

**STAGE 1 PRELIMINARY
ENVIRONMENTAL SITE ASSESSMENT**

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

PREPARED FOR TONY SOUEID
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EXECUTIVE SUMMARY

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by Tony Soueid to undertake a preliminary 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 4,200m² 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, with the future development to include a basement (single or multiple levels) and up to six levels above ground.

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 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. In this regard, GEE has completed a *Stage 1 - Preliminary Site Investigation* (Stage 1 - PSI) with a limited and targeted sampling and analysis program, 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 limited 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 nine borehole locations positioned in accessible areas across the site and targeting areas of potential contamination. It is noted that the number of sampling points does not satisfy the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards, however, it was considered sufficient as a preliminary assessment 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 22 primary soil samples from the 9 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 development, future users of the site and the environment.

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 ($4.5 < \text{pH} < 6.5$) 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

In summary, the Stage 1 PSI completed herein is considered to be sufficient for the purpose of assessing the planning proposal. The limited sampling and analysis program conducted at the site identified no significant contamination issue, however, further investigation in the form of a Stage 2 Detailed Site Investigation (Stage 2 DSI), is warranted and would be appropriate as part of a subsequent Development Application.

Any contamination identified by the Stage 2 DSI (if any) would be required to be addressed in detail as part of the conditions of development consent, and any remediation (if any) carried out prior to any occupation of the site for the proposed land-use.



1 PROJECT INFORMATION

1.1 INTRODUCTION AND OBJECTIVES

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by Tony Soueid to undertake a preliminary 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 4,200m² 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 with likely development to include a basement (single or multiple levels) and up to six levels above-ground.

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 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.

In this regard, GEE has completed a *Stage 1 - Preliminary Site Investigation* (Stage 1 - PSI) with a limited and targeted sampling and analysis program, 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 was 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 nine boreholes (BH101 to BH109) 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 Illawarra 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 Sleight Limited which is known to have operated Golden Fleece Service Stations. Caltex purchased the site from Golden Fleece (HC Sleight Limited) in 1995 before being transferred to an individual (Daneil 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 by Stephen McCormack from GEE, on the 1st of November 2016 and comprised:

- ◇ The drilling of nine boreholes (BH101 to BH109) 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

Prior to commencement of the bores, a scan for potential underground services and utilities was completed and cross-checked with the results of a Dial Before you Dig (DBYD) search.

Nine boreholes (BH101 to BH109) were drilled in accessible areas across the site and were also positioned to provide even coverage (subject to existing obstructions). 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 which were boreholes BH108 and BH109.



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 2016						
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	--
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 31 primary samples were collected from the nine 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	✓	---	---	---	---
Total				22	17	13	5	5



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	---	---	---	

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

8.1 AESTHETICS

For any contamination assessment, it is necessary to assess the human health and ecological risks associated with the presence of site contamination. In this regard, appropriate human health and ecological investigation and/or screening levels need to be defined and are referred herein as the Site Assessment Criteria (SAC).

Also, in accordance with Appendix I of DEC, 2006 guidelines (reference 8), residential sites need to address aesthetics such as highly malodorous soils. Aesthetics was continually assessed in the field during borehole drilling and logging and no significant and adverse observations were noted.

8.2 SOIL SAMPLES

8.2.1 Ecological Investigation / Screening Levels

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

8.2.1.1 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 land-use at ground floor level. For the proposed development, which includes a basement, commercial land-use on ground floor with residential living areas above, the most appropriate land use scenario is commercial / industrial, however GEE has been conservative and adopted the residential setting.

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

8.2.1.2 ESLs

ESLs have been developed for selected petroleum hydrocarbon compounds (specifically TRH⁴, 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.

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



With respect to land-use, residential ESLs have been adopted and like with EILs, these are considered to be conservative considering the proposed development is expected to include a basement with commercial tenancies on ground floor.

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

8.2.2 Health Investigation Levels

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).

8.2.2.1 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 are generally based on the land-use at ground floor level. For the proposed development, which includes a basement, commercial land-use on ground floor with residential living areas above, the most appropriate land use scenario is commercial / industrial (i.e. exposure setting HIL-D), however GEE has been conservative and adopted the HIL-B setting.

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**.

8.2.2.2 HSLs

Health Screening Levels (HSLs) were developed for selected petroleum hydrocarbons (specifically TRH C₆ – C₁₀ or F1 fraction, TRH >C₁₀ – C₁₆ 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 Friebe & Nadebaum (2011 – reference 14).



Typically, the assessment of petroleum hydrocarbon contamination is driven by human health concerns relating to volatile components (e.g. TRH C₆ – C₁₀, TRH >C₁₀ – C₁₆ and Benzene) which have the potential to cause health issues via vapour intrusion. For these components, 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 sand soil at a shallow depth (0m to 1m) have been adopted to screen the soil analytical results because they are most conservative. Also the upper fill layer at the site is predominantly granular (i.e. sand and gravel). If a sample exceedance occurs then the criteria will be adjusted to suit actual soil type and depth.

The various land-use scenarios are based on the land-use at ground level. For multistorey buildings where non-residential uses (e.g. car parking or commercial use) exist in a basement or at ground level, then land use category D (commercial/industrial) should be applied, however, GEE has been conservative and adopted category B (residential with minimal access to soil).

For TRH fractions, where there are no vapour intrusion HSLs available, management limits have been adopted (Table 1B(7) – reference 13). 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 commercial / industrial sites because this is the land-use proposed for the ground floor and there will be a basement below.

Finally, where there are no HILs or management limits available for a particular contaminant, GEE has adopted HSLs recommended for direct contact on commercial/industrial sites (Table A4 – reference 17).

A summary of the HSLs appropriate 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)	
	Exposure Setting D – Commercial / Industrial	Reference	Commercial / Industrial	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	1	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 1A(3) – 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	--	--



8.3 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 Friebe & Nadebaum (2011 – reference 14).

Typically the assessment of petroleum hydrocarbon contamination is driven by human health concerns relating to volatile components (e.g. TRH C₆ – C₁₀ (F1), TRH >C₁₀ – C₁₆ (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 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**) and is provided in below.

9.1.1 Metals

A total of 22 primary samples were analysed 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	22	<4	12	500	100	0	0
Cