART
3 CONDITION(S) CREATED BY A489100
4 J601625 EASEMENT FOR DRAINAGE AFFECTING THE SITE DESIGNATED (A) IN THE TITLE DIAGRAM
5 J601626 EASEMENT FOR DRAINAGE AFFECTING THE SITE DESIGNATED (B) IN THE TITLE DIAGRAM
6 AH332939 MORTGAGE TO WESTPAC BANKING CORPORATION

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

PSH-GROLLY-Bexley North PRINTED ON 12/10/2016

APPENDIX D

WORKCOVER NSW INFORMATION

CONTACT FOR NOTIFICATION INQUIRIES

Title: (Mr) / Miss / Ms / Mrs / Other (please specify) _____ Family name AHMED

Given name FUAD Other names _____

Business phone (02) 91500892 Business fax number (02) 91500892

Business email address sanbib@optusnet.com.au

Previous Licence Number or Acknowledgement Number (if known)

35/007066 18/12/07

Previous Occupier (if known)

N/A

Site on which dangerous goods are to be kept

Number: 307-309 Street: BEXLEY ROAD

Suburb/Town/Locality: BEXLEY NORTH Postcode: 2207

Nearest cross Street

NEW ILLWARA ROAD

Lot and DP if no street number

Is the site staffed? If yes state number of employees 4

Site staffing: Hours per day 15 Days per week 7

Site Emergency Contact

Phone number (04)02 408 623 **Name** FUAD AHMED

Nature of site (eg petrol station, warehouse etc)

PETROL STATION

Nature of primary business activity

ABN Number (if any) 47856421234 Website details (if any)

What is the ANSZIC code most applicable to your business? (see guide for list of codes and further information)

Code 5321 Description AUTOMOTIVE FUEL RETAILING

Attach a site sketch(s) of the premises. Refer to the Guide GDG01 for information on the requirements for the site sketch.

Attach a legible photocopy page from a local Street Directory or other map showing the locality of the premises. Mark the location of the premises with an X.

NOTIFICATION OF DANGEROUS GOODS ON PREMISES FORM **FDG01**

List the dangerous goods that will be stored and/or processed on these premises (refer to Guide GDG01). Copy this page and attach additional sheets if there is insufficient space.

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
1	Underground tank	3	34,200L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1203	PETROL	3	III	UNLEADED	3YE	8000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
2	Underground tank	1	9500L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
00 C1	Combustible liquid	1	III	Diesel		6000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
3	Underground tank	3	27,600L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1203	Petrol	3	III	UNLEADED	3YE	18,000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
4	Underground tank	3	27,600 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1203	Petrol	3	III	UNLEADED	3YE	18,000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
5	Underground tank	3	10,000 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1203	Petrol	3	III	UNLEADED	3YE	8000	L

lo	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
	Underground tank	3	2000 L

mber	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
		3	III	UNLEADED	3YE	2000	L

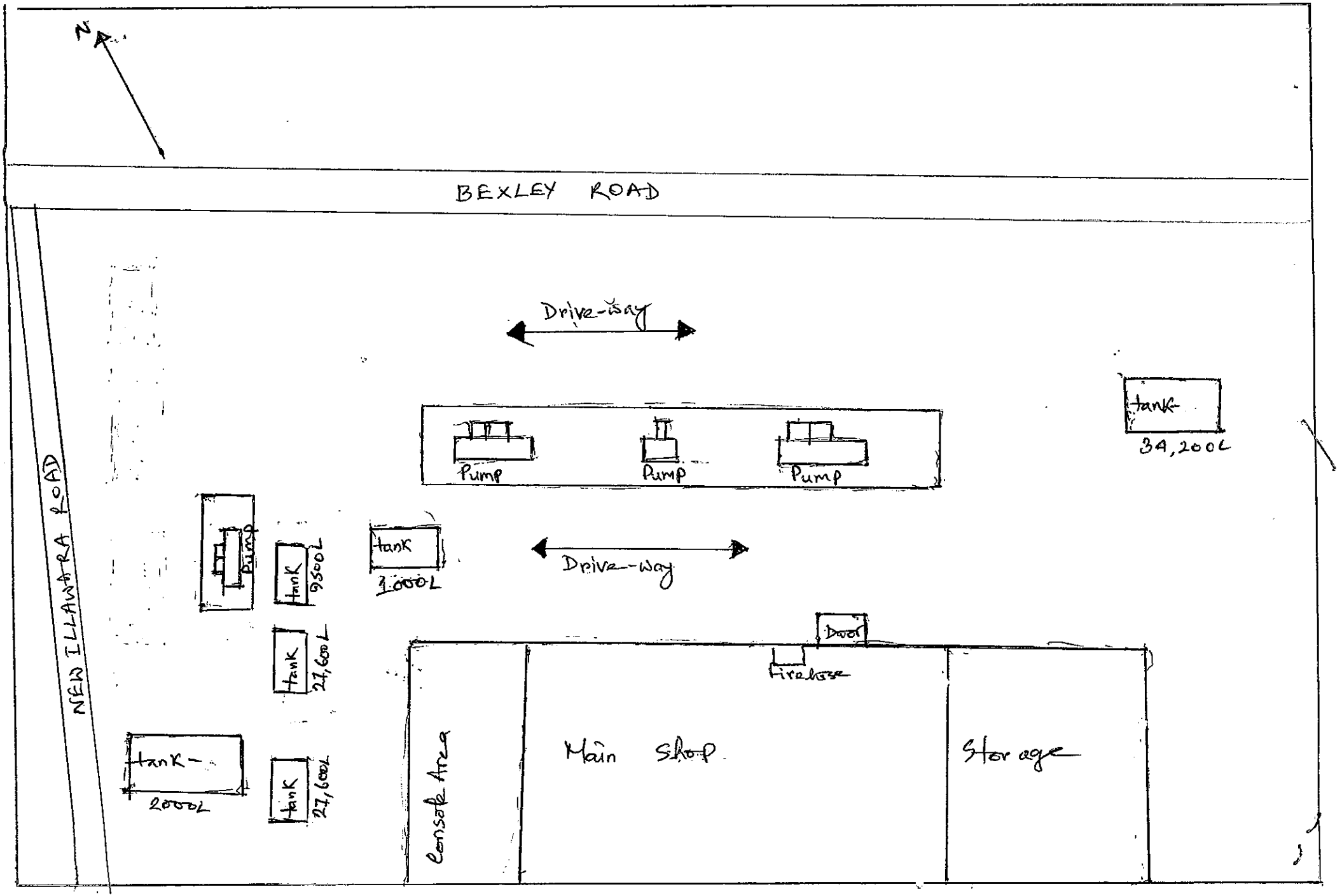


Fig: BEXLEY PETROLEUM, 309 BEXLEY ROAD, BEXLEY ROAD, NSW - 2207

168 - 517-B

Licence No. 35/007066

APPLICATION FOR RENEWAL

OF LICENCE TO KEEP DANGEROUS GOODS

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

DECLARATION: Please renew licence number 35/007066 to 18/12/2005 . I confirm that all the licence details shown below are correct (amend if necessary).

(Signature)	FUAD AHMED	10/11/04
for: AHMED F & RAHMAN M	*(Please print name)*	*(Date signed)*

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

WorkCover New South Wales
Dangerous Goods Licensing Section
LOCKED BAG 2906
LISAROW NSW 2252

Enquiries:ph (02) 43215500
fax (02) 92875500

Details of licence on 5 November 2004

Licence Number 35/007066 **Expiry Date** 18/12/2004

Licensee AHMED F & RAHMAN M BEXLEY PETROLEUM

Postal Address: BEXLEY PETROLEUM 307-309 BEXLEY RD BEXLEY NORTH NSW 2207

Licensee Contact FUAD AHMED Ph. 02 9150 0892 Fax. 02 9150 0892

Premises Licensed to Keep Dangerous Goods
AHMED F & RAHMAN M BEXLEY PETROLEUM
307-309 BEXLEY RD BEXLEY NORTH 2207

Nature of Site AUTOMOTIVE FUEL RETAILING

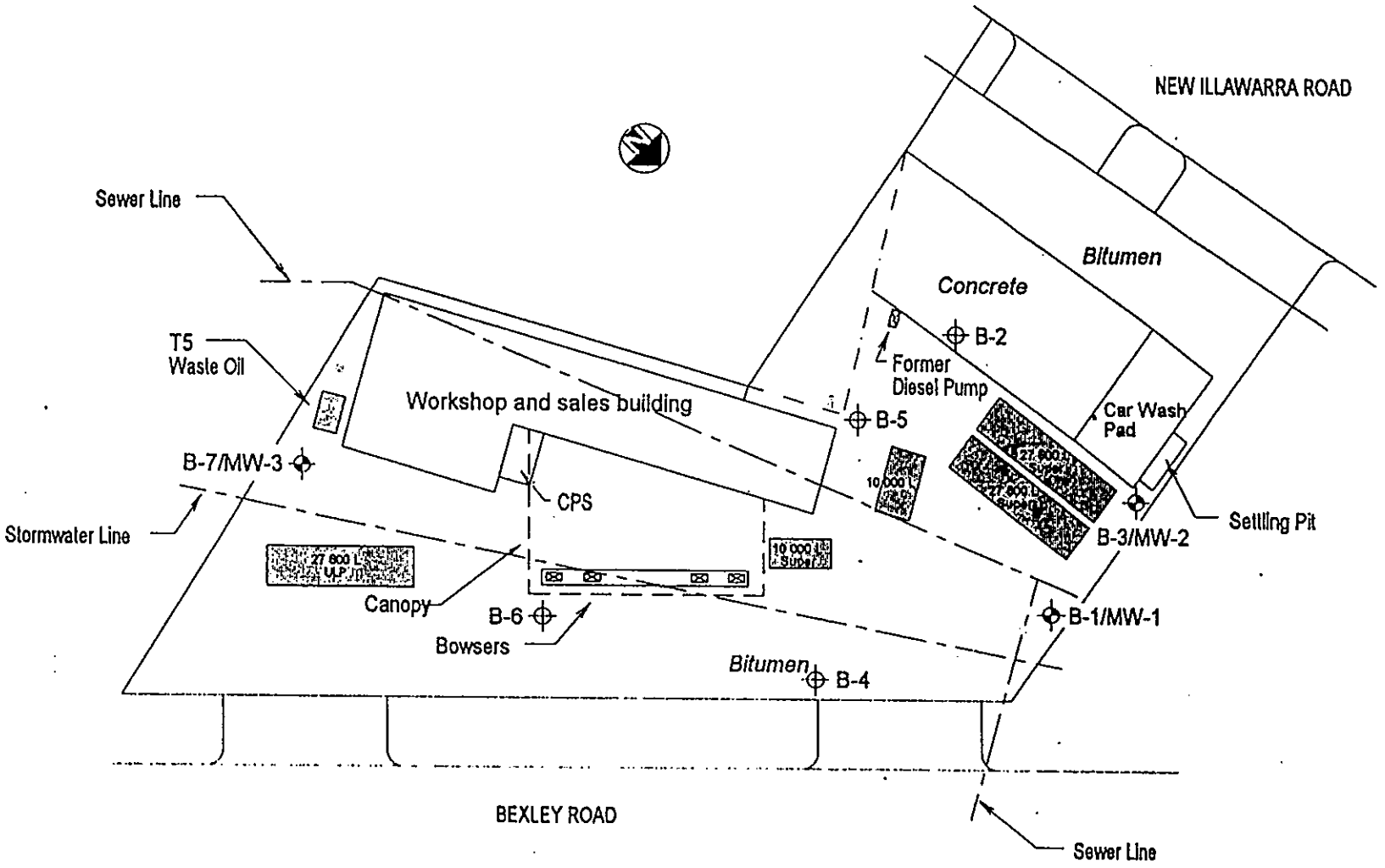
Major Supplier of Dangerous Goods AUSTRALIAN (CALTEX)

Emergency Contact for this Site FUAD AHMED Ph. 0402 408623

Site staffing 16HRS 7DAYS

Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
1	**UNDERGROUND TANK**	**Class 3**	**34200 L**
	UN 1203 PETROL		30000 L
2	**UNDERGROUND TANK**	**Class 3**	**9500 L**
	UN 1203 PETROL		9000 L
3	**UNDERGROUND TANK**	**Class 3**	**27600 L**
	UN 1203 PETROL		25000 L
4	**UNDERGROUND TANK**	**Class 3**	**10000 L**
	UN 1203 PETROL		9000 L
5	**UNDERGROUND TANK**	**Class 3**	**26600 L**
	UN 1203 PETROL		25000 L
6	**EXEMPT - U/G TANK**	**Class C1**	**2000 L**
	UN 00C1 DIESEL		2000 L
LPG1	**CYLINDER STORE**	**Class 2.1**	**180 KG**
	UN 1075 PETROLEUM GASES, LIQUEFIED		180 KG
LPG2	**DECANTING CYLINDER(S)**	**Class 2.1**	**420 KG**
	UN 1075 PETROLEUM GASES, LIQUEFIED		420 KG



LEGEND

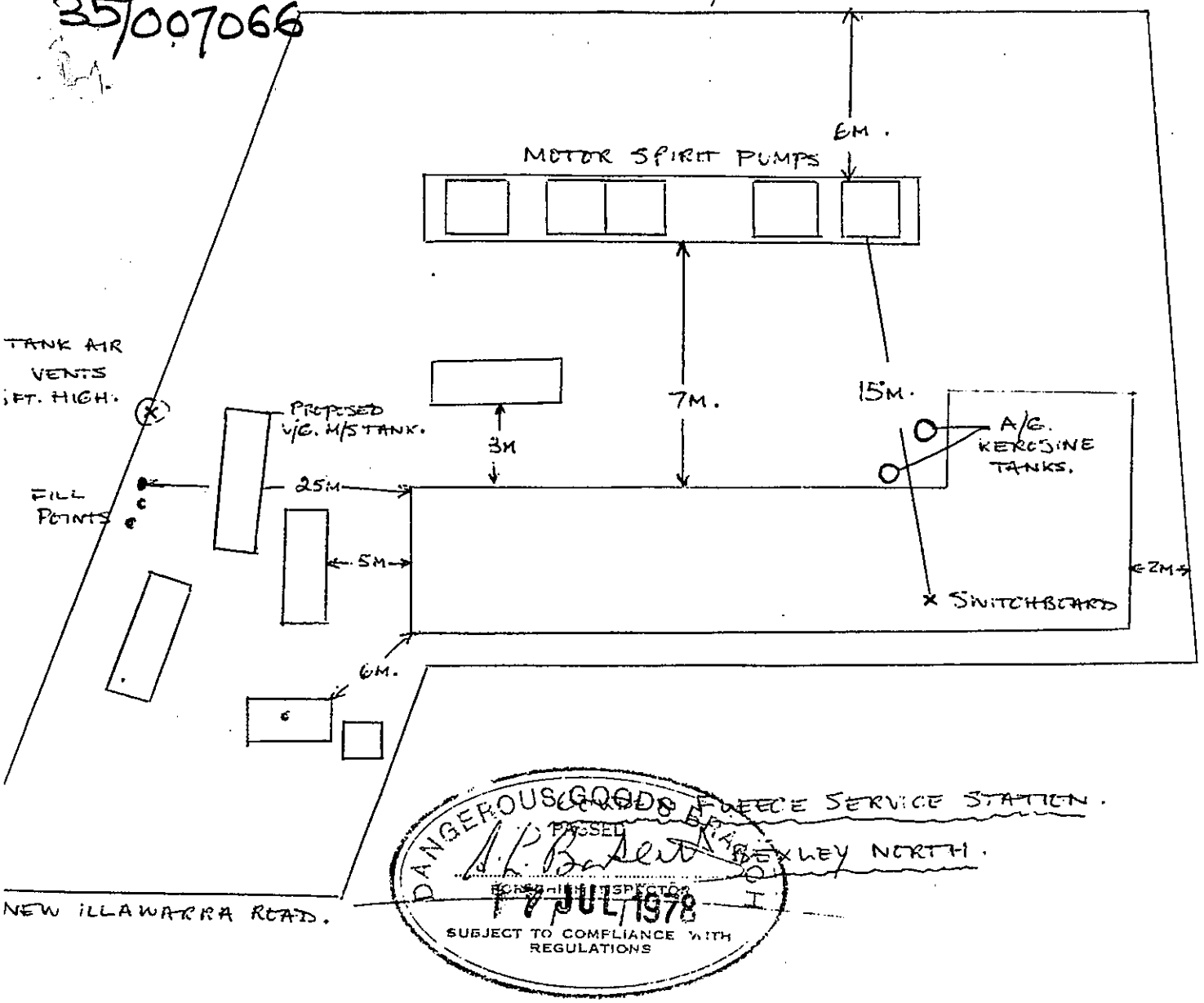
- Underground Storage Tank (UST)
- B-1/MW-1 Soil Boring/Monitoring Well Location
- B-1 Soil Boring Location

Reference: Golden Fleece Petroleum, Site Plan; Drg. No. 226 Sh. 10

OTEK AUSTRALIA PTY LTD		REPORT REFERENCE: Environmental Site Assessment	
APPROXIMATE SCALE: 1:300		Bexley North NSW	
DRAWN: CGH	DATE: 7/4/95	CHECKED:	DATE:
JOB #: S95C030			
TITLE: SITE MAP		FIG #:	

EARLWOOD. ← BEXLEY ROAD. → BEXLEY.

35/007066

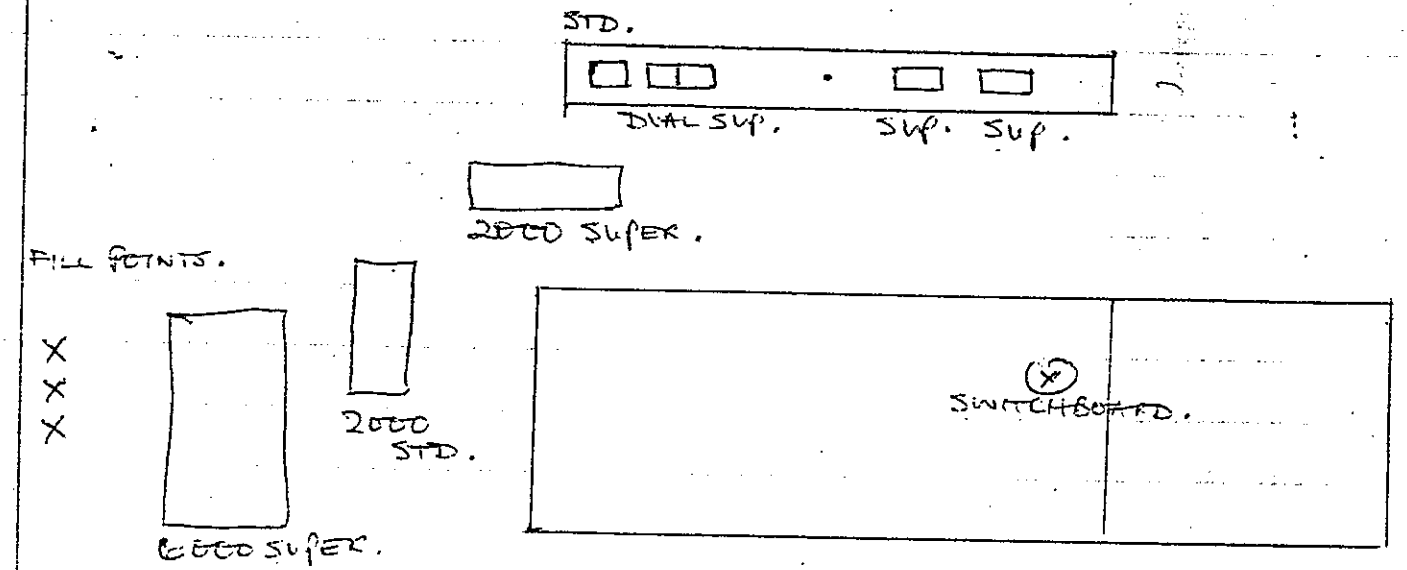


DANGEROUS GOODS BRANCH
PASSED
[signature]
ENGINEERING INSPECTOR
17 JUL 1978
SUBJECT TO COMPLIANCE WITH REGULATIONS

PROPOSED FREECE SERVICE STATION.
BEXLEY NORTH.

GFSS BEXLEY NTH.

BEXLEY RD.



GFSS. BEXLEY NORTH.

NEW ILLAWARRA RD.

DANGEROUS GOODS BRANCH
PASSED
FOR CHIEF INSPECTOR
21/11/78
SUBJECT TO COMPLIANCE WITH REGULATIONS

FOR THE KEEPING OF DANGEROUS GOODS

Application is hereby made for— *a licence (or amendment of the licence) *the transfer of the licence for the keeping of dangerous goods in or on the premises described below.

(*delete whichever is not required)

FEE: $10.00 per Depot for new licence. $10.00 for amendment or transfer.

Name of Applicant in full (see over)	NF NOMENI P/L
Trading name or occupier's name (if any)	Golden Fleece Service Station
Postal address	Postcode
Address of the premises including street number (if any)	cnr. 309 Bexley & New Illawarra Rds, BEXLEY NORTH Postcode 2207
Nature of premises (see over)	SERVICE STATION
Telephone number of applicant	STD Code Number 502.2223

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity LITRES	Dangerous goods: Product being stored	C & C Office use only 2006 120 6
1	Underga. Tank	27800	Petrol 3.1	202034
2	✓ ✓	27800	" 3.1	202034
3	✓ ✓	19000	" 3.1	202093
4	✓ ✓	19000	" 3.1	202093
5	✓ ✓	2500	Kero 3.2	202023
6	Cylinder Store	420	LPGas 2.1	710042
7				
8				
9				
10				
11				
12				

Has site plan been approved? Yes ✓ No — If yes, no plans required. If no, please attach site plan.

Have premises previously been licensed? Yes ✓ No — If yes, state name of previous occupier. DACRA Investment P/L

Name of company supplying flammable liquid (if any) Golden Fleece

Signature of applicant ..... Date 1.10.82

For external explosives magazine(s), please fill in side 2. ERIC FLAMMIA

FOR OFFICE USE ONLY

CERTIFICATE OF INSPECTION

I, ADLY NOUR being an Inspector under the Dangerous Goods Act, 1975, do hereby certify that the premises described above do comply with the requirements of the Dangerous Goods Act, 1975, and the Dangerous Goods Regulation with regard to their situation and construction for the keeping of dangerous goods of the nature and in the quantity specified.

Signature of Inspector ..... Date 15.11.82

Licence No. 3500 7066.2 (F3)

Application is hereby made for premises described below. *the transfer of the licence

(*delete whichever is not required)

FEE: $10.00 per Depot

$20

0059 6/03/79 038

Name of Applicant in full (see over)	Surname HARDY Given Names LESLIE THOMAS
Trading name or occupier's name (if any)	LES HARDY'S PERFORMANCE CENTRE.
Postal address	309 Bexley & New Illawarra Rds Bexley North Postcode 2207
Telephone number of applicant	STD Code 02 Number 506659
Address of the premises in or on which the depot or depots are situated (including street number, if any)	309 Bexley & New Illawarra Rds Bexley North Postcode 2207
Nature of premises (see over)	Service Station

~~PLEASE ATTACH SITE PLAN~~

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods: Product being stored	Dangerous goods: C & C Office use only
1	Underground	27850	3.1 (Petrol)	2020
2	"	27850	3.1 PETROL	2020
3	"	10,000	3.1 PETROL	2020
4	"	10,000	3.1 PETROL.	2020
5	"	2,000	3.2 KEROSENE	2.020
6	Cylinder	420	2.1 (L.P.G.)	7.100.4
7				
8				
9				
10				
11				
12				

Name of company supplying flammable liquid (if any) H.C.P

Have premises previously been licensed? Yes

If known, state name of previous occupier as above Licence No. 07066

Signature of applicant [signature] Date 21/2/79

For external explosives magazine(s), please fill in side 2. X

FOR OFFICE USE ONLY

CERTIFICATE OF INSPECTION

I, George E. Brooks being an Inspector under the Dangerous Goods Act, 1975, do hereby certify that the premises described above do comply with the requirements of the Dangerous Goods Act, 1975, and the Dangerous Goods Regulation with regard to their situation and construction for the keeping of dangerous goods of the nature and in the quantity specified.

Signature of Inspector [signature]

Application is hereby made for—*~~a licence (or amendment of the licence)~~ *the transfer of the licence for the keeping of dangerous goods in or on the premises described below.

(*delete whichever is not required)

FEE: ~~$10.00~~ per Depot
$50.-

Name of Applicant in full (see over)	Surname SLOANE Given Names BARRY COLIN ~~2415 21/06/00 03A~~
Trading name or occupier's name (if any)	~~BC + CA Storage~~ Golden Mile Service Station ~~Caltex~~
Postal address	309 Bexley Rd, Bexley North Postcode 2207.
Telephone number of applicant	STD Code 502 2223 Number 506659.
Address of the premises in or on which the depot or depots are situated (including street number, if any) 1930	309 Bexley Rd Bexley North Postcode 2207.
Nature of premises (see over)	Service Station.

~~PLEASE ATTACH SITE PLAN~~

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods ~~DD 00~~ 1206 Product being stored	C & C Office use only
1	underground tanks	27.800	Class 3.1	2020 34
2	" "	27 800	" "	2020 34
3	" "	10.000	" "	2020 14
4	" "	10 000	" "	2020 14
5	" "		" "	2020 ~~33~~
6	" "	2500	Class 3.2 Keno	
~~0~~	~~Lubrication Store~~	~~200 lt~~	~~Class 2.1 LP Gas~~ EXEMPT	
8				
9				
10				
11				
12				

Name of company supplying flammable liquid (if any) H.C.S.

Have premises previously been licensed? Yes.

If known, state name of previous occupier L.T. Hardy Licence No. ~~33~~ 350070662

Signature of applicant X B Sloane Date 1.8.80

For external explosives magazine(s), please fill in side 2.

FOR OFFICE USE ONLY

CERTIFICATE OF INSPECTION

I, George E Brooks being an Inspector under the Dangerous Goods Act, 1975, do hereby certify that the premises described above do comply with the requirements of the Dangerous Goods Act, 1975, and the Dangerous Goods Regulation with regard to their situation and construction for the keeping of dangerous goods of the nature and in the quantity specified.

Signature of Inspector G E Brooks

Name of Occupier NOCIBARAK (Surname) Peter (First Names)

Trading Name (if any) Golden Fleece Service Station

Postal Address Postcode

Address of the premises in which the depot or depots are situated Cnr Rexley & New Illawarra Rds North Rexley Postcode 2207

Occupation Service Station Prop.

Nature of Premises S/Std

Particulars of construction of depots and maximum quantities of inflammable liquid and/or dangerous goods to be kej at any one time.

PLEASE SKETCH SITE ON BACK OR ATTACH PLAN

Depot No.	Construction of depots *			Inflammable Liquid		Dangerous Goods						
	Walls	Roof	Floor	Mineral spirit litres	Mineral oil litres	Class 1 litres	Class 2 litres	Class 3 kg	Class 4 m^3	Class 5A# litres	Class 5B# litres	Class 9 litres
1	Underground Tank			30000								
2	✓		✓	10000								
3	✓		✓	10000								
4												
5												
6												
7												
8												
9												
10												
TOTAL												

PUBLIC REVENUE A/c

cheque | $25.00

* If kept in tanks describe depots as underground or aboveground tanks.

Insert water capacity of tanks or cylinders.

(Date) 30·3·76

Name of Company supplying inflammable liquid H. C. Sleigh Receipt No. 5614

Have premises previously been licensed? Yes

If known, state name of previous occupier Lagnos, P.

Signature of applicant Peter Manbeck Date

CERTIFICATE OF INSPECTION

I, Leslie Edward Brooks being an Inspector under t Inflammable Liquid Act, 1915, do hereby certify that the premises or store described above does comply with t requirements of that Act and regulations with regard to its situation and construction for the keeping of inflammal liquid and/or dangerous goods in quantity and nature specified.

Signature of Inspector L. E. Brooks

Date 24-3-76

SEE PAGE 4 FOR DETAILS OF FEES PAYABLE AND DISTANCES FROM PROTECTED WORKS

DIRECTIONS

1. Applications must be forwarded to the Chief Inspector of Inflammable Liquid, Explosives Department, Box R.216, Royal Exchange Sydney, N.S.W. 2000 and must be accompanied by the prescribed fee.

Registration of Premises – For quantities not exceeding 300 gallons of mineral oil and 100 gallons of mineral spirit, if kept together; or 800 gallons of mineral oil and 100 gallons of mineral spirit, if kept in separate depots; or 500 gallons of mineral spirit, if kept in an underground tank depot; or 800 gallons of mineral oil and 500 gallons of mineral spirit, if mineral spirit is kept in an underground tank depot.

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

Store Licence, Div. A – For quantities in excess of those stated above, but not exceeding 4,000 gallons mineral oil and/or mineral spirit, and/or Dangerous Goods of Classes 1, 2 and 9.

Store Licence, Div. B (Fee, See Regulation 7) – For quantities exceeding 4,000 gallons of mineral spirit, and/or Dangerous Goods of Classes 1 and 2, and/or Dangerous Goods of Class 3.

For the keeping of Dangerous Goods of Classes 3 and/or 4.

1. Name of occupier including full christian names. — GAVANAS PETROS
2. Trading Name (if any) — Golden Fleece Service Station
3. Locality of the premises in which the depot or depots are situated — No. or Name on
   Street Barclay & New Illawarra Rd
   Town Mch Barclay
4. Postal address — as above Postcode 2207
5. Occupation — S/Stn Attn
6. Nature of premises (dwelling, garage etc.) — S/Stn

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

PLEASE ATTACH PLAN OF PREMISES

Depot No.	Construction of depots*			Inflammable liquid		Dangerous goods						
	Walls	Roof	Floor	Mineral spirit gallons	Mineral oil gallons	Class 1 gallons	Class 2 gallons	Class 3 lb	Class 4 cu ft	Class 5A water gal	Class 5B water gal	Class 9 gallons
1	Underground tank			6000								
2				2000								
3				2000								
4	2x100gl ags		2PC								40	
5												
6												
7												
8												
9												
10												

PUBLIC CONVENIENCE A/c
Cash $4.00
8/9/73 $6.25
(Date)
Receipt No.

*If product is kept in tanks describe depots as underground or aboveground tanks.

Signature of applicant P. Gavanas

Date of application ____, 19__

CERTIFICATE OF INSPECTION

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

Place Sydney Signature of Inspector

premises described below.

(*delete whichever is not required)

1590 3/07/79 038

1592 3/07/79 038

FEE: $10.00 per Depot

Amended Renewal

Name of Applicant in full (see over)	Surname HARDY Given Names LESLIE
Trading name or occupier's name (if any)	GOLDEN FLEECE ~~Motors~~ S/Stn. BEXLEY TF
Postal address	Postcode
Telephone number of applicant	STD Code 02 Number
Address of the premises in or on which the depot or depots are situated (including street number, if any)	cnr. BEXLEY Rd. & NEW ILLAWARRA Rd. BEXLEY Postcode 2207
Nature of premises (see over)	SERVICE STATION

~~PLEASE ATTACH SITE PLAN~~

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity LITRES	Dangerous goods: Product being stored	Dangerous goods: C & C Office use only
1	Underground Tank	27850 ✓	3.1	2 020 34
2	✓ ✓	27850 ✓	3.1	2 020 34
3	✓ ✓	10000 ✓	3.1	2 020 14
4	✓ ✓	10000 ✓	3.1	2 020 14
5	✓ ✓	2500	3.2	2 020 23
6	Cylinder Store	420	2.1	7 100 42
7				
8				
9				
10				
11				
12				

28 JUN 1979

INSPECTORS FIELD COLLECTION
RECEIPT No. 17002
DATE 4.6.79
AMOUNT $60.00
chq

Name of company supplying flammable liquid (if any) HES

Have premises previously been licensed? YES

If known, state name of previous occupier AS ABOVE Licence No. 7066-3

Signature of applicant [signature] Date 4/6/79

For external explosives magazine(s), please fill in side 2.

FOR OFFICE USE ONLY

CERTIFICATE OF INSPECTION

I, ADLY NOUR being an Inspector under the Dangerous Goods Act, 1975, do hereby certify that the premises described above do comply with the requirements of the Dangerous Goods Act, 1975, and the Dangerous Goods Regulation with regard to their situation and construction for the keeping of dangerous goods of the nature and in the quantity specified.

Signature of Inspector [signature]

Date 4.6.79

99.47

• FILL POINT
• VAPOUR RECOVERY

10000 ℓ SUPER A

99.98

DRAIN T PIT

canopy above

STN

pump island

99.15

230mm Ø sewer mains, & SUMP

vent pole

NEW JUNCTION FOR SEWER CONNECTION

D.

PROPOSED 1X~~145~~ KL U/G SUPER PETROL TANK.

34,000

48654

98.72

98.44

crossing

STORMWATER LINE

98.60

98.20

ROAD

DANGEROUS GOODS BRANCH
PASSED
FOR CHIEF INSPECTOR
19/8/86
SUBJECT TO COMPLIANCE WITH REGULATIONS

CALTEX DRG NO A1 55554 E

NOTE: All reduced levels are shown in metres.

4 B	
29.5.78 A	Reduced levels added, pi water meter & S.P., Slab s
DATE	REVISION

STATE MANAGER	OPERAT MANAG
DATE	DATE
SALES MANAGER	BRANCH ENGINEE
DATE	DATE

GOLDEN FLI PETROLEU

A DIVISION OF
H. C. SLEIGH LIMIT
160 QUEEN STREE
MELBOURNE VICTORIA
TELEPHONE 60 052

EXIST. SERVICE S ON BEXLEY ROAD, NORTH

SITE PLAN

SCALE	1 : 100	DRG.
DRAWN	M.A MAINE	2
DATE	17 MAY 78	
CHECKED		SHEE
PASSED		

E

F

G

H

stormwater drainage line

canopy

• DIP POINT.

2m

2m.

48654

• VENT

DUAL [illegible] SIGN
REFER DRWG No
A4-[illegible]

crossing

BEXLEY

7 8 9 10 11

NEW ILLAWARRA ROAD

WATER MAIN

101·725

7160

101·625

crossing

101·24

water meter

100·99

BANJO SIGN, REFER DRWG Nº B18351

101·02

101·30

22555

bitumen

101·04

C.

D.

TRENCH IN BITUMEN FOR ELECTRICAL + WATER SERVICES

crossing

FALL

100

20136

N

100·65

5000

concrete paved area

location of car wash pad with sump

FALL

100·68

garden

pump

distillate

100·00

FALL

100·340 YARD SINK

B

7600

230 BRICK RETAINING WALL

C.

100·28

ELECTRIC CONDUIT 50MM.

ROCK GARDEN ALONG BOUNDARY.

Floor level R.L 100·00

99·90

DIRECT V.R. POINT (B)

REMOTE FILL POINTS

REMOTE V.R. POINTS

26000 ℓ SUPER.

27600 ℓ SUPER

D.

100·00

8500

SETTLING PIT

standpipe

EXISTING SERVICE ALONG THIS BOUNDARY ARE TO

1 2 3 4 5 6

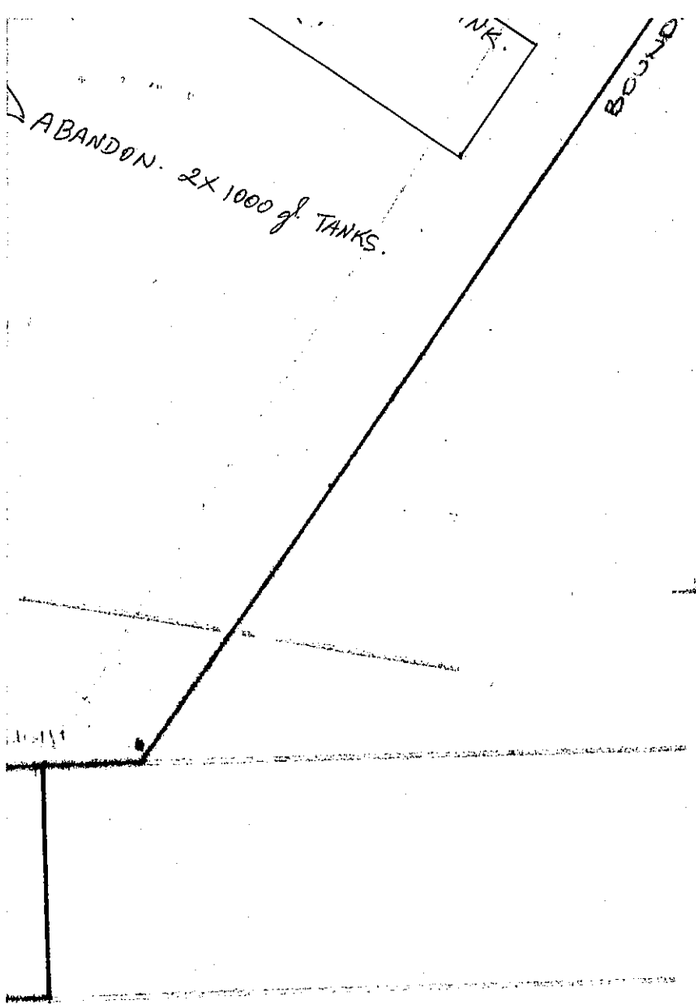
D

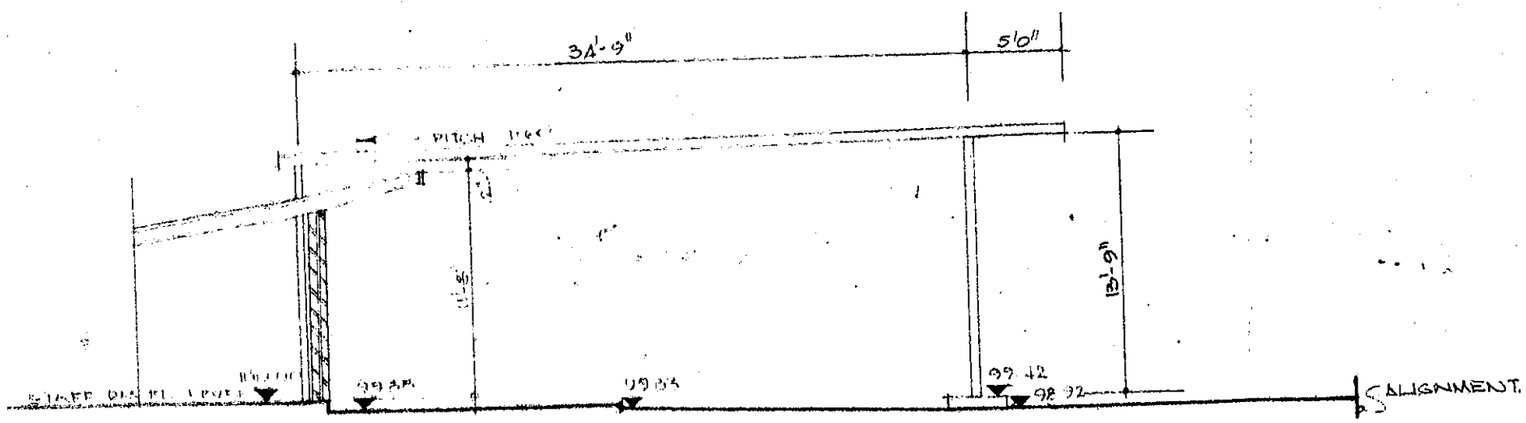
20952

EXISTING SERVICE STATION

electrical distribution board

standpipe





ELEVATION

NOTE :
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR BEFORE COMMENCEMENT OF FABRICATION OF STEELWORK.

Exp. Dept

C	15-4-66	Sky Sign removed. New Illuminated Pylon Sign added.
B	4-3-65	5'0" OVERHANG ON CANOPY & EXTRA SUPER PUMP IN PLACE OF STANDARD PUMP
A	5-1-65	PYLON & LAND DETAIL ADDED - CANOPY STRUCTURE & SIGNS REVISED NOTES ADDED
No	DATE	REVISIONS

GOLDEN FLEECE SERVICE STATION
BEXLEY RD & NEW ILLAWARRA RD BEXLEY NTH

CANOPY ADDITIONS	SCALE: 1/4"=1'-0"	CHECKED	DWG. No. 2260 C
	DATE: 1-3-64	APPROVED	
	DRAWN:		

H. C. SLEIGH LIMITED SYDNEY TELEPHONE 2453

OF STORMWATER DRAIN

EXISTING FLOODLIGHT

ALIGNMENT 19'6"

BEXLEY ROAD

PROPOSED 6000 gl. U/G TANK.
SUPER.

ABANDON 2 x 1000 gl TANKS.

BOUNDARY 87'-6¼"

T.B.A / OFFICE

ABT 8'0"

ABT 8'0"

ABT 8'0"

2000 gl

1100 STD

EXIST CANOPY

EXIST CANOPY

EXISTING PUMP ISLAND TO BE REMOVED

NEW 6'-0" PUMP ISLAND SEE DETAIL

GREASE TRAP TO REMAIN

EXISTING PUMP ISLAND

Existing Pylon Sign to be removed

Existing Paving to remain

New Illuminated Pylon Sign

ELEVATION

APPENDIX E

DATA QUALITY OBJECTIVES

INTRODUCTION

The Data Quality Objectives (DQOs) process was used to define the type, quantity and quality of the data needed to support decisions relating to the environmental condition of a site (reference D1). The process consists of seven steps, with the output from each step influencing the choices that will be made later in the process.

According to USEPA (reference D2), DQOs are qualitative and quantitative statements, derived from the first six steps of the process, that:

- ◊ Clarify the study objective;
- ◊ Define the most appropriate type of data to collect;
- ◊ Determine the most appropriate conditions from which to collect the data; and
- ◊ Specify tolerable limits on decision errors which will be used as the basis for establishing the quantity and quality of data needed to support the decision.

The DQOs are then used to develop a scientific and resource-effective data collection design.

STEP 1 - STATE THE PROBLEM

The problem is the potential for the site to be impacted by contamination caused by past activities undertaken on or adjacent to the site, at levels in excess of those permissible for the proposed residential land-use with minimal access to soil, and which could impact upon anticipated receiving environments and the intended development.

STEP 2 - IDENTIFY THE DECISION STATEMENT

The following decision were required to be made:

- ◊ Does the concentrations of soil (fill and natural soil) and groundwater exceed acceptable levels for the proposed land-use?

- ◊ Are there any aesthetic issues relating to the fill, natural soils and groundwater at the site?

STEP 3 - IDENTIFY INPUTS TO THE DECISION

The following information inputs are required to resolve the decision statement:

- ◊ Collection of environmental soil and groundwater samples using appropriate methods;
- ◊ Analysis of selected samples for the contaminants of concern;
- ◊ Comparison of the results with relevant Site Assessment Criteria (SAC) as defined in the main body of the report; and
- ◊ Accurate measurements of sample locations to allow for accurate mapping and contouring of contamination (if identified).

STEP 4 - DEFINE THE BOUNDARIES OF THE STUDY

The site covers a combined area of 4,200m^2 and the following legal allotments:

- ◊ Lots 3, 4, 5 and 6 in Deposited Plan (DP) 508629,
- ◊ Lots A and B in DP 388204,
- ◊ Lot 1 in DP 1045200,
- ◊ Lot 1 in DP 400341, and
- ◊ Lot 38 in DP 663036.

The lateral extent of the study is the boundaries of the site (as depicted on **Figure 2**). The vertical extent of the study is approximately 1m below ground surface (bgs), 0.5m into natural soils or drilling / excavation method refusal or 0.5m below adjoining tankpits (where present).

STEP 5 - DEVELOP A DECISION RULE

The purpose of this step is to define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single "if…then…" statement that describes a logical basis for choosing among alternative actions.

The parameters of interest (or contaminants of concern) are a broad group of common contaminant compounds known to occur within the Sydney area.

The action level or Site Assessment Criteria (SAC) will be used to decide if the parameter represents an unacceptable risk for residential land-use and/or the receiving environment. If the measured concentration of a parameter or compound exceeds the action levels (SAC) in soils, then this is deemed to present an unacceptable risk if the site is developed for residential land-use or to environmental receptors.

If the concentrations of a parameter or compound, whichever is representative for of the site, are above the nominated action levels, then further sampling may be proposed to determine the extent of contamination.

STEP 6 - SPECIFY ACCEPTABLE LIMITS ON DECISION ERRORS

There are two types of errors:

1) Deciding that the site is acceptable for residential land-use and that there is a low risk to receiving environments when it actually is not. The consequence of this error may be unacceptable health risk for current and future users of the sites.

2) Deciding that the site is unacceptable for residential land-use and that there is a risk to receiving environments when it is acceptable. The consequence of this error is that the client will pay for further investigation / remediation that are not necessary.

The more severe consequences are with decision error (1) since the risk of jeopardising human health outweighs the consequences of paying more for remediation. It will not be possible to conduct statistical hypothesis tests as the proposed sampling programme consists of the collection of one round of samples only.

STEP 7 - OPTIMISING THE DESIGN FOR OBTAINING DATA

The purpose of this step is to identify a resource-effective data collection design for generating data that are expected to satisfy the DQOs.

The resource effective data collection design that is expected to satisfy the DQOs is described in detail in Section 7 of the report. To ensure the design satisfies the DQOs a comprehensive Quality Assurance and Quality Control Plan will be implemented.

References

D1. NSW DEC (2006) *Contaminated Sites: Guidelines for NSW Site Auditor Scheme, 2nd Edition.*

D2. USEPA, 2000: *Guidance for Data Quality Objectives Process*. EPA QA/G-4.

D3. NEPC, 2013: National Environment Protection Council (1999*).* National Environment Protection (Assessment of Site Contamination) Measure. *Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater.*

D4. Friebel & Nadebaum (2011): *Technical Report No. 10 - Health screening levels for petroleum hydrocarbons in soil and groundwater Part 1: Technical development document*. CRC for Contamination Assessment and Remediation of the Environment.

D5. ANZECC/ARMCANZ, 2000: Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000: *Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy*. October 2000.

APPENDIX F

BOREHOLE LOGS

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **BH101**
Hole Depth: **3.80 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **Total Drilling** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **CC to 0.19m, SFA (TC-Bit) to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Hanjin D&B** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
CC		0.2				Fill	**CONCRETE SLAB**.				
Solid Flight Auger		0.4					**FILL**- Gravelly Sand / Sandy Gravel, brown, fine to coarse grained sand, fine to coarse gravel.	loose		SMC011116-1 0.2-0.3m	
		0.6					**SAND**- grey brown, fine to coarse grained sand.	loose	moist	SMC011116-2 0.4-0.5m	Possible Fill.
		0.8									
		1.0								SMC011116-3 0.9-1.0m	
		1.2									
		1.4								SMC011116-4 1.3-1.5m	
		1.6							very moist		
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8				Natural	**Weathered SANDSTONE**- orange brown & pale grey, medium to coarse.				
		3.0									
		3.2								SMC011116-5 3.0-3.3m	
		3.4									
		3.6									
		3.8									
		4.0					**Hole Terminated at 3.80m** Target depth.				Bore dry upon completion.

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

GEE DAVIES BH LOG BEXLEY NORTH.GPJ GEE.GDT 20/12/16 1:50:29 PM

Monitoring Well Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **BH102**
Hole Depth: **2.40 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **Total Drilling** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **CC to 0.15m, SFA (TC-Bit) to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Hanjin D&B** Northing: ----------

Method	Depth (m)	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
CC	0.0	**CONCRETE SLAB**.				
Solid Flight Auger	0.2	**FILL**- Silty Clay, dark grey to black, low to medium plasticity, pockets of sand and gravel (shale and slag).	soft to firm	moist	SMC011116-6 0.2-0.3m	
	0.4					
	0.6				SMC011116-7 0.6-0.7m	
	0.8					
	1.0				SMC011116-8 0.9-1.0m	
	1.2					
	1.4					
	1.6					Water seepage noted below 1.6m.
	1.8					
	2.0				SMC011116-9/10 1.8-2.0m	
	2.2	**SANDSTONE**- orange brown & pale grey, medium to coarse.				
	2.4					
	2.6	**Hole Terminated at 2.40m** Practical refusal.				
	2.8					
	3.0					

Well Details: Gatic; 0.30 Bentonite; 0.80; 1.00 Coarse Sand; 2.20 50mm Ø Screen

Well Construction

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

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Borehole Log Report

Geo Environmental Engineering Pty Ltd
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Hole ID. **BH103**
Hole Depth: **1.40 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **Total Drilling** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **SFA (TC-Bit) to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Hanjin D&B** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
Solid Flight Auger		0.2				Fill	**ASPHALT**.				
		0.4					**FILL**- Gravelly Clayey Sand, dark grey and brown.	loose	moist	SMC011116-11/12 0.1-0.25m	
		0.6				Fill	**FILL**- Silty Sand, dark brown / dark grey, fine to coarse grained sand, trace clay.	loose	moist	SMC011116-13/14 0.5-0.7m	
		0.8									
		1.0									
		1.2				Natural	**SANDSTONE**- grey & orange brown, medium to coarse.				Insufficient quality sandstone for sampling.
		1.4									
		1.6					**Hole Terminated at 1.40m** Practical refusal.				Bore dry upon completion.
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

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Borehole Log Report

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Hole ID. **BH104**
Hole Depth: **1.20 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **Total Drilling** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **CC to 0.15m, SFA (TC-Bit) to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Hanjin D&B** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
CC							**CONCRETE SLAB**.				
Solid Flight Auger		0.2				Fill	**FILL**- Sandy Gravel, dark grey / black, fine to coarse grained sand, fine to coarse gravel.	loose	moist	SMC011116-15 0.2-0.3m	Coal-like fragments.
		0.4									
		0.6					**FILL**- Sand, yellow brown, fine to coarse grained sand.	loose	moist	SMC011116-16 0.5-0.65m	
		0.8									
		1.0					**FILL**- Sand, dark brown, fine to coarse grained sand, trace gravel.	loose	moist	SMC011116-17 0.8-0.95m	
		1.2									
		1.4					**Hole Terminated at 1.20m** Refusal on concrete.				Bore dry upon completion.
		1.6									
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

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Hole ID. **BH105**
Hole Depth: **2.40 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **Total Drilling** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **CC to 0.1m, SFA (TC-Bit) to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Hanjin D&B** Northing: ----------

Method	Depth (m)	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
CC				**CONCRETE SLAB**.				
Solid Flight Auger	0.2		Fill	**FILL**- Gravelly Clay, dark brown, fine to coarse gravel, some sand.	firm	moist	SMC011116-18 0.1-0.2m	
	0.4							
	0.6						SMC011116-19 0.5-0.6m	
	0.8			**FILL**- Sandy Clay, dark brown & brown, trace sand.	firm to stiff	moist		
	1.0						SMC011116-20 0.9-1.0m	
	1.2		Natural	**Sandy CLAY**- orange brown, fine to medium gravel.	stiff to very stiff	moist	SMC011116-21/22 1.1-1.25m	
	1.4							
	1.6			Becoming red brown & orange brown from 1.6m, medium to coarse grained sand.				
	1.8						SMC011116-23 1.8-2.0m	
	2.0							
	2.2							
	2.4			**SANDSTONE**- grey & orange brown, medium to coarse.				
	2.6			**Hole Terminated at 2.40m** Practical refusal.				Bore dry upon completion.
	2.8							
	3.0							

Well Details: Gatic; 0.50 Bentonite; 1.00; 1.15 Coarse Sand; 50mm Ø Screen; 2.35

Well Construction

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

Borehole Log Report

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Hole ID. **BH106**
Hole Depth: **2.20 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **Total Drilling** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **SFA (TC-Bit) to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Hanjin D&B** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
Solid Flight Auger		0.2				Fill	**ASPHALT**.				
		0.4					**FILL**- Clayey Sandy Gravel, dark grey & brown, fine to coarse grained sand, fine to coarse gravel.	firm to stiff	moist	SMC011116-24 0.1-0.3m	
		0.6				Natural	**Sandy CLAY**- orange brown, fine to medium grained sand.	stiff	moist	SMC011116-25/26 0.7-0.9m	
		0.8									
		1.0									
		1.2									
		1.4								SMC011116-27 1.3-1.5m	
		1.6									
		1.8									
		2.0					**SANDSTONE**- grey & orange brown, medium to coarse.				
		2.2									
		2.4					**Hole Terminated at 2.20m** Practical refusal.				Bore dry upon completion.
		2.6									
		2.8									
		3.0									

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

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Hole ID. **BH107**
Hole Depth: **2.80 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **Total Drilling** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **SFA (TC-Bit) to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Hanjin D&B** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: Grass				
Solid Flight Auger		0.2				Fill	**TOPSOIL / FILL**- Sandy Silt, dark brown, fine to medium gravel, becoming pale brown with depth.	loose to medium dense	moist	SMC011116-29 0.1-0.2m	
		0.4									
		0.6								SMC011116-30 0.5-0.6m	
		0.8					**Silty CLAY**- red brown & orange brown, some fine to medium grained sand.	firm to stiff	moist	SMC011116-28 0.7-0.8m	
		1.0					**Sandy CLAY**- red brown & orange brown, medium to coarse grained sand, medium to coarse gravel.	stiff	moist		
		1.2				Natural					
		1.4					**SANDSTONE**- grey & orange brown, medium to coarse.			SMC011116-31 1.5-1.6m	
		1.6									
		1.8									
		2.0					**SANDSTONE**- pale grey, medium to coarse, weak zone, increased moisture.				Likely water bearing zone between 2.0 and 2.8m.
		2.2									
		2.4									
		2.6								SMC011116-35 2.5-2.8m	
		2.8									
		3.0					**Hole Terminated at 2.80m** Practical refusal.				

Well Details / Well Construction: Gatic; 1.00 Bentonite; 1.45; 1.60 Coarse Sand; 50mm Ø Screen

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

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Borehole Log Report

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Hole ID. **BH108**
Hole Depth: **0.75 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **Hand Auger to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: Grass				
Hand Auger		0.2				Fill	**TOPSOIL / FILL**- Sandy Gravelly Silt, dark grey, fine to medium grained sand, fine to coarse gravel.	loose to medium dense	slightly moist	SMC011116-32 0.0-0.15m	
		0.4				Natural	**Sandy CLAY / Clayey SAND**- red brown & orange brown, medium to coarse grained sand, with sandstone gravel.	stiff	moist	SMC011116-33 0.3-0.5m	
		0.6									
		0.8					**Hole Terminated at 0.75m** Practical refusal on weathered sandstone.				Bore dry upon completion.
		1.0									
		1.2									
		1.4									
		1.6									
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

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Borehole Log Report

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Hole ID. **BH109**
Hole Depth: **1.35 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **1/11/2016** Ground Level: ----------
Drill Method: **Hand Auger to EOH** Date Completed: **1/11/2016** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
Hand Auger		0.2				Fill	**TOPSOIL/FILL**- Clayey Silt, dark brown, trace fine to coarse sandstone and coal gravel, roots.	firm	moist	SMC011116-34 0.0-0.15m	Coal gravel.
		0.4									
		0.6								SMC011116-36 0.5-0.6m	Geofabric at 0.65m.
		0.8				Natural	**Sandy CLAY**- orange brown & red brown.	firm to stiff	moist	SMC011116-37 0.7-0.85m	
		1.0									
		1.2									
		1.4					**Hole Terminated at 1.35m** Practical refusal on weathered sandstone.				Bore dry upon completion.
		1.6									
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Stephen McCormack** Date: **1/11/2016**
Checked By: **Stephen McCormack** Date: **10/12/2016**

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Borehole Log Report

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Hole ID. **BH201**
Hole Depth: **1.60 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: bark mulch				
Hand Auger					SP	Fill	**FILL**- Gravelly Sand, brown, fine to coarse grained, with fine to coarse gravel present.	loose	moist	JL190717-01 0.05-0.15m	
					SC		**FILL**- Clayey Sand, brown, fine to coarse grained, with fine to coarse gravel (including fragments of metal).	loose	moist	JL190717-02 0.40-0.50m JL190717-03 0.70-0.80m	
		1.0			SC	Natural	**Clayey SAND**- orange-brown, fine to coarse grained.	loose to medium dense	moist	JL190717-04 1.00-1.10m	
					CL		**Sandy CLAY**- grey, low plasticity, fine to coarse grained.	firm to stiff	moist		
							becoming yellow-brown from 1.4m.		very moist	JL190717-05 1.40-1.50m	
		2.0					**Hole Terminated at 1.60m** Target Depth Reached				Borehole dry upon completion

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

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Monitoring Well Log Report

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Hole ID. **BH202**
Hole Depth: **1.80 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Depth (m)	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
				Surface: concrete				
CC			Fill	**FILL**- Concrete, 150mm.				
Hand Auger		SP	Fill	**FILL**- Gravelly Sand, brown, fine to coarse grained, with fine to coarse gravel (including concrete fragments and plastic).	loose	moist	JL190717-06 / 07 0.25-0.35m	
Hand Auger		SP	Fill	**FILL**- Sand, pale brown, fine to coarse grained, with clumps of brown silty clay present.	loose	moist	JL190717-08 0.60-0.70m	
Hand Auger	1.0	CL	Fill	**FILL**- Silty Clay, dark brown, low to medium plasticity, with fine to coarse sand and fine to coarse gravel.	firm to stiff	moist	JL190717-09 1.10-1.20m	
Hand Auger		CL	Natural	**Sandy CLAY**- dark grey, low plasticity, fine to coarse grained. becoming pale brown from 1.5m.	firm to stiff	moist	JL190717-10 1.40-1.50m	
	2.0			**Hole Terminated at 1.80m** Target Depth Reached				Borehole dry upon completion

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

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Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
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Hole ID. **BH203**
Hole Depth: **1.20 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Depth (m)	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
				Surface: concrete				
CC			Fill	**FILL**- Concrete, 90mm.				
Hand Auger		SM	Fill	**FILL**- Silty Sand, dark brown, fine to medium grained.	loose	moist	JL190717-11 0.15-0.25m	
	1.0	SC	Natural	**Clayey SAND**- brown / yellow-brown, fine to coarse grained.	loose to medium dense	moist	JL190717-12 0.70-0.80m JL190717-13 1.10-1.20m	
	2.0			**Hole Terminated at 1.20m** Target Depth Reached				Borehole dry upon completion

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

GEE DAVIES BH LOG BEXLEY NORTH STAGE 2 EXTRA.GPJ GEE.GDT 28-7-17 8:11:06 AM

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
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Hole ID. **BH204**
Hole Depth: **0.70 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: concrete				
CC						Fill	**FILL**- Concrete, 150mm.				
Solid Flight Auger					CL	Fill	**FILL**- Silty Clay, dark grey / dark brown, low plasticity, with fine to coarse sand and fine to coarse gravel (including large concrete and brick fragments).	firm to stiff	moist	JL190717-14 0.20-0.30m JL190717-15 0.60-0.70m	
		1.0 2.0					**Practical Hand Auger Refusal at 0.70m** Caused by large large obstructions within fill layer				Borehole dry upon completion.

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

GEE DAVIES BH LOG BEXLEY NORTH STAGE 2 EXTRA.GPJ GEE.GDT 28-7-17 8:11:07 AM

Monitoring Well Log Report

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82 Bridge Street
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Hole ID. **BH205**
Hole Depth: **1.00 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Hand Auger					SM	Fill	**TOPSOIL/FILL**- Silty Sand, dark brown, fine to coarse grained, with fine to coarse gravel (including crushed sandstone).	loose	moist	JL190717-16 / 17 0.05-0.15m	
					CL	Natural	**Sandy CLAY**- light grey, low plasticity, fine to coarse grained. becoming orange-brown from 0.8m.	firm to stiff	moist	JL190717-18 0.60-0.70m	
		1.0									
							Hole Terminated at 1.00m Target Depth Reached				Borehole dry upon completion.
		2.0									

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

GEE DAVIES BH LOG BEXLEY NORTH STAGE 2 EXTRA.GPJ GEE.GDT 28-7-17 8:11:08 AM

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

geo-environmental ENGINEERING

Hole ID. **BH206**
Hole Depth: **1.10 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Hand Auger					SM	Fill	**TOPSOIL/FILL**- Silty Sand, dark brown, fine to coarse grained, with fine to coarse gravel.	loose	moist	JL190717-19 0.05-0.15m	
					SP	Natural	**SAND**- pale grey, fine to coarse grained, with clay.	loose to medium dense	moist	JL190717-20 0.70-0.80m	
		1.0			CL		**Sandy CLAY**- pale orange-brown, fine to coarse grained.	firm to stiff	moist		
		2.0					**Hole Terminated at 1.10m** Target Depth Reached				Borehole dry upon completion.

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

GEE DAVIES BH LOG BEXLEY NORTH STAGE 2 EXTRA.GPJ GEE.GDT 28-7-17 8:11:09 AM

Monitoring Well Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **BH207**
Hole Depth: **1.00 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Hand Auger					ML	Fill	**TOPSOIL**- Clayey Silt, dark brown, low plasticity, with fine to medium grained sand and a trace of fine to coarse gravel.	firm	moist	JL190717-21 0.05-0.15m	
					CL	Natural	**Sandy CLAY**- pale grey-brown, low plasticity, fine to coarse grained.	firm to stiff	moist	JL190717-22 0.50-0.60m	
							becoming pale orange-brown from 0.7m.				
		1.0					becoming pale grey / orange-brown / red-brown with fine to coarse ironstone gravel from 0.9m.			JL190717-23 0.90-1.00m	
							Hole Terminated at 1.00m Target Depth Reached				Borehole dry upon completion
		2.0									

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

GEE DAVIES BH LOG BEXLEY NORTH STAGE 2 EXTRA.GPJ GEE.GDT 28-7-17 8:11:10 AM

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **BH208**
Hole Depth: **1.00 m**
Sheet: **1 of 1**

Project Name: **Contamination Assessment** Project Number: **E16016BN**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd** Client: **Tony Soueid**

Drilling Company: **GEE** Date Started: **19-JUL-17** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **19-JUL-17** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Hand Auger					ML	Fill	**TOPSOIL**- Clayey Silt, dark brown, low plasticity, with fine to medium grained sand and a trace of fine to coarse gravel.	firm	moist	JL190717-24 / 25 0.05-0.15m	
		1.0			CL	Natural	**Sandy CLAY**- brown / orange-brown, low plasticity, fine to coarse grained. becoming grey / red-brown / orange-brown with fine to coarse ironstone gravel from 1.0m.	firm to stiff	moist	JL190717-26 0.50-0.60m	
		2.0					**Hole Terminated at 1.00m** Target Depth Reached				Borehole dry upon completion

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

No adverse odour or staining and no obvious ACM.

Logged By: **Joshua Long** Date: **19-Jul-17** Checked By: **Stephen McCormack** Date: **19-JUL-17**

GEE DAVIES BH LOG BEXLEY NORTH STAGE 2 EXTRA.GPJ GEE.GDT 28-7-17 8:11:10 AM

Geo Environmental Engineering
82 Bridge Street
Lane Cove NSW 2066
E info@geoenvironmental.com.au

Log Report Legend

MATERIAL SYMBOL


FILL


CONCRETE


ASPHALT


TOPSOIL


ORGANICS


ESTUARINE MUD


CLAY


SAND


SILT


GRAVEL


Sandy CLAY


Clayey SAND


Clayey SILT


Clayey GRAVEL


Silty CLAY


Silty SAND


Sandy SILT


Sandy GRAVEL


Gravelly CLAY


Gravelly SAND


Gravelly SILT


Silty GRAVEL


CLAY & SAND


SAND & CLAY


SILT & CLAY


GRAVEL & CLAY


CLAY & SILT


SAND & SILT


SILT & SAND


GRAVEL & SAND


CLAY & GRAVEL


SAND & GRAVEL


SILT & GRAVEL


GRAVEL & SILT


Sandy Silty CLAY


Clayey Silty SAND


Sandy Clayey SILT


Sandy Clayey GRAVEL


Silty Sandy CLAY


Silty Clayey SAND


Clayey Sandy SILT


Clayey Sandy GRAVEL


Sandy Gravelly CLAY


Clayey Gravelly SAND


Sandy Gravelly SILT


Silty Clayey GRAVEL


Silty Gravelly CLAY


Silty Gravelly SAND


Clayey Gravelly SILT


Clayey Silty GRAVEL


Gravelly Silty CLAY


Gravelly Silty SAND


Gravelly Clayey SILT


Sandy Silty GRAVEL


Gravelly Sandy CLAY


Gravelly Clayey SAND


Gravelly Sandy SILT


Silty Sandy GRAVEL


SANDSTONE


SHALE


GRANITE


BASALT


SHALE / SANDSTONE


PORCELLANITE


GNEISS


SHALE / CLAYSTONE


MUDSTONE


CLAYSTONE


MUDSTONE / CLAYSTONE


SHALE / SILTSTONE


IRONSTONE

WATER LEVELS


Encountered Water

Standing Water

ABBREVIATIONS

PT	Pushtube
SFA	Solid Flight Auger
PWS	Percussion Window Sampler
HA	Hand Auger
HFA	Hollow Flight Auger

WELL GRAPHICS


Cuttings


Bentonite


Screen


Gravel Pack


Grout


Cave-in

GEE LEGEND * * 29/10/09 5:04:07 PM

APPENDIX G

FIELD DATA SHEETS

GROUNDWATER SAMPLING FIELD DATA

WELL ID: GW01

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA | PROJECT NUMBER: E16016BN

LOCATION / SITE: Bexley North Metro Petrol | CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50 | WELL SCREEN INTERVAL (m): | CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES (NO) | Well Locked: (YES) NO | Water Around Well: YES (NO)

Well ID Visible: YES (NO) | Cap on PVC: (YES) / NO | Water Between PVC and Gatic/ Monument: YES / (NO)

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL): 2.21 | m BTOC or (m BGL) or m BTOM

FREE PRODUCT: Yes or (No) | Thickness (m):

TOTAL DEPTH OF WELL (TD): 2.69 | m BTOC or (m BGL) or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump | Peristaltic | High Volume Pump | (Foot Valve) | Bailer | Other:

DATE: 11/11/16 | WATER LEVEL AFTER PURGE: DRY | mBTOC / mBGL / mBTOM

MAX. DRAWDOWN (m) | INTAKE DEPTH: | mBTOC / mBGL / mBTOM

TIME	CUMUL. VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB. (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	–
10:10	5L							

RECHARGE OBSERVATIONS

Slow (80% recharge > 2 Hours) | Fast (80% recharge < 2 Hours)

SAMPLING DETAILS

METHOD: Bladder Pump | Peristaltic | High Volume Pump | (Foot Valve) | Bailer | Other:

DATE & TIME: 11/11/16 15:15 | WATER LEVEL (m) 2.29 | mBTOC / mBGL / mBTOM

SAMPLE ID: ACON1116-03 | Blind Replicate ID: | Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB. (NTUs)
	0.67	685	6.18	-107.5	21.7	

DESCRIPTION: Colour red brown | Turbidity: high | Odour: hydrocarbon slight | Other

PURGE VOLUME CALCULATOR: Length of Water Column (m) = TD (m) – SWL (m) = _____

One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____

Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument

hydrocarbon odor noted during purge

GEE PERSONNEL: ~~S. McCormack~~ A. Owen | SIGNATURE:

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GROUNDWATER SAMPLING FIELD DATA

WELL ID: GW02

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA — PROJECT NUMBER: E160/6BN

LOCATION / SITE: Bexley North Metro Petrol — CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50	WELL SCREEN INTERVAL (m):	CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES / (NO) — Well Locked: (YES) / NO — Water Around Well: YES / (NO)

Well ID Visible: YES / (NO) — Cap on PVC: (YES) / NO — Water Between PVC and Gatic/ Monument: YES / (NO)

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL): 2.13 — m BTOC or (m BGL) or m BTOM

FREE PRODUCT: Yes or (No) — Thickness (m):

TOTAL DEPTH OF WELL (TD): 2.94 — **m BTOC** or ~~m BGL~~ or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump / Peristaltic / High Volume Pump / (Foot Valve) / Bailer / Other:

DATE: — WATER LEVEL AFTER PURGE: DRY — mBTOC / mBGL / mBTOM

MAX. DRAWDOWN (m): — INTAKE DEPTH: — mBTOC / mBGL / mBTOM

TIME	CUMUL. VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB. (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	–
~~2~~ 10:20	2L							

RECHARGE OBSERVATIONS

Slow (80% recharge > 2 Hours) | Fast (80% recharge < 2 Hours)

SAMPLING DETAILS

METHOD: Bladder Pump / Peristaltic / High Volume Pump / (Foot Valve) / Bailer / Other:

DATE & TIME: 11/11/16 15:30 — WATER LEVEL (m): 2.15 — mBTOC / mBGL / mBTOM

SAMPLE ID: AC111116-04 — Blind Replicate ID: — Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB. (NTUs)
	1.06	620	6.09	-80.3	22.5	

DESCRIPTION: Colour: green-grey — Turbidity: moderate — Odour: hydrocarb (slight) — Other:

PURGE VOLUME CALCULATOR:
Length of Water Column (m) = TD (m) – SWL (m) = _____
One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____
Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument

GEE PERSONNEL: S. McCormack A. Chiem — SIGNATURE:

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GROUNDWATER SAMPLING FIELD DATA

WELL ID: BH102

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA | PROJECT NUMBER: E16016BN

LOCATION / SITE: Bexley North Metro Petrol | CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50	WELL SCREEN INTERVAL (m):	CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES / (NO) | Well Locked: (YES) / NO | Water Around Well: YES / (NO)

Well ID Visible: YES / (NO) | Cap on PVC: (YES) / NO | Water Between PVC and Gatic/ Monument: (YES) / NO

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL): 1.28 | m BTOC or (m BGL) or m BTOM

FREE PRODUCT: Yes or (No) | Thickness (m):

TOTAL DEPTH OF WELL (TD): 2.20 | **m BTOC** or (m BGL) or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump | Peristaltic | High Volume Pump | (Foot Valve) | Bailer | Other:

DATE: 11/11/16 | WATER LEVEL AFTER PURGE: DRY | mBTOC / mBGL / mBTOM

MAX. DRAWDOWN (m) | INTAKE DEPTH: | mBTOC / mBGL / mBTOM

TIME	CUMUL. VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB. (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	–
10:45	5L							

RECHARGE OBSERVATIONS

Slow (80% recharge > 2 Hours) | Fast (80% recharge < 2 Hours)

SAMPLING DETAILS

METHOD: Bladder Pump | Peristaltic | High Volume Pump | (Foot Valve) | Bailer | Other:

DATE & TIME: 11/11/16 15:50 | WATER LEVEL (m): 1.29 | mBTOC / (mBGL) / mBTOM

SAMPLE ID: AC111116-06 | Blind Replicate ID: | Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB. (NTUs)
	1.60	1048	5.86	-55.3	22.0	

DESCRIPTION: Colour: grey-brn | Turbidity: sl wgh | Odour: none | Other:

PURGE VOLUME CALCULATOR: Length of Water Column (m) = TD (m) – SWL (m) = _____

One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____

Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument

GEE PERSONNEL: ~~S. McCormack~~ A Chiem | SIGNATURE:

GROUNDWATER SAMPLING FIELD DATA

WELL ID: BH105

PROJECT INFORMATION

PROJECT NAME:	Stage 2 ESA	PROJECT NUMBER:	E16016BN
LOCATION / SITE:	Bexley North ~~Bardgett~~ Metro Petrol.	CLIENT:	

WELL DETAILS

WELL DIAMETER (mm): 50	WELL SCREEN INTERVAL (m):	CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES / (NO) — Well Locked: (YES) / NO — Water Around Well: YES / (NO)

Well ID Visible: YES / (NO) — Cap on PVC: (YES) / NO — Water Between PVC and Gatic/ Monument: YES / (NO)

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL):	DRY	m BTOC or m BGL or m BTOM
FREE PRODUCT:	Yes or (No)	Thickness (m):
TOTAL DEPTH OF WELL (TD):	2.21	**m BTOC** or m BGL or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump / Peristaltic / High Volume Pump / Foot Valve / Bailer / Other:

DATE: | WATER LEVEL AFTER PURGE: | mBTOC / mBGL / ~~mBTOM~~

MAX. DRAWDOWN (m) | INTAKE DEPTH: | ~~mBTOC~~ / mBGL / mBTOM

TIME	CUMUL. VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	–

RECHARGE OBSERVATIONS

Slow (80% recharge > 2 Hours) | Fast (80% recharge < 2 Hours)

SAMPLING DETAILS

METHOD: Bladder Pump / Peristaltic / High Volume Pump / Foot Valve / Bailer / Other:

DATE & TIME: | WATER LEVEL (m): | ~~mBTOC~~ / mBGL / mBTOM

SAMPLE ID: | Blind Replicate ID: | Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)

DESCRIPTION: Colour / Turbidity / Odour / Other

PURGE VOLUME CALCULATOR: Length of Water Column (m) = TD (m) – SWL (m) = _____

One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____

Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument

GEE PERSONNEL: ~~S. McCormack~~ A. Chiem

SIGNATURE:

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GROUNDWATER SAMPLING FIELD DATA

WELL ID: BH107

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA — PROJECT NUMBER: E16016BN

LOCATION / SITE: Bexley North Metro Petrol — CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50	WELL SCREEN INTERVAL (m):	CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES (NO) — Well Locked: YES (NO) — Water Around Well: YES (NO)

Well ID Visible: YES (NO) — Cap on PVC: (YES) NO — Water Between PVC and Gatic/ Monument: YES (NO)

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL): 1.78 — m BTOC or (m BGL) or m BTOM

FREE PRODUCT: Yes or (No) — Thickness (m):

TOTAL DEPTH OF WELL (TD): 2.78 — m BTOC or (m BGL) or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump, Penstaltic, High Volume Pump, (Foot Valve), Bailer, Other:

DATE: 11/11/16 — WATER LEVEL AFTER PURGE: DRY — mBTOC / mBGL / mBTOM

MAX. DRAWDOWN (m): — INTAKE DEPTH: — mBTOC / mBGL / mBTOM

TIME	CUMUL VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	–
10:00	3L							

RECHARGE OBSERVATIONS

Slow (80% recharge > 2 Hours) | Fast (80% recharge < 2 Hours)

SAMPLING DETAILS

METHOD: Bladder Pump, Peristaltic, High Volume Pump, Foot Valve, Bailer, Other:

DATE & TIME: 11/11/16 15:00 — WATER LEVEL (m): 1.75 — mBTOC / (mBGL) / mBTOM

SAMPLE ID: AC111116-01 — Blind Replicate ID: ~~AC101~~ AC111116-02 — Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
	2.42	1093	4.88	-91.0	22.5	

DESCRIPTION: Colour: brown — Turbidity: moderate — Odour: none — Other

PURGE VOLUME CALCULATOR: Length of Water Column (m) = TD (m) – SWL (m) = _____
One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____
Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument

GEE PERSONNEL: ~~S. McCormack~~ A. Chiem — SIGNATURE:

APPENDIX H

QUALITY ASSURANCE ASSESSMENT REPORT

H1. INTRODUCTION

A detailed Quality Assurance (QA) assessment, including the analysis of Quality Control (QC) samples, was carried out by GEE to determine the reliability of field procedures and analytical results.

H2. QUALITY ASSURANCE

Quality Assurance (QA) involves all of the actions, procedures, checks and decisions undertaken to ensure the representativeness and integrity of samples and accuracy and reliability of analysis results (reference 1).

In accordance with AS4482.1 (reference 2) and AS5667.1 (reference 3), a series of QA procedures were integrated within the sampling and analysis plan and included:

- ◊ The collection of Quality Control (QC) samples.
- ◊ The use of standardised field sampling forms developed by GEE.
- ◊ Documentation of calibration and use of field instruments.

To ensure QA in the field, samples were collected by experienced and trained personnel using appropriate methods detailed herein, including appropriate sample handling, containment and transport, and calibrated equipment. Additionally QC samples were collected and analysed as discussed in Section H3.

To ensure QA in the laboratory, GEE used laboratories that are NATA accredited for the analytical tests carried out, therefore it is reasonable for GEE to rely on the laboratories to be proficient in all tests conducted. This encompasses all actions, procedures, checks and decisions undertaken, to ensure the accuracy and reliability of the analysis results. As part of the laboratory QA, QC samples were analysed with each batch of samples as part of this investigation as required by NATA. A discussion of the laboratory QC samples analysed as part of this investigation is provided in Section H3.3.2.

H3. QUALITY CONTROL

QC involves those parts of QA which serve to monitor and measure the effectiveness of QA procedures. QC samples assess sample integrity, accuracy and precision and can be separated into field and laboratory QC.

H3.1 DEFINITIONS

Table H1 provides a description and objective of each of the field and laboratory QC samples used during this investigation.

Table H1: QC Sample Types, Descriptions and Recommended Frequency of Analysis

Type	Description	Purpose	Recommended Frequency
	FIELD QC SAMPLES		
Blind Replicate	A sample collected at the same time and from the same sampling point as the corresponding primary sample[1], and analysed at the same laboratory. Blind replicates are collected, preserved, stored, transported and analysed in the same manner as the primary sample, with the laboratory having no knowledge of the source of the replicate sample. The assessment of blind replicates samples is undertaken by calculating the Relative Percent Difference (RPD) which is defined as: $RPD\ (\%) = 100 \times \frac{\text{Result No. 1} - \text{Result No. 2}}{\text{Mean Result}}$	Used to evaluate total sampling and analysis precision and, in the case of soil samples, sample variability.	In accordance with AS4482.1 (reference 2) and NEPM (reference 4) it is recommended that 1 blind replicate sample is collected for every 20 primary samples.
Split Duplicate	A sample collected at the same time and from the same sampling point as the corresponding primary sample, and analysed at a separate laboratory. Split duplicates are collected, preserved, stored, transported and analysed in the same manner as the primary sample, with the laboratories having no knowledge of the purpose of the sample. The assessment of split duplicates samples is undertaken by calculating the Relative Percent Difference (RPD) which is defined as: $RPD\ (\%) = 100 \times \frac{\text{Result No. 1} - \text{Result No. 2}}{\text{Mean Result}}$	Used to provide a check on the analytical proficiency of the laboratories and hence precision and comparability.	In accordance with AS4482.1 (reference 2) and NEPM (reference 4) it is recommended that 1 split duplicate sample is collected for every 20 primary samples.
Trip Blank	Trip blanks are laboratory supplied test samples of analyte-free media (either washed sand or de-ionised water) which remain in the sample storage eskies during sampling activities and returned to the laboratory unopened. For soil sampling programmes, the trip blank consists of acid-washed quartz sand that has been heated to 400ºC. For water sampling programs trip blanks comprise pre-washed glass vials containing distilled or de-ionised water with appropriate preservatives. The USEPA has shown that cross-contamination only occurs with volatile organics (reference 5), therefore, trip blanks are only analysed for volatile organics.	Used to measure cross-contamination during sampling, transport, sample preparation and analysis.	Industry standard is 1 trip blank per batch of primary samples.

[1] Primary samples are the original representative samples of soil or groundwater collected for analysis to determine aspects of their chemical composition. Primary samples are the original sample taken from a particular location and other samples from the same location are duplicates, replicates or splits.

Trip Spike	Trip spikes, like trip blanks, are supplied by the primary laboratory using analyte-free media (either washed sand or de-ionised water) and remain in the sample storage eskies during sampling activities and returned to the laboratory unopened. The sample media, however, is spiked with BTEX. For water sampling programmes the BTEX concentration is known and standardised by each laboratory, while for soil sampling programmes the exact spike concentration is not known, rather two identical jars of sand are spiked the same concentration with one sample becoming the trip-spike and the other becoming a control sample, which remains in a refrigerator at the laboratory. The trip spike is analysed after returning from the field and the % recovery of the known spike (for water sampling programs), or of the control sample (for soil sampling programs), is calculated.	Used to monitor VOC losses during transit.	Industry standard is 1 trip spike per batch of primary samples where volatile concentrations are being measured.

Table H1 Continued

Type	Description	Purpose	Recommended Frequency
	LABORATORY QC SAMPLES		
Laboratory Duplicate	Laboratory duplicates are field samples which are prepared and analysed in the same manner twice. The assessment of laboratory duplicates is undertaken by calculating the (RPD) which is defined as: $\text{RPD (\%)} = 100 \times \frac{\text{Result No. 1 – Result No. 2}}{\text{Mean Result}}$	Determines analytical precision for a sample batch	NATA specifies 1 per 10 samples for trace element and inorganic analysis
Laboratory Control Sample (LCS)	Laboratory Control Samples (LCS) are analyte-free matrices (de-ionised water or clean sand) spiked with a known concentration of target analytes and carried through the entire preparation and analysis. Assessment of LCS is undertaken by calculating the percent recovery (%R) of the spike which is defined as: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR) – Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	Determines analytical accuracy and precision for a batch of samples	NATA specifies 1 per batch of up to 20 samples
Surrogates	Surrogates are organic compounds added to field samples and laboratory QC samples prior to preparation. They are similar in chemical behaviour to the target analytes and are not expected to be present in samples (reference 6). They form part of the laboratory QC for organic analyses, and are used to indicate the presence of sample specific interferences. The surrogate is added at the extraction stage then analysed with the batch of samples. Like LCSs, surrogates are assessed by calculating the percent recovery (%R), although the definition is slightly different as shown below: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spiked Sample Result (SSR)}}{\text{Concentration of Spike Added (SA)}}$	Used to demonstrate that the surrogate does not interfere with the target analytes, therefore determines analytical accuracy for each sample	Added to every blank, field and laboratory QC sample

Matrix Spikes	Field samples spiked with a known concentration of a target analytes and carried through the entire preparation and analysis. Matrix spike samples are assessed by calculating the percent recovery (%R) of the spike which is defined as: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR)} - \text{Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	Determine the effects of matrix interferences on analytical accuracy of a sample.	Performed at least 1 per batch of up to 20 samples.
Method Blank	Method blanks are an analyte-free matrices (reagent water or clean sand) that is carried through the entire preparation and analysis.	Establishes that laboratory contamination does not cause false positives.	Prepared with every batch of up to 20 samples for all organic and inorganic analyses.

H3.2 CRITERIA / ACCEPTABLE RANGE

The QC Acceptance Criteria adopted for this investigation is provided in Table H2 and is in general accordance with the Table 4 of AS4482.1 (reference 2) and NEPM (reference 4).

Table H2: QC Sample Acceptance Criteria

QC Sample	Criteria / Acceptable Range
FIELD QC SAMPLES	
Blind Replicate & Split Duplicate	RPD < 50 % When average concentration is > 10 x LOR/PQL[2] RPD < 75 % When average concentration is 5 to 10 x LOR/PQL RPD < 100 % When average concentration is< 5 x LOR/PQL
Trip Blank	Analytical Result < LOR/PQL
Trip Spike	± 30%
LABORATORY QC SAMPLES	
Laboratory Duplicates	RPD < 30 % When average concentration is > 10 x LOR/PQL RPD < 50 % When average concentration is 4 to 10 x LOR/PQL RPD < 100 % When average concentration is< 4 x LOR/PQL
Laboratory Control Samples	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs) %R of 62 – 130% (Chromium)
Surrogates	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs)
Matrix Spikes	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs) %R of 62 – 130% (Chromium)
Method Blanks	Analytical Results < LOR/PQL

If data do not meet the QC Acceptance Criteria then a judgement is made as to whether the exceedance is critical in relation to the suitability of the data set. Otherwise the following steps will be taken:

- ◊ Request that the laboratory re-check or even re-analyse the sample.
- ◊ Inspect the sample for anomalies which may be causing the failure.
- ◊ If necessary, undertake additional sampling and analyses.

[2] Both the LOR and PQL are interchangeable terms used by laboratories and is defined as the lowest concentration that can be reliably achieved within specific limits of precision and accuracy during routine laboratory operating conditions (reference 6).

H3.3 RESULTS

H3.3.1 Field QC Samples

Field QC samples collected and analysed as part of this investigation comprised:

Soil Sampling

- ◊ Two blind replicates (SM011116-10 and JL190717-07)
- ◊ One split duplicate (SM011116-12)
- ◊ One trip blank (labelled 'trip blank')
- ◊ One trip spike (labelled 'trip spike')

Water Sampling

- ◊ One duplicate (AC111116-02)
- ◊ One trip blank (labelled 'trip blank')
- ◊ One trip spike (labelled 'trip spike')

A split duplicate sample was not collected during the groundwater sampling event due to the small number of samples analysed.

Tabulated results are presented at the conclusion of this Appendix. Table H3 and H4 provides a summary of the frequency of QC samples and lists results which do not meet the criteria established in Table H2.

Table H3: QC Sample Acceptance Criteria - Soil

Type	Frequency Conducted	Results Not Meeting the Criteria
Blind Replicates	Metals - 1 per 22 primary samples (4.5%)	Zinc (SM011116-10)
	TRH/BTEX - 1 per 17 primary samples (6.7%)	--
	PAHs - 1 per 13 primary samples (7.7%)	--
	OCPs / PCBs – 1 per 10 primary samples (10%)	--
Split Duplicate	Metals - 1 per 21 primary samples (4.5%)	Arsenic, Chromium, Copper, Lead, Nickel
	TRH/BTEX - 1 per 17 primary samples (6.67%)	--
	PAHs - 1 per 16 primary samples (6.2%)	--
Trip Blank	1 per sample batch	--
Trip Spike	1 per sample batch	--

Table H4: QC Sample Acceptance Criteria - Water

Type	Frequency Conducted	Results Not Meeting the Criteria
Blind replicate	Metals - 1 per 5 primary samples (20%)	--
	TRH/BTEX - 1 per 5 primary samples (20%)	--
	PAHs - 1 per 5 primary samples (20%)	--
	Phenols - 1 per 5 primary samples (20%)	--
	Hardness - 1 per 5 primary samples (20%)	--
Trip Blank	1 per sample batch	--
Trip Spike	1 per sample batch	--

The quality control results all conformed to the sample acceptance criteria except for some metals in the blind replicate and split duplicates. The elevated RPD for these metals is attributed to the heterogeneous fill at this location and is not considered to be a reflection of laboratory inaccuracy. Notwithstanding this, GEE has adopted the highest least concentration when making decisions about the suitability of the site.

H3.3.2 Laboratory QC

Laboratory QC results are provided in the laboratory reports while a summary of the results which exceeded the acceptance criteria is provided in Table H5.

Table H5: QC Sample Acceptance Criteria

Type	Results Exceeding Criteria
Laboratory Duplicates	--
Laboratory Control Samples	--
Surrogates	--
Matrix Spikes	--
Method Blanks	--

The laboratory RPD acceptance criteria were considered acceptable.

H4. DATA QUALITY ASSESSMENT

In accordance with reference 7, Data Quality Indicators (DQIs), specifically, precision, accuracy, representativeness, completeness and comparability, were used to assess the reliability of field procedures and analytical results.

H4.1 PRECISION

This is the measure of the variability (or reproducibility) of the data. In the field precision is achieved by using standard operating procedures which were adopted by GEE during this investigation. For laboratory analysis precision is assessed using blind replicates and trip spikes. The measured RPDs for the blind replicate samples and split samples were considered acceptable as were the analytical results for the trip spike.

H4.2 ACCURACY

Accuracy is a measure of the closeness of a measurement to the true parameter value. In the field, accuracy is achieved by using standard operating procedures which were adopted by GEE. For laboratory analysis, accuracy is assessed using tip blanks, rinsate blanks, method blanks, matrix spikes, surrogates and laboratory control samples. Considering that these QC samples were of an acceptable standard, GEE considers the laboratory data set to be accurate.

H4.3 REPRESENTATIVENESS

This is the confidence (expressed qualitatively) that the data are representative of each media present on the site. This is achieved in the field and laboratory by using an adequate number of sampling points to characterise the site and ensuring that the samples collected were representative of the media from which they were collected. Additionally, samples should be analysed within necessary holding times depending on the analyte.

Environmental soil samples were collected from each borehole in general accordance with techniques described in Australian Standards AS4482.1 (reference 2), AS4482.2 (reference 8) and NEPM (reference 1), to maintain the representativeness and integrity of the samples. The number of sampling points exceeded the minimum required sampling density as defined by NSW EPA (reference 9), however, were considered sufficient for the purpose of this investigation.

The groundwater samples were collected in a manner consistent with the collection, handling and preservation principles enunciated in AS/NZS 5667.1:1998 (reference 3) and more specifically the procedures outlined AS/NZS 5667.11:1998 (reference 10) and USEPA's (1991) *Handbook: Groundwater – Volume II: Methodology* (reference 11), to maintain the representativeness and integrity of the samples.

Finally all samples were analysed within holding times.

H4.4 COMPLETENESS

This is a measure of whether all the data necessary to meet the project objectives, were collected. In the field and laboratory, this is achieved by sampling all critical locations and depths using acceptable methods and ensuring samples are analysed for appropriate chemicals.

GEE selected sufficient a sufficient number of sample points for the purpose of the investigation as defined by the NSW EPA (reference 9) and collected groundwater samples from all available monitoring wells on the site. Additionally, samples were analysed for chemicals of concern based on appropriate field screening measures and logging of unusual aesthetics which may indicate contamination. Combined with the fact that standard operating procedures were adopted by GEE, the investigation is assessed as being complete.

H4.5 COMPARABILITY

This is a measure of confidence that data may be considered to be equivalent for each sampling and analysis event. Soil samples were collected by experienced GEE personnel using standard operating procedures and analysed in accordance with NATA accredited laboratory methods. The comparability of the data should be consistent as sampling protocols were employed throughout the duration of the fieldwork and analysis was undertaken by NATA registered laboratories using accredited analytical methods.

H5. CONCLUSION

A review of the DQIs indicates that the field procedures and analytical results adopted for this investigation are able to be relied upon for making conclusions and recommendations regarding the contamination status of the site.

References

1. *NEPC, 1999: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure. Schedule B(2) Data Collection, Sample Design and Reporting.*

2. *Australian Standard AS4482.1 – 2005: Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.*

3. *Australian / New Zealand Standard AS/NZS5667.1 – 1998: Water Quality – Sampling. Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*

4. *NEPC, 1999: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure. Schedule B(3) Guideline of Laboratory Analysis of Potentially contaminated Soils.*

5. *Keith, 1991: Environmental sampling and Analysis, A practical guide. Lewis Publishers.*

6. *Popek (2003). Sampling and Analysis of Environmental Chemical Pollutants. Academic Press.*

7. *NSW DEC (2006) Contaminated Sites: Guidelines for NSW Site Auditor Scheme, 2nd Edition.*

8. *Australian Standard AS4482.2 – 1999: Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances.*

9. *NSW EPA, 1995: Environment Protection Authority NSW, 1995: Contaminated Sites: Sampling Design Guidelines, EPA NSW.*

10. *Australian / New Zealand Standard AS/NZS5667.11 – 1998: Water Quality – Sampling. Part 1: Guidance on sampling of groundwaters.*

11. *US Environmental Protection Agency (USEPA), 1991: Handbook Groundwater Volume II: Groundwater.*

SOIL - Blind Replicate Results

Sample Date		01-11-16	01-11-16	RPD	19-07-17	19-07-17	RPD
Sample Identification		**SM011116-09**	**SM011116-10**		**JL190717-06**	**JL190717-17**	
Analyte	Units						
Total Metals							
Arsenic	mg/kg	9	12	29%	4	7	55%
Cadmium	mg/kg	<0.4	<0.4	--	<0.4	<0.4	--
Chromium	mg/kg	20	20	0%	22	16	32%
Copper	mg/kg	10	14	33%	24	29	19%
Lead	mg/kg	48	33	37%	9	12	29%
Mercury	mg/kg	<0.1	<0.1	--	<0.1	<0.1	--
Nickel	mg/kg	3	4	29%	27	24	12%
Zinc	mg/kg	87	30	**97%**	30	39	26%
PCBs							--
Total PCBs	mg/kg	--	--	--	<0.1	<0.1	--
Organochlorine Pesticides (OCP)							--
HCB	mg/kg	--	--	--	<0.1	<0.1	--
alpha-BHC	mg/kg	--	--	--	<0.1	<0.1	--
gamma-BHC	mg/kg	--	--	--	<0.1	<0.1	--
beta-BHC	mg/kg	--	--	--	<0.1	<0.1	--
Heptachlor	mg/kg	--	--	--	<0.1	<0.1	--
delta-BHC	mg/kg	--	--	--	<0.1	<0.1	--
Aldrin	mg/kg	--	--	--	<0.1	<0.1	--
Heptachlor Epoxide	mg/kg	--	--	--	<0.1	<0.1	--
gamma-Chlordane	mg/kg	--	--	--	<0.1	<0.1	--
alpha-chlordane	mg/kg	--	--	--	<0.1	<0.1	--
Endosulfan I	mg/kg	--	--	--	<0.1	<0.1	--
pp-DDE	mg/kg	--	--	--	<0.1	<0.1	--
Dieldrin	mg/kg	--	--	--	<0.1	<0.1	--
Endrin	mg/kg	--	--	--	<0.1	<0.1	--
pp-DDD	mg/kg	--	--	--	<0.1	<0.1	--
Endosulfan II	mg/kg	--	--	--	<0.1	<0.1	--
pp-DDT	mg/kg	--	--	--	<0.1	<0.1	--
Endrin Aldehyde	mg/kg	--	--	--	<0.1	<0.1	--
Endosulfan Sulphate	mg/kg	--	--	--	<0.1	<0.1	--
Methoxychlor	mg/kg	--	--	--	<0.1	<0.1	--
Polycyclic Aromatic Hydrocarbons							
Naphthalene	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	--
Benz(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&k)fluoranthene	mg/kg	<0.2	<0.2	--	<0.2	<0.2	--
Benzo(a)pyrene	mg/kg	<0.05	<0.05	--	<0.05	<0.05	--
Indeno(1.2.3.cd)pyrene	mg/kg	<0.1	<0.1	--	<0.1	<0.1	--
Dibenz(a.h)anthracene	mg/kg	<0.1	<0.1	--	<0.1	<0.1	--
Benzo(g.h.i)perylene	mg/kg	<0.1	<0.1	--	<0.1	<0.1	--
TOTAL PAHs	mg/kg	NIL(+)VE	NIL(+)VE	--	NIL(+)VE	NIL(+)VE	--
BTEX							
Benzene	mg/kg	<0.2	<0.2	--	<0.2	<0.2	--
Toluene	mg/kg	<0.5	<0.5	--	<0.5	<0.5	--
Ethylbenzene	mg/kg	<1	<1	--	<1	<1	--
meta- & para-Xylene	mg/kg	<2	<2	--	<2	<2	--
ortho-Xylene	mg/kg	<1	<1	--	<1	<1	--
Total Petroleum Hydrocarbons							
F1 (C6-C10)	mg/kg	<25	<25	--	<25	<25	--
F2 (>C10-C16)	mg/kg	<50	<50	--	<50	<50	--
F3 (>C16-C34)	mg/kg	<100	<100	--	<100	<100	--
F4 (>C34-C40)	mg/kg	<100	<100	--	<100	<100	--

Values in Bold Indicate: RPD > 50 % When average concentration is > 10 x LOR
RPD > 75 % When average concentration is 5 to 10 x LOR
RPD > 100 % When average concentration is< 5 x LOR

SOIL - Split Replicate Results

	Sample Date	01-11-16	01-11-16	RPD
Sample Identification		**SM011116-11**	**SM011116-12**	
Analyte	Units	Envirolab Services	Eurofins MGT	
Total Metals				
Arsenic	mg/kg	5	20	**120%**
Cadmium	mg/kg	<0.4	<0.4	--
Chromium	mg/kg	95	34	**95%**
Copper	mg/kg	38	17	**76%**
Lead	mg/kg	20	66	**107%**
Mercury	mg/kg	<0.1	<0.05	--
Nickel	mg/kg	87	15	**141%**
Zinc	mg/kg	62	64	3%
Polycyclic Aromatic Hydrocarbons				
Naphthalene	mg/kg	<0.1	<0.5	--
Acenaphthylene	mg/kg	<0.1	<0.5	--
Acenaphthene	mg/kg	<0.1	<0.5	--
Fluorene	mg/kg	<0.1	<0.5	--
Phenanthrene	mg/kg	0.1	<0.5	--
Anthracene	mg/kg	<0.1	<0.5	--
Fluoranthene	mg/kg	0.3	<0.5	--
Pyrene	mg/kg	0.3	<0.5	--
Benz(a)anthracene	mg/kg	0.2	<0.5	--
Chrysene	mg/kg	0.2	<0.5	--
Benzo(b&k)fluoranthene	mg/kg	0.4	<0.5	--
Benzo(a)pyrene	mg/kg	0.2	<0.5	--
Indeno(1.2.3.cd)pyrene	mg/kg	0.1	<0.5	--
Dibenz(a.h)anthracene	mg/kg	<0.1	<0.5	--
Benzo(g.h.i)perylene	mg/kg	0.2	<0.5	--
TOTAL PAHs	mg/kg	2.1	<0.5	--
BTEX				
Benzene	mg/kg	<0.2	<0.1	--
Toluene	mg/kg	<0.5	<0.1	--
Ethylbenzene	mg/kg	<1	<0.1	--
meta- & para-Xylene	mg/kg	<2	<0.2	--
ortho-Xylene	mg/kg	<1	<0.1	--
Total Petroleum Hydrocarbons				
F1 (C6-C10)	mg/kg	<25	<20	--
F2 (>C10-C16)	mg/kg	<50	<50	--
F3 (>C16-C34)	mg/kg	<100	<100	--
F4 (>C34-C40)	mg/kg	<100	<100	--

Values in Bold Indicate: RPD > 50 % When average concentration is > 10 x LOR
RPD > 75 % When average concentration is 5 to 10 x LOR
RPD > 100 % When average concentration is< 5 x LOR

SOIL - Trip Blank Results

Laboratory:		Envirolab	Envirolab
Laboratory Report Number:		156541	171789
Sample ID		**Trip Blank**	**Trip Blank**
Analyte	Units		
BTEX			
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
meta- & para-Xylene	mg/kg	<2	<2
ortho-Xylene	mg/kg	<1	<1
Total Petroleum Hydrocarbons			
C6 - C9 Fraction	mg/kg	<25	<25
C10 - C14 Fraction	mg/kg	<50	<50
C15 - C28 Fraction	mg/kg	<100	<100
C29 - C36 Fraction	mg/kg	<100	<100

Notes:

--- Not Analysed

SOIL - Trip Spike Results

Laboratory:		Envirolab	Envirolab
Laboratory Report Number:		156541	171789
Sample ID		**Trip Spike**	**Trip Spike**
Analyte	Units		
BTEX			
Benzene	mg/kg	95%	103%
Toluene	mg/kg	96%	95%
Ethylbenzene	mg/kg	97%	118%
meta- & para-Xylene	mg/kg	97%	96%
ortho-Xylene	mg/kg	93%	106%

Notes:

--- Not Analysed

WATER - Blind Replicate

Sample Date		11-09-16	11-09-16	RPD
Sample Identification		**AC111116-01**	**AC111116-02**	
Analyte	Units	BH107	BH107	
Dissolved Metals				
Arsenic	µg/L	<1	<1	--
Cadmium	µg/L	<0.1	<0.1	--
Chromium	µg/L	<1	<1	--
Copper	µg/L	<1	<1	--
Lead	µg/L	1	1	0%
Mercury	µg/L	<0.05	<0.05	--
Nickel	µg/L	10	11	10%
Zinc	µg/L	32	34	6%
PAHs				
Naphthalene	µg/L	<1	<1	--
Acenaphythlene		<1	<1	--
Phenanthrene	µg/L	<1	<1	--
Anthracene	µg/L	<1	<1	--
Fluoranthene	µg/L	<1	<1	--
Benzo(a)pyrene	µg/L	<1	<1	--
Benzo(a)pyrene TEQ	µg/L	<5	<5	--
Total (+VE) PAHs	µg/L	NIL(+)VE	NIL(+)VE	--
BTEX				
Benzene	µg/L	<1	<1	--
Toluene	µg/L	<1	<1	--
Ethylbenzene	µg/L	<1	<1	--
m+p-xylene	µg/L	<2	<2	--
o-xylene	µg/L	<1	<1	--
TRH				
vTPH C_6 - C_{10} (F1)	µg/L	<10	<10	--
TRH >C_{10} - C_{16} (F2)	µg/L	<50	<50	--
TRH >C_{16}-C_{34} (F3)	µg/L	<100	<100	--
TRH >C_{34}-C_{40} (F4)	µg/L	<100	<100	--
Phenols				
Total Phenolics	mg/L	<0.05	<0.05	--
Hardness	mg/L	140	140	0.00%

Values in Bold Indicate:

RPD > 50 % When average concentration is > 10 x LOR
RPD > 75 % When average concentration is 5 to 10 x LOR
RPD > 100 % When average concentration is< 5 x LOR

WATER - Trip Blank Results

Laboratory:		Envirolab
Laboratory Report Number:		157226
Sample ID		**Trip Blank**
Analyte	Units	
BTEX		
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
meta- & para-Xylene	µg/L	<2
ortho-Xylene	µg/L	<1
Total Petroleum Hydrocarbons		
C6 - C9 Fraction	µg/L	<10

Notes:

--- Not Analysed

WATER - Trip Spike Results

Laboratory:		Envirolab
Laboratory Report Number:		157226
Sample ID		**Trip Spike**
Analyte	Units	
BTEX		
Benzene	µg/L	119%
Toluene	µg/L	120%
Ethylbenzene	µg/L	115%
meta- & para-Xylene	µg/L	119%
ortho-Xylene	µg/L	121%

Notes:

--- Not Analysed

APPENDIX I

LABORATORY REPORTS AND CERTIFICATES

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 156541

Client:

Geo-Environmental Engineering
82 Bridge St
Lane Cove
NSW 2066

Attention: Stephen McCormack

Sample log in details:

Your Reference:	**E16016BN**		
No. of samples:	38 Soils		
Date samples received / completed instructions received	02/11/16	/	02/11/16

This report replaces the R00 due to changes in project's ID as client's request.

This report replaces the R01 due to changes in samples ID.

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.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	9/11/16	/	29/11/16
Date of Preliminary Report:	Not Issued		

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Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	156541-1	156541-2	156541-4	156541-6	156541-9
Your Reference	---------- -	SM011116-01	SM011116-02	SM011116-04	SM011116-06	SM011116-09
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	106	95	89	101	93

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	156541-10	156541-11	156541-12	156541-14	156541-16
Your Reference	---------- -	SM011116-10	SM011116-11	SM011116-13	SM011116-15	SM011116-17
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	92	92	92	85	103

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	156541-17	156541-19	156541-20	156541-23	156541-24
Your Reference	---------- -	SM011116-18	SM011116-20	SM011116-21	SM011116-24	SM011116-25
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	95	103	104	106	101

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	156541-28	156541-32	156541-34	156541-37	156541-38
Your Reference	---------- -	SM011116-29	SM011116-32	SM011116-34	Trip Blank	Trip spike
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	[NA]
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	[NA]
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	95%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	96%
Ethylbenzene	mg/kg	<1	<1	<1	<1	97%
m+p-xylene	mg/kg	<2	<2	<2	<2	97%
o-Xylene	mg/kg	<1	<1	<1	<1	93%
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	101	101	95	110	97

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	156541-1	156541-2	156541-4	156541-6	156541-9
Your Reference	---------- -	SM011116-01	SM011116-02	SM011116-04	SM011116-06	SM011116-09
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	82	77	79	80	80

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	156541-10	156541-11	156541-12	156541-14	156541-16
Your Reference	---------- -	SM011116-10	SM011116-11	SM011116-13	SM011116-15	SM011116-17
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	04/11/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	81	80	79	88	80

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	156541-17	156541-19	156541-20	156541-23	156541-24
Your Reference	---------- -	SM011116-18	SM011116-20	SM011116-21	SM011116-24	SM011116-25
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	80	77	77	78	80

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	156541-28	156541-32	156541-34
Your Reference	---------- -	SM011116-29	SM011116-32	SM011116-34
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100
Surrogate o-Terphenyl	%	80	80	81

PAHs in Soil Our Reference: Your Reference	UNITS ----------	156541-1 SM011116-01	156541-6 SM011116-06	156541-9 SM011116-09	156541-10 SM011116-10	156541-11 SM011116-11
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	0.4
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	2.1
Surrogate p-Terphenyl-d14	%	124	87	81	91	88

PAHs in Soil Our Reference: Your Reference	UNITS ----------	156541-12 SM011116-13	156541-14 SM011116-15	156541-16 SM011116-17	156541-17 SM011116-18	156541-19 SM011116-20
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.4	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.2	0.1
Pyrene	mg/kg	<0.1	0.1	<0.1	0.3	0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Chrysene	mg/kg	<0.1	0.2	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.3	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.07	<0.05	0.2	0.07
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	0.81	NIL (+)VE	1.5	0.37
Surrogate p-Terphenyl-d14	%	89	87	86	85	88

PAHs in Soil Our Reference: Your Reference	UNITS ----------	156541-23 SM011116-24	156541-28 SM011116-29	156541-32 SM011116-32	156541-34 SM011116-34
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Naphthalene	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	0.2
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.2
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+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.08	0.08
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	NIL (+)VE	0.080	0.43
Surrogate p-Terphenyl-d14	%	85	90	86	88

Acid Extractable metals in soil						
Our Reference:	UNITS	156541-1	156541-2	156541-5	156541-6	156541-9
Your Reference	---------- -	SM011116-01	SM011116-02	SM011116-05	SM011116-06	SM011116-09
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Arsenic	mg/kg	<4	<4	5	<4	9
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	59	35	11	5	20
Copper	mg/kg	17	8	4	3	10
Lead	mg/kg	11	3	20	6	48
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	48	20	3	1	3
Zinc	mg/kg	33	10	29	15	87

Acid Extractable metals in soil						
Our Reference:	UNITS	156541-10	156541-11	156541-12	156541-14	156541-15
Your Reference	---------- -	SM011116-10	SM011116-11	SM011116-13	SM011116-15	SM011116-16
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Arsenic	mg/kg	12	5	12	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	95	7	4	3
Copper	mg/kg	14	38	6	17	42
Lead	mg/kg	33	20	15	17	2
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	87	1	6	<1
Zinc	mg/kg	30	62	30	24	3

Acid Extractable metals in soil						
Our Reference:	UNITS	156541-16	156541-17	156541-19	156541-20	156541-23
Your Reference	---------- -	SM011116-17	SM011116-18	SM011116-20	SM011116-21	SM011116-24
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Arsenic	mg/kg	6	4	4	<4	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	11	12	15	72
Copper	mg/kg	14	12	9	1	42
Lead	mg/kg	11	34	32	7	30
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	2	2	2	63
Zinc	mg/kg	21	25	28	5	69

Acid Extractable metals in soil						
Our Reference:	UNITS	156541-24	156541-26	156541-28	156541-29	156541-32
Your Reference	----------	SM011116-25	SM011116-27	SM011116-29	SM011116-30	SM011116-32
	-					
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Arsenic	mg/kg	<4	<4	<4	5	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	0.7
Chromium	mg/kg	12	11	4	9	12
Copper	mg/kg	3	1	1	7	23
Lead	mg/kg	6	6	8	74	170
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	1	1	2	4
Zinc	mg/kg	4	5	10	74	380

Acid Extractable metals in soil				
Our Reference:	UNITS	156541-33	156541-34	156541-36
Your Reference	----------	SM011116-33	SM011116-34	SM011116-37
	-			
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil
Date prepared	-	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	03/11/2016	03/11/2016	03/11/2016
Arsenic	mg/kg	6	6	8
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	23	13	21
Copper	mg/kg	2	24	3
Lead	mg/kg	9	420	12
Mercury	mg/kg	<0.1	0.1	<0.1
Nickel	mg/kg	3	2	2
Zinc	mg/kg	38	100	110

Moisture						
Our Reference:	UNITS	156541-1	156541-2	156541-4	156541-5	156541-6
Your Reference	---------- -	SM011116-01	SM011116-02	SM011116-04	SM011116-05	SM011116-06
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	3/11/2016	3/11/2016	3/11/2016	3/11/2016	3/11/2016
Date analysed	-	4/11/2016	4/11/2016	4/11/2016	4/11/2016	4/11/2016
Moisture	%	6.4	17	19	20	15

Moisture						
Our Reference:	UNITS	156541-9	156541-10	156541-11	156541-12	156541-14
Your Reference	---------- -	SM011116-09	SM011116-10	SM011116-11	SM011116-13	SM011116-15
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	3/11/2016	3/11/2016	3/11/2016	3/11/2016	3/11/2016
Date analysed	-	4/11/2016	4/11/2016	4/11/2016	4/11/2016	4/11/2016
Moisture	%	20	24	17	11	26

Moisture						
Our Reference:	UNITS	156541-15	156541-16	156541-17	156541-19	156541-20
Your Reference	---------- -	SM011116-16	SM011116-17	SM011116-18	SM011116-20	SM011116-21
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	3/11/2016	3/11/2016	3/11/2016	3/11/2016	3/11/2016
Date analysed	-	4/11/2016	4/11/2016	4/11/2016	4/11/2016	4/11/2016
Moisture	%	7.5	7.3	16	11	16

Moisture						
Our Reference:	UNITS	156541-23	156541-24	156541-26	156541-28	156541-29
Your Reference	---------- -	SM011116-24	SM011116-25	SM011116-27	SM011116-29	SM011116-30
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	3/11/2016	3/11/2016	3/11/2016	3/11/2016	3/11/2016
Date analysed	-	4/11/2016	4/11/2016	4/11/2016	4/11/2016	4/11/2016
Moisture	%	11	10	14	9.5	11

Moisture					
Our Reference:	UNITS	156541-32	156541-33	156541-34	156541-36
Your Reference	---------- -	SM011116-32	SM011116-33	SM011116-34	SM011116-37
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	3/11/2016	3/11/2016	3/11/2016	3/11/2016
Date analysed	-	4/11/2016	4/11/2016	4/11/2016	4/11/2016
Moisture	%	8.3	17	17	21

Organochlorine Pesticides in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	156541-6 SM011116-06 1/11/2016 Soil	156541-14 SM011116-15 1/11/2016 Soil	156541-17 SM011116-18 1/11/2016 Soil	156541-28 SM011116-29 1/11/2016 Soil	156541-32 SM011116-32 1/11/2016 Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	82	99	84	86	88

PCBs in Soil Our Reference: Your Reference	UNITS ---------- -	156541-6 SM011116-06	156541-14 SM011116-15	156541-17 SM011116-18	156541-28 SM011116-29	156541-32 SM011116-32
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/11/2016	03/11/2016	03/11/2016	03/11/2016	03/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	82	99	84	86	88

Asbestos ID - soils						
Our Reference:	UNITS	156541-6	156541-14	156541-17	156541-28	156541-32
Your Reference	---------- -	SM011116-06	SM011116-15	SM011116-18	SM011116-29	SM011116-32
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	8/11/2016	8/11/2016	8/11/2016	8/11/2016	8/11/2016
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 35g	Approx. 35g	Approx. 35g
Sample Description	-	Tan sandy soil	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil						
Our Reference:	UNITS	156541-1	156541-2	156541-5	156541-9	156541-11
Your Reference	---------- -	SM011116-01	SM011116-02	SM011116-05	SM011116-09	SM011116-11
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
Date analysed	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
pH 1:5 soil:water	pH Units	9.6	9.1	8.2	7.7	8.2

Misc Inorg - Soil						
Our Reference:	UNITS	156541-12	156541-14	156541-15	156541-16	156541-17
Your Reference	---------- -	SM011116-13	SM011116-15	SM011116-16	SM011116-17	SM011116-18
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
Date analysed	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
pH 1:5 soil:water	pH Units	7.1	6.9	8.7	8.3	7.8

Misc Inorg - Soil						
Our Reference:	UNITS	156541-19	156541-20	156541-23	156541-24	156541-26
Your Reference	---------- -	SM011116-20	SM011116-21	SM011116-24	SM011116-25	SM011116-27
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
Date analysed	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
pH 1:5 soil:water	pH Units	5.8	5.5	7.7	6.9	5.6

Misc Inorg - Soil						
Our Reference:	UNITS	156541-28	156541-29	156541-32	156541-33	156541-34
Your Reference	---------- -	SM011116-29	SM011116-30	SM011116-32	SM011116-33	SM011116-34
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
Date analysed	-	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016
pH 1:5 soil:water	pH Units	5.9	6.0	7.0	6.3	3.5

Misc Inorg - Soil		
Our Reference:	UNITS	156541-36
Your Reference	---------- -	SM011116-37
Date Sampled	----------	1/11/2016
Type of sample		Soil
Date prepared	-	07/11/2016
Date analysed	-	07/11/2016
pH 1:5 soil:water	pH Units	6.2

CEC Our Reference: Your Reference	UNITS --- -	156541-1 SM011116-01	156541-2 SM011116-02	156541-5 SM011116-05	156541-9 SM011116-09	156541-11 SM011116-11
Date Sampled	---	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Exchangeable Ca	meq/100g	12	15	6.3	27	20
Exchangeable K	meq/100g	0.2	<0.1	<0.1	0.6	0.2
Exchangeable Mg	meq/100g	2.5	1.0	0.21	1.4	2.7
Exchangeable Na	meq/100g	0.70	0.40	<0.1	0.13	<0.1
Cation Exchange Capacity	meq/100g	16	16	6.6	29	22

CEC Our Reference: Your Reference	UNITS --- -	156541-12 SM011116-13	156541-14 SM011116-15	156541-15 SM011116-16	156541-16 SM011116-17	156541-17 SM011116-18
Date Sampled	---	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Exchangeable Ca	meq/100g	4.1	10	12	14	11
Exchangeable K	meq/100g	<0.1	<0.1	<0.1	<0.1	0.4
Exchangeable Mg	meq/100g	0.49	0.36	0.76	0.81	1.7
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	4.7	10	12	15	13

CEC Our Reference: Your Reference	UNITS --- -	156541-19 SM011116-20	156541-20 SM011116-21	156541-23 SM011116-24	156541-24 SM011116-25	156541-26 SM011116-27
Date Sampled	---	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Exchangeable Ca	meq/100g	5.1	1.6	22	1.1	0.5
Exchangeable K	meq/100g	0.2	0.1	0.3	0.1	0.2
Exchangeable Mg	meq/100g	1.3	1.2	3.8	0.72	2.6
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	6.6	2.9	26	1.9	3.3

CEC Our Reference: Your Reference	UNITS ----------	156541-28 SM011116-29	156541-29 SM011116-30	156541-32 SM011116-32	156541-33 SM011116-33	156541-34 SM011116-34
Date Sampled	----------	1/11/2016	1/11/2016	1/11/2016	1/11/2016	1/11/2016
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Date analysed	-	04/11/2016	04/11/2016	04/11/2016	04/11/2016	04/11/2016
Exchangeable Ca	meq/100g	2.0	2.2	9.8	3.0	0.5
Exchangeable K	meq/100g	0.2	0.1	0.2	<0.1	0.2
Exchangeable Mg	meq/100g	0.59	0.50	0.88	2.1	<0.1
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	2.7	2.9	11	5.2	<1.0

CEC Our Reference: Your Reference	UNITS ----------	156541-36 SM011116-37
Date Sampled	----------	1/11/2016
Type of sample		Soil
Date prepared	-	04/11/2016
Date analysed	-	04/11/2016
Exchangeable Ca	meq/100g	7.3
Exchangeable K	meq/100g	0.2
Exchangeable Mg	meq/100g	1.0
Exchangeable Na	meq/100g	<0.1
Cation Exchange Capacity	meq/100g	8.5

Method ID	Methodology Summary
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-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
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-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. 'TEQ 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. 'TEQ 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. 'TEQ 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.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
Date analysed	-			03/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	156541-6	<25 || <25	LCS-4	103%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	156541-6	<25 || <25	LCS-4	103%
Benzene	mg/kg	0.2	Org-016	<0.2	156541-6	<0.2 || <0.2	LCS-4	98%
Toluene	mg/kg	0.5	Org-016	<0.5	156541-6	<0.5 || <0.5	LCS-4	97%
Ethylbenzene	mg/kg	1	Org-016	<1	156541-6	<1 || <1	LCS-4	103%
m+p-xylene	mg/kg	2	Org-016	<2	156541-6	<2 || <2	LCS-4	109%
o-Xylene	mg/kg	1	Org-016	<1	156541-6	<1 || <1	LCS-4	116%
naphthalene	mg/kg	1	Org-014	<1	156541-6	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	94	156541-6	101 || 90 || RPD: 12	LCS-4	102%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			04/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
Date analysed	-			06/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	156541-6	<50 || <50	LCS-4	100%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	156541-6	<100 || <100	LCS-4	94%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	156541-6	<100 || <100	LCS-4	96%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	156541-6	<50 || <50	LCS-4	100%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	156541-6	<100 || <100	LCS-4	94%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	156541-6	<100 || <100	LCS-4	96%
Surrogate o-Terphenyl	%		Org-003	90	156541-6	80 || 79 || RPD: 1	LCS-4	94%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
Date analysed	-			04/11/2016	156541-6	04/11/2016 || 04/11/2016	LCS-4	04/11/2016
Naphthalene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	LCS-4	106%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	LCS-4	107%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	LCS-4	99%
Anthracene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	LCS-4	107%
Pyrene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	LCS-4	116%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Benzo(b,j +k)fluoranthene	mg/kg	0.2	Org-012	<0.2	156541-6	<0.2 || <0.2	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	156541-6	<0.05 || <0.05	LCS-4	112%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	93	156541-6	87 || 84 || RPD: 4	LCS-4	137%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			03/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
Date analysed	-			03/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
Arsenic	mg/kg	4	Metals-020	<4	156541-6	<4 || <4	LCS-4	111%
Cadmium	mg/kg	0.4	Metals-020	<0.4	156541-6	<0.4 || <0.4	LCS-4	107%
Chromium	mg/kg	1	Metals-020	<1	156541-6	5 || 5 || RPD: 0	LCS-4	111%
Copper	mg/kg	1	Metals-020	<1	156541-6	3 || 3 || RPD: 0	LCS-4	110%
Lead	mg/kg	1	Metals-020	<1	156541-6	6 || 5 || RPD: 18	LCS-4	103%
Mercury	mg/kg	0.1	Metals-021	<0.1	156541-6	<0.1 || <0.1	LCS-4	84%
Nickel	mg/kg	1	Metals-020	<1	156541-6	1 || 1 || RPD: 0	LCS-4	102%
Zinc	mg/kg	1	Metals-020	<1	156541-6	15 || 23 || RPD: 42	LCS-4	103%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
Date analysed	-			04/11/2016	156541-6	04/11/2016 || 04/11/2016	LCS-4	04/11/2016
HCB	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	111%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	97%
Heptachlor	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	103%
delta-BHC	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	100%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	96%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	101%
Dieldrin	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	102%
Endrin	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	108%
pp-DDD	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	103%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	LCS-4	110%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	97	156541-6	82 || 87 || RPD: 6	LCS-4	122%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2016	156541-6	03/11/2016 || 03/11/2016	LCS-4	03/11/2016
Date analysed	-			04/11/2016	156541-6	04/11/2016 || 04/11/2016	LCS-4	04/11/2016
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	156541-6	<0.1 || <0.1	LCS-4	107%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	156541-6	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	97	156541-6	82 || 87 || RPD: 6	LCS-4	94%
QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			07/11/2016	[NT]	[NT]	LCS-4	07/11/2016
Date analysed	-			07/11/2016	[NT]	[NT]	LCS-4	07/11/2016
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-4	101%
QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			04/11/2016	[NT]	[NT]	LCS-4	04/11/2016
Date analysed	-			04/11/2016	[NT]	[NT]	LCS-4	04/11/2016
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	106%
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	88%
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	102%
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	83%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
Date analysed	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
TRHC$_6$ - C$_9$	mg/kg	156541-17	<25 || <25	156541-14	83%
TRHC$_6$ - C$_{10}$	mg/kg	156541-17	<25 || <25	156541-14	83%
Benzene	mg/kg	156541-17	<0.2 || <0.2	156541-14	83%
Toluene	mg/kg	156541-17	<0.5 || <0.5	156541-14	78%
Ethylbenzene	mg/kg	156541-17	<1 || <1	156541-14	82%
m+p-xylene	mg/kg	156541-17	<2 || <2	156541-14	86%
o-Xylene	mg/kg	156541-17	<1 || <1	156541-14	93%
naphthalene	mg/kg	156541-17	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	156541-17	95 || 97 || RPD: 2	156541-14	85%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
Date analysed	-	156541-17	04/11/2016 || 04/11/2016	156541-14	06/11/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	156541-17	<50 || <50	156541-14	116%
TRHC$_{15}$ - C$_{28}$	mg/kg	156541-17	<100 || <100	156541-14	118%
TRHC$_{29}$ - C$_{36}$	mg/kg	156541-17	<100 || <100	156541-14	79%
TRH>C$_{10}$-C$_{16}$	mg/kg	156541-17	<50 || <50	156541-14	116%
TRH>C$_{16}$-C$_{34}$	mg/kg	156541-17	<100 || <100	156541-14	118%
TRH>C$_{34}$-C$_{40}$	mg/kg	156541-17	<100 || <100	156541-14	79%
Surrogate o-Terphenyl	%	156541-17	80 || 80 || RPD: 0	156541-14	84%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
Date analysed	-	156541-17	04/11/2016 || 04/11/2016	156541-14	04/11/2016
Naphthalene	mg/kg	156541-17	<0.1 || <0.1	156541-14	96%
Acenaphthylene	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	156541-17	<0.1 || <0.1	156541-14	91%
Phenanthrene	mg/kg	156541-17	<0.1 || <0.1	156541-14	74%
Anthracene	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	156541-17	0.2 || 0.1 || RPD: 67	156541-14	75%
Pyrene	mg/kg	156541-17	0.3 || 0.1 || RPD: 100	156541-14	80%
Benzo(a)anthracene	mg/kg	156541-17	0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	156541-17	0.2 || <0.1	[NR]	[NR]
Benzo(b,j+k)fluoranthene	mg/kg	156541-17	0.3 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	156541-17	0.2 || 0.07 || RPD: 96	156541-14	60%
Indeno(1,2,3-c,d)pyrene	mg/kg	156541-17	0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(g,h,i)perylene	mg/kg	156541-17	0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	156541-17	85 || 85 || RPD: 0	156541-14	116%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
Date analysed	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
Arsenic	mg/kg	156541-17	4 || 6 || RPD: 40	156541-14	100%
Cadmium	mg/kg	156541-17	<0.4 || <0.4	156541-14	107%
Chromium	mg/kg	156541-17	11 || 13 || RPD: 17	156541-14	110%
Copper	mg/kg	156541-17	12 || 8 || RPD: 40	156541-14	106%
Lead	mg/kg	156541-17	34 || 30 || RPD: 12	156541-14	94%
Mercury	mg/kg	156541-17	<0.1 || <0.1	156541-14	82%
Nickel	mg/kg	156541-17	2 || 2 || RPD: 0	156541-14	104%
Zinc	mg/kg	156541-17	25 || 24 || RPD: 4	156541-14	90%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
Date analysed	-	156541-17	04/11/2016 || 04/11/2016	156541-14	04/11/2016
HCB	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	156541-17	<0.1 || <0.1	156541-14	89%
gamma-BHC	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	156541-17	<0.1 || <0.1	156541-14	85%
Heptachlor	mg/kg	156541-17	<0.1 || <0.1	156541-14	89%
delta-BHC	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	156541-17	<0.1 || <0.1	156541-14	86%
Heptachlor Epoxide	mg/kg	156541-17	<0.1 || <0.1	156541-14	83%
gamma-Chlordane	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	156541-17	<0.1 || <0.1	156541-14	89%
Dieldrin	mg/kg	156541-17	<0.1 || <0.1	156541-14	90%
Endrin	mg/kg	156541-17	<0.1 || <0.1	156541-14	95%
pp-DDD	mg/kg	156541-17	<0.1 || <0.1	156541-14	92%
Endosulfan II	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	156541-17	<0.1 || <0.1	156541-14	99%
Methoxychlor	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	156541-17	84 || 87 || RPD: 4	156541-14	114%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	156541-17	03/11/2016 || 03/11/2016	156541-14	03/11/2016
Date analysed	-	156541-17	04/11/2016 || 04/11/2016	156541-14	04/11/2016
Aroclor 1016	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	156541-17	<0.1 || <0.1	156541-14	101%
Aroclor 1260	mg/kg	156541-17	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	156541-17	84 || 87 || RPD: 4	156541-14	89%
QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	156541-14	07/11/2016
Date analysed	-	[NT]	[NT]	156541-14	07/11/2016
pH 1:5 soil:water	pH Units	[NT]	[NT]	156541-14	101%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD		
Date extracted	-	156541-34	03/11/2016 || 03/11/2016		
Date analysed	-	156541-34	03/11/2016 || 03/11/2016		
TRHC$_6$ - C$_9$	mg/kg	156541-34	<25 || <25		
TRHC$_6$ - C$_{10}$	mg/kg	156541-34	<25 || <25		
Benzene	mg/kg	156541-34	<0.2 || <0.2		
Toluene	mg/kg	156541-34	<0.5 || <0.5		
Ethylbenzene	mg/kg	156541-34	<1 || <1		
m+p-xylene	mg/kg	156541-34	<2 || <2		
o-Xylene	mg/kg	156541-34	<1 || <1		
naphthalene	mg/kg	156541-34	<1 || <1		
Surrogate aaa-Trifluorotoluene	%	156541-34	95 || 96 || RPD: 1		

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	156541-34	03/11/2016 || 03/11/2016
Date analysed	-	156541-34	04/11/2016 || 04/11/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	156541-34	<50 || <50
TRHC$_{15}$ - C$_{28}$	mg/kg	156541-34	<100 || <100
TRHC$_{29}$ - C$_{36}$	mg/kg	156541-34	<100 || <100
TRH>C$_{10}$-C$_{16}$	mg/kg	156541-34	<50 || <50
TRH>C$_{16}$-C$_{34}$	mg/kg	156541-34	<100 || <100
TRH>C$_{34}$-C$_{40}$	mg/kg	156541-34	<100 || <100
Surrogate o-Terphenyl	%	156541-34	81 || 82 || RPD: 1

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	156541-34	03/11/2016 || 03/11/2016
Date analysed	-	156541-34	04/11/2016 || 04/11/2016
Naphthalene	mg/kg	156541-34	<0.1 || <0.1
Acenaphthylene	mg/kg	156541-34	<0.1 || <0.1
Acenaphthene	mg/kg	156541-34	<0.1 || <0.1
Fluorene	mg/kg	156541-34	<0.1 || <0.1
Phenanthrene	mg/kg	156541-34	<0.1 || 0.2
Anthracene	mg/kg	156541-34	<0.1 || <0.1
Fluoranthene	mg/kg	156541-34	0.2 || 0.4 || RPD: 67
Pyrene	mg/kg	156541-34	0.2 || 0.5 || RPD: 86
Benzo(a)anthracene	mg/kg	156541-34	<0.1 || 0.2
Chrysene	mg/kg	156541-34	<0.1 || 0.2
Benzo(b,j+k)fluoranthene	mg/kg	156541-34	<0.2 || 0.4
Benzo(a)pyrene	mg/kg	156541-34	0.08 || 0.2 || RPD: 86
Indeno(1,2,3-c,d)pyrene	mg/kg	156541-34	<0.1 || 0.1
Dibenzo(a,h)anthracene	mg/kg	156541-34	<0.1 || <0.1
Benzo(g,h,i)perylene	mg/kg	156541-34	<0.1 || 0.1
Surrogate p-Terphenyl-d14	%	156541-34	88 || 86 || RPD: 2

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	156541-34	03/11/2016 || 03/11/2016	LCS-5	03/11/2016
Date analysed	-	156541-34	03/11/2016 || 03/11/2016	LCS-5	03/11/2016
Arsenic	mg/kg	156541-34	6 || 6 || RPD: 0	LCS-5	110%
Cadmium	mg/kg	156541-34	<0.4 || <0.4	LCS-5	106%
Chromium	mg/kg	156541-34	13 || 12 || RPD: 8	LCS-5	110%
Copper	mg/kg	156541-34	24 || 24 || RPD: 0	LCS-5	106%
Lead	mg/kg	156541-34	420 || 420 || RPD: 0	LCS-5	102%
Mercury	mg/kg	156541-34	0.1 || 0.1 || RPD: 0	LCS-5	88%
Nickel	mg/kg	156541-34	2 || 2 || RPD: 0	LCS-5	101%
Zinc	mg/kg	156541-34	100 || 100 || RPD: 0	LCS-5	102%
QUALITY CONTROL CEC	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	156541-34	04/11/2016 || 04/11/2016	LCS-5	04/11/2016
Date analysed	-	156541-34	04/11/2016 || 04/11/2016	LCS-5	04/11/2016
Exchangeable Ca	meq/100 g	156541-34	0.5 || 0.4 || RPD: 22	LCS-5	107%
Exchangeable K	meq/100 g	156541-34	0.2 || 0.2 || RPD: 0	LCS-5	102%
Exchangeable Mg	meq/100 g	156541-34	<0.1 || <0.1	LCS-5	105%
Exchangeable Na	meq/100 g	156541-34	<0.1 || <0.1	LCS-5	90%

QUALITY CONTROL CEC	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	156541-2	04/11/2016 || 04/11/2016
Date analysed	-	156541-2	04/11/2016 || 04/11/2016
Exchangeable Ca	meq/100 g	156541-2	15 || 15 || RPD: 0
Exchangeable K	meq/100 g	156541-2	<0.1 || <0.1
Exchangeable Mg	meq/100 g	156541-2	1.0 || 1.0 || RPD: 0
Exchangeable Na	meq/100 g	156541-2	0.40 || 0.39 || RPD: 3

QUALITY CONTROL CEC	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	156541-20	04/11/2016 || 04/11/2016
Date analysed	-	156541-20	04/11/2016 || 04/11/2016
Exchangeable Ca	meq/100 g	156541-20	1.6 || 1.3 || RPD: 21
Exchangeable K	meq/100 g	156541-20	0.1 || 0.1 || RPD: 0
Exchangeable Mg	meq/100 g	156541-20	1.2 || 0.95 || RPD: 23
Exchangeable Na	meq/100 g	156541-20	<0.1 || <0.1

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	156541-1	07/11/2016 || 07/11/2016
Date analysed	-	156541-1	07/11/2016 || 07/11/2016
pH 1:5 soil:water	pH Units	156541-1	9.6 || 9.6 || RPD: 0

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	156541-19	07/11/2016 || 07/11/2016
Date analysed	-	156541-19	07/11/2016 || 07/11/2016
pH 1:5 soil:water	pH Units	156541-19	5.8 || 5.8 || RPD: 0

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	156541-36	07/11/2016 || 07/11/2016
Date analysed	-	156541-36	07/11/2016 || 07/11/2016
pH 1:5 soil:water	pH Units	156541-36	6.2 || 6.2 || RPD: 0

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples 156541-6, 14, 17, 28 & 32 were sub-sampled from jars provided by the client.

Asbestos ID was analysed by Approved Identifier: Paul Ching

Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
PQL: Practical Quantitation Limit
NT: Not tested
NR: Test not required
RPD: Relative Percent Difference
NA: Test not required
<: Less than
>: Greater than
LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
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.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd
Project Mgr:	S. McCormack
Sampler:	S. McCormack
Address:	82 Bridge Street Lane Cove NSW 2066
Email:	stephen@geoenvironmental.com.au
Phone:	0431 480 980

Client Project Name and Number:	E16014BLA
PO No.:	
Envirolab Services Quote No. :	
Date results required:	
Or choose: standard / 1 day / 2 day / 3 day	5 days
Note: Inform lab in advance if urgent turnaround is required - surcharge applies	

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 5b	Combination 5	Combination 5a	OCP/OPPs	Metals (Std8)	pH	EC	Asbestos	BTEX / Volatile TRH	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
1	SM011116-01	1/11/2016	soil jar	1													1		
2	SM011116-02	1/11/2016	soil jar								1						1	1	
3	SM011116-03	1/11/2016	soil jar																
4	SM011116-04	1/11/2016	soil jar															1	
5	SM011116-05	1/11/2016	soil jar								1						1		
6	SM011116-06	1/11/2016	soil jar						1										
7	SM011116-07	1/11/2016	soil jar																
8	SM011116-08	1/11/2016	soil jar																
9	SM011116-09	1/11/2016	soil jar	1													1		
10	SM011116-10	1/11/2016	soil jar	1															
11	SM011116-11	1/11/2016	soil jar	1													1		
12	SM011116-13	1/11/2016	soil jar	1													1		

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 156541
Date Received: 2/11/16
Time Received: 11:30am
Received by: SKON
Temp: Cool/Ambient
Cooling: Ice/Icepack 14°C
Security: Intact/Broken/None

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):**	ELS
Print Name:	S. McCormack	**Print Name:**	Steph
Date & Time:	02-Nov-16	**Date & Time:**	2/11/16 (11:30am)
Signature:		**Signature:**	SK

Samples Received: Cool or Ambient (circle one)
Temperature Recieved at: (if applicable)
Transported by: Hand delivered / courier

156541

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd	**Client Project Name and Number:** E16016BN	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067
Project Mgr:	S. McCormack	**PO No.:**	**Phone: 02 9910 6200**
Sampler:	S. McCormack	**Envirolab Services Quote No. :**	**Fax: 02 9910 6201**
Address:	82 Bridge Street Lane Cove NSW 2066	**Date results required:**	**E-mail: ahie@envirolabservices.com.au**
Email:	stephen@geoenvironmental.com.au	**Or choose: standard / 1 day / 2 day / 3 day** 5 days *Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact: Aileen Hie**
Phone:	0431 480 980		

Sample information				Tests Required															Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 5b	Combination 5	Combination 5a	OCP/OPPs	Metals (Std8)	pH	EC	Asbestos	BTEX / Volatile TRH	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
13	SM011116-14	1/11/2016	Soil jar																
14	SM011116-15	1/11/2016	Soil jar						1								1		
15	SM011116-16	1/11/2016	Soil jar								1						1		
16	SM011116-17	1/11/2016	Soil jar	1													1		
17	SM011116-18	1/11/2016	Soil jar						1								1		
18	SM011116-19	1/11/2016	Soil jar																
19	SM011116-20	1/11/2016	Soil jar	1													1		
20	SM011116-21	1/11/2016	Soil jar								1						1	1	
21	SM011116-22	1/11/2016	Soil jar																
22	SM011116-23	1/11/2016	Soil jar																
23	SM011116-24	1/11/2016	Soil jar	1													1	1	
24	SM011116-25	1/11/2016	Soil jar								1						1	1	
25	SM011116-26	1/11/2016	Soil jar																

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):** ELS	**Samples Received: Cool or Ambient (circle one)**
Print Name:	S. McCormack	**Print Name:** STEPH	**Temperature Recieved at:** (if applicable)
Date & Time:	23-Aug-16	**Date & Time:** 23/11/16 1130	**Transported by: Hand delivered / courier**
Signature:		**Signature:** SK	**Page No: 2 of 3**

156541

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd
Project Mgr	S. McCormack
Sampler:	S. McCormack
Address:	82 Bridge Street Lane Cove NSW 2066
Email:	stephen@geoenvironmental.com.au
Phone:	0431 480 980

Client Project Name and Number:	E16014BLA
PO No.:	
Envirolab Services Quote No. :	
Date results required:	
Or choose: standard / 1 day / 2 day / 3 day	5 days
Note: Inform lab in advance if urgent turnaround is required - surcharge applies	

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 5b	Combination 5	Combination 5a	OCP/OPPs	Metals (Std8)	pH	EC	Asbestos	BTEX / Volatile TRH	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
26	SM011116-27	1/11/2016	Soil jar								1						1		
27	SM011116-28	1/11/2016	Soil jar																
28	SM011116-29	1/11/2016	Soil jar						1								1		
29	SM011116-30	1/11/2016	Soil jar								1						1		
30	SM011116-31	1/11/2016	Soil jar																
31	SM011116-35	1/11/2016	Soil jar																
32	SM011116-32	1/11/2016	Soil jar						1								1		
33	SM011116-33	1/11/2016	Soil jar								1						1		
34	SM011116-34	1/11/2016	Soil jar	1													1		
35	SM011116-36	1/11/2016	Soil jar																
36	SM011116-37	1/11/2016	Soil jar								1						1		
37	Trip Blank	1/11/2016	Soil jar												1				
38	Trip Spike	1/11/2016	Soil jar													1			

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):**	ELS
Print Name:	S. McCormack	**Print Name:**	STEPH
Date & Time:	23-Aug-16	**Date & Time:**	~~1~~ 2/11 1130
Signature:		**Signature:**	SK

Samples Received: Cool or Ambient (circle one)
Temperature Recieved at: (if applicable)
Transported by: Hand delivered / courier

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 157226

Client:

Geo-Environmental Engineering
82 Bridge St
Lane Cove
NSW 2066

Attention: Stephen McCormack

Sample log in details:

Your Reference:	**E16016BN**		
No. of samples:	8 Waters		
Date samples received / completed instructions received	14/11/16	/	14/11/16

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.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	21/11/16	/	17/11/16
Date of Preliminary Report:	Not Issued		

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Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference:	UNITS	157226-1	157226-2	157226-3	157226-4	157226-5
Your Reference	---------- -	AC111116-01	AC111116-02	AC111116-03	AC111116-04	AC111116-05
Date Sampled	----------	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016
Type of sample		water	water	water	water	water
Date extracted	-	14/11/2016	14/11/2016	14/11/2016	14/11/2016	14/11/2016
Date analysed	-	15/11/2016	15/11/2016	15/11/2016	15/11/2016	15/11/2016
TRHC$_6$ - C$_9$	µg/L	<10	<10	100	68	<10
TRHC$_6$ - C$_{10}$	µg/L	<10	<10	130	130	<10
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10	<10	130	130	<10
Benzene	µg/L	<1	<1	1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	103	105	110	101	96
Surrogate toluene-d8	%	108	107	103	103	105
Surrogate 4-BFB	%	101	103	100	103	103

vTRH(C6-C10)/BTEXN in Water				
Our Reference:	UNITS	157226-6	157226-7	157226-8
Your Reference	---------- -	AC111116-06	Trip Blank	Trip Spike
Date Sampled	----------	11/11/2016	11/11/2016	11/11/2016
Type of sample		water	water	water
Date extracted	-	14/11/2016	14/11/2016	14/11/2016
Date analysed	-	15/11/2016	15/11/2016	15/11/2016
TRHC$_6$ - C$_9$	µg/L	<10	<10	[NA]
TRHC$_6$ - C$_{10}$	µg/L	<10	<10	[NA]
TRHC$_6$ - C$_{10}$ less BTEX (F1)	µg/L	<10	<10	[NA]
Benzene	µg/L	<1	<1	119%
Toluene	µg/L	<1	<1	120%
Ethylbenzene	µg/L	<1	<1	115%
m+p-xylene	µg/L	<2	<2	119%
o-xylene	µg/L	<1	<1	121%
Naphthalene	µg/L	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	106	99	93
Surrogate toluene-d8	%	106	105	104
Surrogate 4-BFB	%	101	102	102

svTRH (C10-C40) in Water						
Our Reference:	UNITS	157226-1	157226-2	157226-3	157226-4	157226-5
Your Reference	----------	AC111116-01	AC111116-02	AC111116-03	AC111116-04	AC111116-05
	-					
Date Sampled	----------	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016
Type of sample		water	water	water	water	water
Date extracted	-	16/11/2016	16/11/2016	16/11/2016	16/11/2016	16/11/2016
Date analysed	-	16/11/2016	16/11/2016	16/11/2016	16/11/2016	16/11/2016
TRHC$_{10}$ - C$_{14}$	µg/L	<50	<50	260	480	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100	<100	<100	120	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100	<100	<100	<100	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	<50	<50	290	560	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	<50	<50	290	560	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	<100	<100	<100	<100	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	80	85	81	80	83

svTRH (C10-C40) in Water		
Our Reference:	UNITS	157226-6
Your Reference	----------	AC111116-06
	-	
Date Sampled	----------	11/11/2016
Type of sample		water
Date extracted	-	16/11/2016
Date analysed	-	16/11/2016
TRHC$_{10}$ - C$_{14}$	µg/L	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	<50
TRH>C$_{16}$ - C$_{34}$	µg/L	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100
Surrogate o-Terphenyl	%	91

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ----------	157226-1 AC111116-01 11/11/2016 water	157226-2 AC111116-02 11/11/2016 water	157226-3 AC111116-03 11/11/2016 water	157226-4 AC111116-04 11/11/2016 water	157226-5 AC111116-05 11/11/2016 water
Date extracted	-	16/11/2016	16/11/2016	16/11/2016	16/11/2016	16/11/2016
Date analysed	-	16/11/2016	16/11/2016	16/11/2016	16/11/2016	16/11/2016
Naphthalene	µg/L	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	81	103	89	91	94

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	157226-6 AC111116-06 11/11/2016 water
Date extracted	-	16/11/2016
Date analysed	-	16/11/2016
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	99

Total Phenolics in Water						
Our Reference:	UNITS	157226-1	157226-2	157226-3	157226-4	157226-5
Your Reference	---------- -	AC111116-01	AC111116-02	AC111116-03	AC111116-04	AC111116-05
Date Sampled	----------	11/11/2016	11/11/2016	11/11/2016	11/11/2016	11/11/2016
Type of sample		water	water	water	water	water
Date extracted	-	15/11/2016	15/11/2016	15/11/2016	15/11/2016	15/11/2016
Date analysed	-	15/11/2016	15/11/2016	15/11/2016	15/11/2016	15/11/2016
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Total Phenolics in Water		
Our Reference:	UNITS	157226-6
Your Reference	---------- -	AC111116-06
Date Sampled	----------	11/11/2016
Type of sample		water
Date extracted	-	15/11/2016
Date analysed	-	15/11/2016
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ----------	157226-1 AC111116-01 11/11/2016 water	157226-2 AC111116-02 11/11/2016 water	157226-3 AC111116-03 11/11/2016 water	157226-4 AC111116-04 11/11/2016 water	157226-5 AC111116-05 11/11/2016 water
Date prepared	-	15/11/2016	15/11/2016	15/11/2016	15/11/2016	15/11/2016
Date analysed	-	15/11/2016	15/11/2016	15/11/2016	15/11/2016	15/11/2016
Arsenic-Dissolved	µg/L	<1	<1	<1	12	1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1	<1
Lead-Dissolved	µg/L	1	1	1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	10	11	2	2	<1
Zinc-Dissolved	µg/L	32	34	3	10	3

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ----------	157226-6 AC111116-06 11/11/2016 water
Date prepared	-	15/11/2016
Date analysed	-	15/11/2016
Arsenic-Dissolved	µg/L	5
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	2
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	6
Zinc-Dissolved	µg/L	25

Method ID	Methodology Summary
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-013	Water samples are analysed directly by purge and trap GC-MS.
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-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.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/11/2016	157226-3	14/11/2016 || 14/11/2016	LCS-W1	14/11/2016
Date analysed	-			15/11/2016	157226-3	15/11/2016 || 15/11/2016	LCS-W1	15/11/2016
TRH C_6 - C_9	µg/L	10	Org-016	<10	157226-3	100 || 110 || RPD: 10	LCS-W1	115%
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	157226-3	130 || 140 || RPD: 7	LCS-W1	115%
Benzene	µg/L	1	Org-016	<1	157226-3	1 || 1 || RPD: 0	LCS-W1	122%
Toluene	µg/L	1	Org-016	<1	157226-3	<1 || <1	LCS-W1	123%
Ethylbenzene	µg/L	1	Org-016	<1	157226-3	<1 || <1	LCS-W1	108%
m+p-xylene	µg/L	2	Org-016	<2	157226-3	<2 || <2	LCS-W1	111%
o-xylene	µg/L	1	Org-016	<1	157226-3	<1 || <1	LCS-W1	113%
Naphthalene	µg/L	1	Org-013	<1	157226-3	<1 || <1	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	100	157226-3	110 || 114 || RPD: 4	LCS-W1	95%
Surrogate toluene-d8	%		Org-016	110	157226-3	103 || 102 || RPD: 1	LCS-W1	111%
Surrogate 4-BFB	%		Org-016	102	157226-3	100 || 102 || RPD: 2	LCS-W1	101%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/11/2016	[NT]	[NT]	LCS-W1	16/11/2016
Date analysed	-			16/11/2016	[NT]	[NT]	LCS-W1	16/11/2016
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	100%
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	96%
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	119%
TRH>C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	100%
TRH>C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	96%
TRH>C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	119%
Surrogate o-Terphenyl	%		Org-003	75	[NT]	[NT]	LCS-W1	93%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/11/2016	[NT]	[NT]	LCS-W1	16/11/2016
Date analysed	-			16/11/2016	[NT]	[NT]	LCS-W1	16/11/2016
Naphthalene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-W1	84%
Acenaphthylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-W1	80%
Phenanthrene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-W1	92%
Anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-W1	77%
Pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-W1	77%
Benzo(a)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chrysene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Benzo(b,j+k) fluoranthene	µg/L	2	Org-012	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	LCS-W1	102%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	90	[NT]	[NT]	LCS-W1	82%
QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/11/2016	[NT]	[NT]	LCS-W1	15/11/2016
Date analysed	-			15/11/2016	[NT]	[NT]	LCS-W1	15/11/2016
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	LCS-W1	108%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			15/11/2016	[NT]	[NT]	LCS-W2	15/11/2016
Date analysed	-			15/11/2016	[NT]	[NT]	LCS-W2	15/11/2016
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	98%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W2	99%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	93%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	88%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	103%
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	LCS-W2	106%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	92%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	95%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	157226-1	16/11/2016 || 16/11/2016	157226-2	16/11/2016
Date analysed	-	157226-1	16/11/2016 || 16/11/2016	157226-2	16/11/2016
TRHC$_{10}$ - C$_{14}$	µg/L	157226-1	<50 || <50	157226-2	117%
TRHC$_{15}$ - C$_{28}$	µg/L	157226-1	<100 || <100	157226-2	110%
TRHC$_{29}$ - C$_{36}$	µg/L	157226-1	<100 || <100	157226-2	123%
TRH>C$_{10}$ - C$_{16}$	µg/L	157226-1	<50 || <50	157226-2	117%

QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
TRH>C_{16} - C_{34}	µg/L	157226-1	<100 || <100	157226-2	110%
TRH>C_{34} - C_{40}	µg/L	157226-1	<100 || <100	157226-2	123%
Surrogate o-Terphenyl	%	157226-1	80 || 86 || RPD: 7	157226-2	85%
QUALITY CONTROL PAHs in Water	**UNITS**	**Dup. Sm#**	**Duplicate Base + Duplicate + %RPD**	**Spike Sm#**	**Spike % Recovery**
Date extracted	-	157226-1	16/11/2016 || 16/11/2016	157226-2	16/11/2016
Date analysed	-	157226-1	16/11/2016 || 16/11/2016	157226-2	16/11/2016
Naphthalene	µg/L	157226-1	<1 || <1	157226-2	81%
Acenaphthylene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Acenaphthene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Fluorene	µg/L	157226-1	<1 || <1	157226-2	71%
Phenanthrene	µg/L	157226-1	<1 || <1	157226-2	76%
Anthracene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Fluoranthene	µg/L	157226-1	<1 || <1	157226-2	64%
Pyrene	µg/L	157226-1	<1 || <1	157226-2	68%
Benzo(a)anthracene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Chrysene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Benzo(b,j+k)fluoranthene	µg/L	157226-1	<2 || <2	[NR]	[NR]
Benzo(a)pyrene	µg/L	157226-1	<1 || <1	157226-2	93%
Indeno(1,2,3-c,d)pyrene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	157226-1	<1 || <1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	157226-1	81 || 98 || RPD: 19	157226-2	81%

QUALITY CONTROL Total Phenolics in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	157226-1	15/11/2016 || 15/11/2016
Date analysed	-	157226-1	15/11/2016 || 15/11/2016
Total Phenolics (as Phenol)	mg/L	157226-1	<0.05 || <0.05

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	157226-1	15/11/2016 || 15/11/2016	157226-2	15/11/2016
Date analysed	-	157226-1	15/11/2016 || 15/11/2016	157226-2	15/11/2016
Arsenic-Dissolved	µg/L	157226-1	<1 || <1	157226-2	95%
Cadmium-Dissolved	µg/L	157226-1	<0.1 || <0.1	157226-2	98%
Chromium-Dissolved	µg/L	157226-1	<1 || <1	157226-2	88%
Copper-Dissolved	µg/L	157226-1	<1 || <1	157226-2	83%
Lead-Dissolved	µg/L	157226-1	1 || <1	157226-2	96%
Mercury-Dissolved	µg/L	157226-1	<0.05 || <0.05	157226-2	107%
Nickel-Dissolved	µg/L	157226-1	10 || 11 || RPD: 10	157226-2	87%
Zinc-Dissolved	µg/L	157226-1	32 || 32 || RPD: 0	157226-2	92%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NR: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
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.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd
Project Mgr:	McCormack
Sampler:	A. Chiem
Address:	82 Bridge Street Lane Cove NSW 2066
Email:	stephen@geoenvironmental.com.au andy@geoenvironmental.com.au
Phone:	0431 480 980

Client Project Name and Number:	E16016BN
PO No.:	
Envirolab Services Quote No. :	
Date results required:	
Or choose: standard / 1 day / 2 day / 3 day	5 days

Note: Inform lab in advance if urgent turnaround is required - surcharge applies

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 5	Combination 5a	Combination 4	TRH/BTEX	Metals (Std8)	Asbestos	VOCs	PAH	BTEX	TRH(C6-C9)/BTEX	EC	hardness	CEC/pH	Provide as much information about the sample as you can
1	AC111116-01	11/11/2016	water					1											
2	AC111116-02	11/11/2016	water					1											
3	AC111116-03	11/11/2016	water					1											
4	AC111116-04	11/11/2016	water					1											
5	AC111116-05	11/11/2016	water					1											
6	AC111116-06	11/11/2016	water					1											
7	Trip Blank	--	water												1				
8	Trip Spike	--	water											1					

ENVIROLAB GROUP

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 157226
Date Received: 14/11/2016
Time Received: 10 45
Received by: PR
Temp: Cool/Ambient 12.5
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):**	EVS
Print Name:	A. Chiem	**Print Name:**	P. Raj
Date & Time:	14/11/16	**Date & Time:**	14/11/2016 10:45
Signature:		**Signature:**	PR

Samples Received: Cool or Ambient (circle one)
Temperature Recieved at: 12.5 (if applicable)
Transported by: Hand delivered / courier

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 157226-A

Client:

Geo-Environmental Engineering
82 Bridge St
Lane Cove
NSW 2066

Attention: Stephen McCormack

Sample log in details:

Your Reference:	**E16016BN**
No. of samples:	Additional testing
Date samples received / completed instructions received	14/11/16 / 28/11/16

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.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	30/11/16 / 30/11/16
Date of Preliminary Report:	Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager

Cations in water Dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	157226-A-1 AC111116-01 11/11/2016 water	157226-A-2 AC111116-02 11/11/2016 water	157226-A-3 AC111116-03 11/11/2016 water	157226-A-4 AC111116-04 11/11/2016 water	157226-A-5 AC111116-05 11/11/2016 water
Date digested	-	29/11/2016	29/11/2016	29/11/2016	29/11/2016	29/11/2016
Date analysed	-	29/11/2016	29/11/2016	29/11/2016	29/11/2016	29/11/2016
Calcium - Dissolved	mg/L	12	12	26	38	110
Magnesium - Dissolved	mg/L	26	26	23	13	15
Hardness	mgCaCO3/L	140	140	160	150	330

Cations in water Dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	157226-A-6 AC111116-06 11/11/2016 water
Date digested	-	29/11/2016
Date analysed	-	29/11/2016
Calcium - Dissolved	mg/L	30
Magnesium - Dissolved	mg/L	30
Hardness	mgCaCO3/L	200

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.

QUALITY CONTROL Cations in water Dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			29/11/2016	157226-A-4	29/11/2016 || 29/11/2016	LCS-W1	29/11/2016
Date analysed	-			29/11/2016	157226-A-4	29/11/2016 || 29/11/2016	LCS-W1	29/11/2016
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	157226-A-4	38 || 39 || RPD: 3	LCS-W1	104%
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	157226-A-4	13 || 14 || RPD: 7	LCS-W1	104%
Hardness	mgCaCO3/L	3		[NT]	157226-A-4	150 || 150 || RPD: 0	[NR]	[NR]

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

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eurofins | mgt

Certificate of Analysis

Geo-Environmental Engineering Pty Ltd
82 Bridge St
Lane Cove
NSW 2066

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Stephen McCormack**

Report **521920-S**
Project name E16016BN
Received Date Nov 01, 2016

Client Sample ID			**SM011116-12**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S16-No00764**
Date Sampled			**Nov 01, 2016**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	66
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5

Client Sample ID			SM011116-12
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S16-No00764**
Date Sampled			**Nov 01, 2016**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108
p-Terphenyl-d14 (surr.)	1	%	81
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Heavy Metals			
Arsenic	2	mg/kg	20
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	34
Copper	5	mg/kg	17
Lead	5	mg/kg	66
Mercury	0.05	mg/kg	< 0.05
Nickel	5	mg/kg	15
Zinc	5	mg/kg	64
% Moisture	1	%	16

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Nov 08, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Nov 07, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Nov 07, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Nov 08, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Nov 07, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	Nov 07, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
% Moisture	Sydney	Nov 01, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Geo-Environmental Engineering P/L	**Order No.:**		**Received:**	Nov 1, 2016 6:00 PM
Address:	82 Bridge St Lane Cove NSW 2066	**Report #:** **Phone:** **Fax:**	521920 02 9592 0218 02 9519 9140	**Due:** **Priority:** **Contact Name:**	Nov 9, 2016 5 Day Stephen McCormack
Project Name:	E16016BN				

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	SM011116-12	Nov 01, 2016		Soil	S16-No00764	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	105			70-130	Pass	
TRH C10-C14	%	107			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	113			70-130	Pass	
Toluene	%	113			70-130	Pass	
Ethylbenzene	%	113			70-130	Pass	
m&p-Xylenes	%	112			70-130	Pass	
o-Xylene	%	113			70-130	Pass	
Xylenes - Total	%	112			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	106			70-130	Pass	
TRH C6-C10	%	98			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	105			70-130	Pass	
Acenaphthylene	%	107			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	108			70-130	Pass	
Benzo(a)pyrene	%	93			70-130	Pass	
Benzo(b&j)fluoranthene	%	84			70-130	Pass	
Benzo(k)fluoranthene	%	81			70-130	Pass	
Chrysene	%	110			70-130	Pass	
Fluoranthene	%	114			70-130	Pass	
Fluorene	%	104			70-130	Pass	
Naphthalene	%	110			70-130	Pass	
Phenanthrene	%	123			70-130	Pass	
Pyrene	%	125			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	104			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	94			70-130	Pass	
Cadmium	%	106			70-130	Pass	
Chromium	%	93			70-130	Pass	
Copper	%	94			70-130	Pass	
Lead	%	103			70-130	Pass	
Mercury	%	94			70-130	Pass	
Nickel	%	90			70-130	Pass	
Zinc	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S16-No02620	NCP	%	86			70-130	Pass	
TRH C10-C14	S16-No03259	NCP	%	108			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-No02620	NCP	%	103			70-130	Pass	
Toluene	S16-No02620	NCP	%	103			70-130	Pass	
Ethylbenzene	S16-No02620	NCP	%	102			70-130	Pass	
m&p-Xylenes	S16-No02620	NCP	%	102			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
o-Xylene	S16-No02620	NCP	%	102			70-130	Pass	
Xylenes - Total	S16-No02620	NCP	%	102			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S16-No02620	NCP	%	88			70-130	Pass	
TRH C6-C10	S16-No02620	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-No04669	NCP	%	87			70-130	Pass	
Acenaphthylene	S16-No04669	NCP	%	95			70-130	Pass	
Anthracene	S16-No04669	NCP	%	85			70-130	Pass	
Benz(a)anthracene	S16-No02486	NCP	%	109			70-130	Pass	
Benzo(a)pyrene	S16-No02486	NCP	%	111			70-130	Pass	
Benzo(b&j)fluoranthene	S16-No02486	NCP	%	108			70-130	Pass	
Benzo(k)fluoranthene	S16-No02486	NCP	%	118			70-130	Pass	
Chrysene	S16-No02486	NCP	%	118			70-130	Pass	
Fluoranthene	S16-No02486	NCP	%	123			70-130	Pass	
Fluorene	S16-No04669	NCP	%	88			70-130	Pass	
Naphthalene	S16-No04669	NCP	%	95			70-130	Pass	
Phenanthrene	S16-No02486	NCP	%	121			70-130	Pass	
Pyrene	S16-No02486	NCP	%	124			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S16-No03259	NCP	%	119			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-No01842	NCP	%	89			70-130	Pass	
Cadmium	S16-No07198	NCP	%	107			70-130	Pass	
Chromium	S16-No07198	NCP	%	86			70-130	Pass	
Copper	S16-No07198	NCP	%	72			70-130	Pass	
Lead	S16-No07198	NCP	%	86			70-130	Pass	
Mercury	S16-No07198	NCP	%	93			70-130	Pass	
Nickel	S16-No01842	NCP	%	95			70-130	Pass	
Zinc	S16-No07198	NCP	%	90			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S16-No00764	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-No03258	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-No03258	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-No03258	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-No00764	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-No00764	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-No00764	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-No00764	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-No00764	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-No00764	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S16-No00764	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-No00764	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-No02496	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S16-No03258	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-No03258	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-No03258	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-No01992	NCP	mg/kg	6.7	6.5	4.0	30%	Pass	
Cadmium	S16-No07197	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-No01992	NCP	mg/kg	18	18	1.0	30%	Pass	
Copper	S16-No01992	NCP	mg/kg	12	12	2.0	30%	Pass	
Lead	S16-No01992	NCP	mg/kg	15	16	11	30%	Pass	
Mercury	S16-No01992	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-No01992	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S16-No01992	NCP	mg/kg	11	9.5	15	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-No04537	NCP	%	20	19	7.0	30%	Pass	

Quality Control Analyte Summary Compliance

The table below is the actual occurrence of QC performed on the batch of samples within this report and as defined below

Analysis	Samples Analysed	Laboratory Duplicates Reported	Laboratory Matrix Spikes Reported	Method Blanks Reported	Laboratory Control Samples Reported
BTEX	1	1	1	1	1
Total Recoverable Hydrocarbons - 1999 NEPM	1	1	1	1	1
Total Recoverable Hydrocarbons - 2013 NEPM	1	1	1	1	1
Polycyclic Aromatic Hydrocarbons	1	1	1	1	1
Heavy Metals	1	1	1	1	1
% Moisture	1	1	NA	NA	NA

Quality Control Parameter Frequency Compliance follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure April 2011, Schedule B3, Guideline on Laboratory Analysis of Potentially Contaminated Soils and US EPA SW-846 Chapter 1: 'Quality Control'.

It comprises the following when a laboratory process batch is deemed to consist of up to 20 samples that are similar in terms of matrix and test procedure, and are processed as one unit for QC purposes. If more than 20 samples are being processed, they are considered as more than one batch.

Method blank

One method blank per process batch.

Laboratory duplicate

There should be at least one duplicate per process batch, or two duplicates if the process batch exceeds 10 samples.

Laboratory control sample (LCS)

There should be at least one LCS per process batch.

Matrix spikes

There should be one matrix spike per matrix type per process batch.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Andrew Black	Analytical Services Manager
Ryan Hamilton	Senior Analyst-Inorganic (NSW)
Ryan Hamilton	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

eurofins | mgt

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

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Geo-Environmental Engineering P/L**
Contact name:	Stephen McCormack
Project name:	E16016BN
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Nov 1, 2016 6:00 PM
Eurofins | mgt reference:	**521920**

Sample information

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

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

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

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

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Stephen McCormack - stephen@geoenvironmental.com.au.

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 171789

Client:

Geo-Environmental Engineering
82 Bridge St
Lane Cove
NSW 2066

Attention: S McCormack

Sample log in details:

Your Reference:	**E16016BN**		
No. of samples:	28 Soils		
Date samples received / completed instructions received	19/07/17	/	20/07/17

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.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	27/07/17	/	27/07/17
Date of Preliminary Report:	Not Issued		

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Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	171789-1	171789-3	171789-6	171789-7	171789-8
Your Reference	---------- -	JL190717-01	JL190717-03	JL190717-06	JL190717-07	JL190717-08
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	76	72	75	81	81

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	171789-10	171789-11	171789-14	171789-16	171789-18
Your Reference	---------- -	JL190717-10	JL190717-11	JL190717-14	JL190717-16	JL190717-18
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	79	82	78	84	83

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	171789-19	171789-21	171789-24	171789-27	171789-28
Your Reference	---------- -	JL190717-19	JL190717-21	JL190717-24	Trip Blank	Trip Spike
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	[NA]
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	[NA]
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	103%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	95%
Ethylbenzene	mg/kg	<1	<1	<1	<1	118%
m+p-xylene	mg/kg	<2	<2	<2	<2	96%
o-Xylene	mg/kg	<1	<1	<1	<1	106%
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	[NA]
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	85	81	75	83	101

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	171789-1	171789-3	171789-6	171789-7	171789-8
Your Reference	---------- -	JL190717-01	JL190717-03	JL190717-06	JL190717-07	JL190717-08
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	240	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	750	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	790	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	480	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	1,300	<50	<50	<50	<50
Surrogate o-Terphenyl	%	106	97	95	94	94

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	171789-10	171789-11	171789-14	171789-16	171789-18
Your Reference	---------- -	JL190717-10	JL190717-11	JL190717-14	JL190717-16	JL190717-18
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	93	94	92	93	92

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	171789-19	171789-21	171789-24
Your Reference	---------- -	JL190717-19	JL190717-21	JL190717-24
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	93	93	94

PAHs in Soil Our Reference: Your Reference	UNITS ----------	171789-1 JL190717-01	171789-3 JL190717-03	171789-6 JL190717-06	171789-7 JL190717-07	171789-8 JL190717-08
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.1	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.5	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	0.50	1.3	<0.05	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	90	100	92	94	93

PAHs in Soil Our Reference: Your Reference	UNITS ----------	171789-10 JL190717-10	171789-11 JL190717-11	171789-14 JL190717-14	171789-16 JL190717-16	171789-18 JL190717-18
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	<0.05	<0.05	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	0.06	<0.05	<0.05	1.0	<0.05
Surrogate p-Terphenyl-d14	%	94	97	99	90	95

PAHs in Soil Our Reference: Your Reference	UNITS ----------	171789-19 JL190717-19	171789-21 JL190717-21	171789-24 JL190717-24
Date Sampled	-	19/07/2017	19/07/2017	19/07/2017
Type of sample	----------	Soil	Soil	Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<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	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.2	0.2
Pyrene	mg/kg	<0.1	0.2	0.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.06	0.1	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	0.06	0.76	0.83
Surrogate p-Terphenyl-d14	%	99	96	103

Organochlorine Pesticides in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	171789-6 JL190717-06 19/07/2017 Soil	171789-7 JL190717-07 19/07/2017 Soil	171789-11 JL190717-11 19/07/2017 Soil	171789-14 JL190717-14 19/07/2017 Soil	171789-16 JL190717-16 19/07/2017 Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	0.6	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	95	93	95	94

Organochlorine Pesticides in soil		
Our Reference:	UNITS	171789-24
Your Reference	----------	JL190717-24
	-	
Date Sampled	----------	19/07/2017
Type of sample		Soil
Date extracted	-	21/07/2017
Date analysed	-	21/07/2017
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	%	93

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	171789-6 JL190717-06 19/07/2017 Soil	171789-7 JL190717-07 19/07/2017 Soil	171789-11 JL190717-11 19/07/2017 Soil	171789-14 JL190717-14 19/07/2017 Soil	171789-16 JL190717-16 19/07/2017 Soil
Date extracted	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	95	95	93	95	94

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- - ---------- 	171789-24 JL190717-24 19/07/2017 Soil
Date extracted	-	21/07/2017
Date analysed	-	21/07/2017
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 TCLMX	%	93

Acid Extractable metals in soil						
Our Reference:	UNITS	171789-1	171789-3	171789-4	171789-6	171789-7
Your Reference	----------	JL190717-01	JL190717-03	JL190717-04	JL190717-06	JL190717-07
	-					
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Arsenic	mg/kg	8	5	<4	4	7
Cadmium	mg/kg	0.9	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	12	15	22	16
Copper	mg/kg	34	13	1	24	29
Lead	mg/kg	590	74	14	9	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	14	9	2	27	24
Zinc	mg/kg	250	75	21	30	39

Acid Extractable metals in soil						
Our Reference:	UNITS	171789-8	171789-9	171789-10	171789-11	171789-12
Your Reference	----------	JL190717-08	JL190717-09	JL190717-10	JL190717-11	JL190717-12
	-					
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Arsenic	mg/kg	<4	6	4	14	11
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	9	9	10	12
Copper	mg/kg	<1	9	11	8	2
Lead	mg/kg	1	43	29	65	13
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	2	2	3	2
Zinc	mg/kg	2	40	11	94	51

Acid Extractable metals in soil						
Our Reference:	UNITS	171789-14	171789-15	171789-16	171789-18	171789-19
Your Reference	----------	JL190717-14	JL190717-15	JL190717-16	JL190717-18	JL190717-19
	-					
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Arsenic	mg/kg	5	4	5	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	0.5
Chromium	mg/kg	12	9	12	3	11
Copper	mg/kg	11	8	26	4	19
Lead	mg/kg	42	86	180	3	170
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Nickel	mg/kg	2	3	3	<1	3
Zinc	mg/kg	36	130	180	18	220

Acid Extractable metals in soil						
Our Reference:	UNITS	171789-20	171789-21	171789-22	171789-24	171789-26
Your Reference	----------	JL190717-20	JL190717-21	JL190717-22	JL190717-24	JL190717-26
	-					
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Arsenic	mg/kg	<4	5	<4	6	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.7	<0.4
Chromium	mg/kg	2	11	5	14	8
Copper	mg/kg	<1	28	<1	45	3
Lead	mg/kg	6	280	9	190	8
Mercury	mg/kg	<0.1	2.0	<0.1	0.1	<0.1
Nickel	mg/kg	<1	3	1	6	2
Zinc	mg/kg	19	270	6	380	25

Moisture						
Our Reference:	UNITS	171789-1	171789-3	171789-4	171789-6	171789-7
Your Reference	---------- -	JL190717-01	JL190717-03	JL190717-04	JL190717-06	JL190717-07
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Moisture	%	7.8	21	15	2.6	6.1

Moisture						
Our Reference:	UNITS	171789-8	171789-9	171789-10	171789-11	171789-12
Your Reference	---------- -	JL190717-08	JL190717-09	JL190717-10	JL190717-11	JL190717-12
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Moisture	%	4.4	22	17	7.8	9.3

Moisture						
Our Reference:	UNITS	171789-14	171789-15	171789-16	171789-18	171789-19
Your Reference	---------- -	JL190717-14	JL190717-15	JL190717-16	JL190717-18	JL190717-19
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Moisture	%	22	20	15	12	7.9

Moisture						
Our Reference:	UNITS	171789-20	171789-21	171789-22	171789-24	171789-26
Your Reference	---------- -	JL190717-20	JL190717-21	JL190717-22	JL190717-24	JL190717-26
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/07/2017	21/07/2017	21/07/2017	21/07/2017	21/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Moisture	%	9.8	18	12	17	13

Asbestos ID - soils				
Our Reference:	UNITS	171789-11	171789-16	171789-24
Your Reference	----------	JL190717-11	JL190717-16	JL190717-24
	-			
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil
Date analysed	-	27/07/2017	27/07/2017	27/07/2017
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil						
Our Reference:	UNITS	171789-1	171789-3	171789-4	171789-6	171789-8
Your Reference	---------- -	JL190717-01	JL190717-03	JL190717-04	JL190717-06	JL190717-08
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
pH 1:5 soil:water	pH Units	6.6	7.3	7.4	8.6	8.5

Misc Inorg - Soil						
Our Reference:	UNITS	171789-9	171789-10	171789-11	171789-12	171789-14
Your Reference	---------- -	JL190717-09	JL190717-10	JL190717-11	JL190717-12	JL190717-14
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
pH 1:5 soil:water	pH Units	7.7	7.2	6.8	6.5	6.9

Misc Inorg - Soil						
Our Reference:	UNITS	171789-15	171789-16	171789-18	171789-19	171789-20
Your Reference	---------- -	JL190717-15	JL190717-16	JL190717-18	JL190717-19	JL190717-20
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
pH 1:5 soil:water	pH Units	8.0	5.7	6.4	6.3	6.4

Misc Inorg - Soil					
Our Reference:	UNITS	171789-21	171789-22	171789-24	171789-26
Your Reference	---------- -	JL190717-21	JL190717-22	JL190717-24	JL190717-26
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017
pH 1:5 soil:water	pH Units	6.2	6.7	6.2	6.2

CEC Our Reference: Your Reference	UNITS ----------	171789-1 JL190717-01	171789-3 JL190717-03	171789-4 JL190717-04	171789-6 JL190717-06	171789-8 JL190717-08
	-					
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Exchangeable Ca	meq/100g	19	5.8	5.2	25	0.3
Exchangeable K	meq/100g	0.2	<0.1	0.2	0.3	<0.1
Exchangeable Mg	meq/100g	1.0	0.40	0.57	4.3	<0.1
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	0.15	<0.1
Cation Exchange Capacity	meq/100g	20	6.3	6.0	29	<1.0

CEC Our Reference: Your Reference	UNITS ----------	171789-9 JL190717-09	171789-10 JL190717-10	171789-11 JL190717-11	171789-12 JL190717-12	171789-14 JL190717-14
	-					
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Exchangeable Ca	meq/100g	18	5.0	5.5	3.5	11
Exchangeable K	meq/100g	0.5	0.2	0.1	<0.1	0.6
Exchangeable Mg	meq/100g	2.2	1.3	0.74	0.60	0.75
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	<0.1	0.14
Cation Exchange Capacity	meq/100g	20	6.6	6.4	4.2	12

CEC Our Reference: Your Reference	UNITS ----------	171789-15 JL190717-15	171789-16 JL190717-16	171789-18 JL190717-18	171789-19 JL190717-19	171789-20 JL190717-20
	-					
Date Sampled	----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Exchangeable Ca	meq/100g	20	5.4	1.4	4.9	1.4
Exchangeable K	meq/100g	0.5	0.2	<0.1	0.2	<0.1
Exchangeable Mg	meq/100g	1.3	0.57	0.19	0.95	0.24
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	22	6.2	1.7	6.1	1.7

CEC Our Reference: Your Reference	UNITS ----------	171789-21 JL190717-21	171789-22 JL190717-22	171789-24 JL190717-24	171789-26 JL190717-26
Date Sampled	- ----------	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Date analysed	-	24/07/2017	24/07/2017	24/07/2017	24/07/2017
Exchangeable Ca	meq/100g	4.6	1.5	4.9	2.9
Exchangeable K	meq/100g	0.3	<0.1	0.2	<0.1
Exchangeable Mg	meq/100g	1.2	0.11	0.89	0.53
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	6.1	1.7	6.1	3.5

Method ID	Methodology Summary
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.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
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-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. 'TEQ 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. 'TEQ 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. 'TEQ 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-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.
Metals-020	Determination of various metals by ICP-AES.

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
Date analysed	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
TRHC$_{6}$ - C$_{9}$	mg/kg	25	Org-016	<25	171789-6	<25 || <25	LCS-7	100%
TRHC$_{6}$ - C$_{10}$	mg/kg	25	Org-016	<25	171789-6	<25 || <25	LCS-7	100%
Benzene	mg/kg	0.2	Org-016	<0.2	171789-6	<0.2 || <0.2	LCS-7	86%
Toluene	mg/kg	0.5	Org-016	<0.5	171789-6	<0.5 || <0.5	LCS-7	78%
Ethylbenzene	mg/kg	1	Org-016	<1	171789-6	<1 || <1	LCS-7	110%
m+p-xylene	mg/kg	2	Org-016	<2	171789-6	<2 || <2	LCS-7	114%
o-Xylene	mg/kg	1	Org-016	<1	171789-6	<1 || <1	LCS-7	113%
naphthalene	mg/kg	1	Org-014	<1	171789-6	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	94	171789-6	75 || 80 || RPD: 6	LCS-7	90%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
Date analysed	-			24/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	171789-6	<50 || <50	LCS-7	107%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	171789-6	<100 || <100	LCS-7	106%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	171789-6	<100 || <100	LCS-7	106%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	171789-6	<50 || <50	LCS-7	107%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	171789-6	<100 || <100	LCS-7	106%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	171789-6	<100 || <100	LCS-7	106%
Surrogate o-Terphenyl	%		Org-003	89	171789-6	95 || 95 || RPD: 0	LCS-7	101%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
Date analysed	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	LCS-7	104%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	LCS-7	105%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	LCS-7	107%
Anthracene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	LCS-7	102%
Pyrene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	LCS-7	101%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	LCS-7	118%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012	<0.2	171789-6	<0.2 || <0.2	[NR]	[NR]

Client Reference: E16016BN

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	171789-6	<0.05 || <0.05	LCS-7	114%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	100	171789-6	92 || 92 || RPD: 0	LCS-7	120%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-10	21/07/2017
Date analysed	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-10	21/07/2017
HCB	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	84%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	102%
Heptachlor	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	106%
delta-BHC	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	99%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	102%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	98%
Dieldrin	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	108%
Endrin	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	97%
pp-DDD	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	102%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	LCS-10	87%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	99	171789-6	95 || 97 || RPD: 2	LCS-10	117%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-10	21/07/2017
Date analysed	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-10	21/07/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	171789-6	<0.1 || <0.1	LCS-10	97%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	171789-6	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	99	171789-6	95 || 97 || RPD: 2	LCS-10	97%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
Date analysed	-			21/07/2017	171789-6	21/07/2017 || 21/07/2017	LCS-7	21/07/2017
Arsenic	mg/kg	4	Metals-020	<4	171789-6	4 || 6 || RPD: 40	LCS-7	109%
Cadmium	mg/kg	0.4	Metals-020	<0.4	171789-6	<0.4 || <0.4	LCS-7	100%
Chromium	mg/kg	1	Metals-020	<1	171789-6	22 || 23 || RPD: 4	LCS-7	104%
Copper	mg/kg	1	Metals-020	<1	171789-6	24 || 27 || RPD: 12	LCS-7	106%
Lead	mg/kg	1	Metals-020	<1	171789-6	9 || 11 || RPD: 20	LCS-7	104%
Mercury	mg/kg	0.1	Metals-021	<0.1	171789-6	<0.1 || <0.1	LCS-7	105%
Nickel	mg/kg	1	Metals-020	<1	171789-6	27 || 31 || RPD: 14	LCS-7	99%
Zinc	mg/kg	1	Metals-020	<1	171789-6	30 || 38 || RPD: 24	LCS-7	101%
QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			24/07/2017	[NT]	[NT]	LCS-7	24/07/2017
Date analysed	-			24/07/2017	[NT]	[NT]	LCS-7	24/07/2017
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-7	101%
QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			24/07/2017	[NT]	[NT]	LCS-1	24/07/2017
Date analysed	-			24/07/2017	[NT]	[NT]	LCS-1	24/07/2017
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	99%
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	105%
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	96%

QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Exchangeable Na	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-1	101%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
Date analysed	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
TRH C_6 - C_9	mg/kg	171789-18	<25 || <25	171789-7	90%
TRH C_6 - C_{10}	mg/kg	171789-18	<25 || <25	171789-7	90%
Benzene	mg/kg	171789-18	<0.2 || <0.2	171789-7	77%
Toluene	mg/kg	171789-18	<0.5 || <0.5	171789-7	69%
Ethylbenzene	mg/kg	171789-18	<1 || <1	171789-7	99%
m+p-xylene	mg/kg	171789-18	<2 || <2	171789-7	103%
o-Xylene	mg/kg	171789-18	<1 || <1	171789-7	102%
naphthalene	mg/kg	171789-18	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	171789-18	83 || 79 || RPD: 5	171789-7	81%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
Date analysed	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
TRH C_{10} - C_{14}	mg/kg	171789-18	<50 || <50	171789-7	101%
TRH C_{15} - C_{28}	mg/kg	171789-18	<100 || <100	171789-7	102%
TRH C_{29} - C_{36}	mg/kg	171789-18	<100 || <100	171789-7	103%
TRH >C_{10}-C_{16}	mg/kg	171789-18	<50 || <50	171789-7	101%
TRH >C_{16}-C_{34}	mg/kg	171789-18	<100 || <100	171789-7	102%
TRH >C_{34}-C_{40}	mg/kg	171789-18	<100 || <100	171789-7	103%
Surrogate o-Terphenyl	%	171789-18	92 || 91 || RPD: 1	171789-7	94%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
Date analysed	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
Naphthalene	mg/kg	171789-18	<0.1 || <0.1	171789-7	105%
Acenaphthylene	mg/kg	171789-18	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	171789-18	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	171789-18	<0.1 || <0.1	171789-7	102%
Phenanthrene	mg/kg	171789-18	<0.1 || <0.1	171789-7	106%
Anthracene	mg/kg	171789-18	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	171789-18	<0.1 || <0.1	171789-7	99%
Pyrene	mg/kg	171789-18	<0.1 || <0.1	171789-7	98%
Benzo(a)anthracene	mg/kg	171789-18	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	171789-18	<0.1 || <0.1	171789-7	117%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(b,j+k)fluoranthene	mg/kg	171789-18	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	171789-18	<0.05 || <0.05	171789-7	122%
Indeno(1,2,3-c,d)pyrene	mg/kg	171789-18	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	171789-18	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	171789-18	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	171789-18	95 || 96 || RPD: 1	171789-7	114%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	[NT]	[NT]
Date analysed	-	[NT]	[NT]
HCB	mg/kg	[NT]	[NT]
alpha-BHC	mg/kg	[NT]	[NT]
gamma-BHC	mg/kg	[NT]	[NT]
beta-BHC	mg/kg	[NT]	[NT]
Heptachlor	mg/kg	[NT]	[NT]
delta-BHC	mg/kg	[NT]	[NT]
Aldrin	mg/kg	[NT]	[NT]
Heptachlor Epoxide	mg/kg	[NT]	[NT]
gamma-Chlordane	mg/kg	[NT]	[NT]
alpha-chlordane	mg/kg	[NT]	[NT]
Endosulfan I	mg/kg	[NT]	[NT]
pp-DDE	mg/kg	[NT]	[NT]
Dieldrin	mg/kg	[NT]	[NT]
Endrin	mg/kg	[NT]	[NT]
pp-DDD	mg/kg	[NT]	[NT]
Endosulfan II	mg/kg	[NT]	[NT]
pp-DDT	mg/kg	[NT]	[NT]
Endrin Aldehyde	mg/kg	[NT]	[NT]
Endosulfan Sulphate	mg/kg	[NT]	[NT]
Methoxychlor	mg/kg	[NT]	[NT]
Surrogate TCMX	%	[NT]	[NT]

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	[NT]	[NT]
Date analysed	-	[NT]	[NT]
Aroclor 1016	mg/kg	[NT]	[NT]
Aroclor 1221	mg/kg	[NT]	[NT]
Aroclor 1232	mg/kg	[NT]	[NT]
Aroclor 1242	mg/kg	[NT]	[NT]
Aroclor 1248	mg/kg	[NT]	[NT]
Aroclor 1254	mg/kg	[NT]	[NT]
Aroclor 1260	mg/kg	[NT]	[NT]
Surrogate TCLMX	%	[NT]	[NT]

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
Date analysed	-	171789-18	21/07/2017 || 21/07/2017	171789-7	21/07/2017
Arsenic	mg/kg	171789-18	<4 || <4	171789-7	97%
Cadmium	mg/kg	171789-18	<0.4 || <0.4	171789-7	87%
Chromium	mg/kg	171789-18	3 || 3 || RPD: 0	171789-7	119%
Copper	mg/kg	171789-18	4 || 4 || RPD: 0	171789-7	104%
Lead	mg/kg	171789-18	3 || 4 || RPD: 29	171789-7	78%
Mercury	mg/kg	171789-18	<0.1 || <0.1	171789-7	109%
Nickel	mg/kg	171789-18	<1 || <1	171789-7	123%
Zinc	mg/kg	171789-18	18 || 18 || RPD: 0	171789-7	81%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	171789-1	21/07/2017 || 21/07/2017
Date analysed	-	171789-1	21/07/2017 || 21/07/2017
Arsenic	mg/kg	171789-1	8 || 6 || RPD: 29
Cadmium	mg/kg	171789-1	0.9 || 0.7 || RPD: 25
Chromium	mg/kg	171789-1	16 || 13 || RPD: 21
Copper	mg/kg	171789-1	34 || 43 || RPD: 23
Lead	mg/kg	171789-1	590 || 470 || RPD: 23
Mercury	mg/kg	171789-1	<0.1 || <0.1
Nickel	mg/kg	171789-1	14 || 13 || RPD: 7
Zinc	mg/kg	171789-1	250 || 220 || RPD: 13

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	171789-1	24/07/2017 || 24/07/2017
Date analysed	-	171789-1	24/07/2017 || 24/07/2017
pH 1:5 soil:water	pH Units	171789-1	6.6 || 6.9 || RPD: 4
QUALITY CONTROL CEC	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	171789-1	24/07/2017 || 24/07/2017
Date analysed	-	171789-1	24/07/2017 || 24/07/2017
Exchangeable Ca	meq/100 g	171789-1	19 || 20 || RPD: 5
Exchangeable K	meq/100 g	171789-1	0.2 || 0.2 || RPD: 0
Exchangeable Mg	meq/100 g	171789-1	1.0 || 1.0 || RPD: 0
Exchangeable Na	meq/100 g	171789-1	<0.1 || <0.1
QUALITY CONTROL CEC	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	171789-15	24/07/2017 || 24/07/2017
Date analysed	-	171789-15	24/07/2017 || 24/07/2017
Exchangeable Ca	meq/100 g	171789-15	20 || 20 || RPD: 0
Exchangeable K	meq/100 g	171789-15	0.5 || 0.5 || RPD: 0
Exchangeable Mg	meq/100 g	171789-15	1.3 || 1.5 || RPD: 14
Exchangeable Na	meq/100 g	171789-15	<0.1 || <0.1
QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	171789-16	24/07/2017 || 24/07/2017
Date analysed	-	171789-16	24/07/2017 || 24/07/2017
pH 1:5 soil:water	pH Units	171789-16	5.7 || 5.9 || RPD: 3

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples 171789- 11, 16 & 24 were sub-sampled from jars provided by the client.

Asbestos ID was analysed by Approved Identifier: Matt Tang

Asbestos ID was authorised by Approved Signatory: Lulu Scott

INS: Insufficient sample for this test
NR: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

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.

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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
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.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd	**Client Project Name and Number:** E16016BN	**Envirolab Services** **12 Ashley St, Chatswood, NSW, 2067**
Project Mgr:	S. McCormack	**PO No.:**	**Phone: 02 9910 6200**
Sampler:	J. Long	**Envirolab Services Quote No. :**	**Fax: 02 9910 6201**
Address:	82 Bridge Street Lane Cove NSW 2066	**Date results required:** **Or choose: standard / 1 day / 2 day / 3 day** Std	**E-mail: ahie@envirolabservices.com.au**
Email:	stephen@geoenvironmental.com.au josh@geoenvironmental.com.au	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact: Aileen Hie**
Phone:	0431 480 980		

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 5b	Combination 5	Combination 5a	OCP/OPPs	Metals (Std8)	pH	VOCs	PAHs	BTEX / Volatile TRH	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
1	JL190717-01	19-07-17	soil jar	1													1		
2	JL190717-02	19-07-17	soil jar																
3	JL190717-03	19-07-17	soil jar	1													1		
4	JL190717-04	19-07-17	soil jar								1						1		
5	JL190717-05	19-07-17	soil jar																
6	JL190717-06	19-07-17	soil jar					1									1		
7	JL190717-07	19-07-17	soil jar					1											
8	JL190717-08	19-07-17	soil jar	1													1		
9	JL190717-09	19-07-17	soil jar								1						1		
10	JL190717-10	19-07-17	soil jar	1													1		
11	JL190717-11	19-07-17	soil jar						1								1		
12	JL190717-12	19-07-17	soil jar								1						1		
13	JL190717-13	19-07-17	soil jar																

Envirolab Service
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 171789
Date Received: ~~20~~ 19/7/17
Time Received: 15:30
Received by: MT
Temp: Cool/Ambient 16.3
Cooling: Ice/icepack
Security: Intact/Broken/None

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):** ELS	**Samples Received: Cool or Ambient (circle one)**
Print Name:	S. McCormack	**Print Name:** MT	**Temperature Recieved at:** 16.3 **(if applicable)**
Date & Time:	19-Jul-17	**Date & Time:** 19/7/17 15:30 COC rec'd 20/7/17 14:00	**Transported by: Hand delivered / courier**
Signature:		**Signature:**	**Page No: 1 of 3**

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd
Project Mgr:	S. McCormack
Sampler:	J. Long
Address:	82 Bridge Street Lane Cove NSW 2066
Email:	stephen@geoenvironmental.com.au josh@geoenvironmental.com.au
Phone:	0431 480 980

Client Project Name and Number:	E16016BN
PO No.:	
Envirolab Services Quote No. :	
Date results required:	
Or choose: standard / 1 day / 2 day / 3 day	Std
Note: Inform lab in advance if urgent turnaround is required - surcharge applies	

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 5b	Combination 5	Combination 5a	OCP/OPPs	Metals (Std8)	pH	VOCs	PAHs	BTEX / Volatile TRH	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
14	JL190717-14	19-07-17	soil jar					1									1		
15	JL190717-15	19-07-17	soil jar								1						1		
16	JL190717-16	19-07-17	soil jar						1								1		
17	JL190717-17	19-07-17	soil jar																
18	JL190717-18	19-07-17	soil jar	1													1		
19	JL190717-19	19-07-17	soil jar	1													1		
20	JL190717-20	19-07-17	soil jar								1						1		
21	JL190717-21	19-07-17	soil jar	1													1		
22	JL190717-22	19-07-17	soil jar								1						1		
23	JL190717-23	19-07-17	soil jar																
24	JL190717-24	19-07-17	soil jar						1								1		
25	JL190717-25	19-07-17	soil jar																
26	JL190717-26	19-07-17	soil jar								1						1		

Relinquished by (company):	Geo-Environmental Engineering
Print Name:	S. McCormack
Date & Time:	19-Jul-17
Signature:	

Received by (company):	ELS
Print Name:	MT.
Date & Time:	19/7/17 15:30 CoC recd 20/7/17 14:00
Signature:	

Samples Received: Cool or Ambient (circle one)
Temperature Recieved at: (if applicable)
Transported by: Hand delivered / courier

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd	**Client Project Name and Number:** E16016BN	**Envirolab Services** **12 Ashley St, Chatswood, NSW, 2067**
Project Mgr:	S. McCormack	**PO No.:**	**Phone: 02 9910 6200**
Sampler:	J. Long	**Envirolab Services Quote No. :**	**Fax: 02 9910 6201**
Address:	82 Bridge Street Lane Cove NSW 2066	**Date results required:** **Or choose: standard / 1 day / 2 day / 3 day** Std *Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**E-mail: ahie@envirolabservices.com.au** **Contact: Aileen Hie**
Email:	stephen@geoenvironmental.com.au josh@geoenvironmental.com.au		
Phone:	0431 480 980		

Sample information				Tests Required														Comments
Envirolab Sample ID	**Client Sample ID**	**Date sampled**	**Type of sample**	**Combination 3**	**Combination 3a**	**Combination 4**	**Combination 5b**	**Combination 5**	**Combination 5a**	**OCP/OPPs**	**Metals (Std8)**	**pH**	**VOCs**	**PAHs**	**BTEX / Volatile TRH**	**BTEX**	**CEC/pH**	**TRH/BTEX**	**Provide as much information about the sample as you can**
27	Trip Blank	19-07-17	Soil Jar												1				
28	Trip Spike	19-07-17	Soil Jar													1			

not rec'd.

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):**	**Samples Received: Cool or Ambient (circle one)**
Print Name:	S. McCormack	**Print Name:**	**Temperature Recieved at: (if applicable)**
Date & Time:	19-Jul-17	**Date & Time:**	**Transported by: Hand delivered / courier**
Signature:		**Signature:**	**Page No: 1 of 3**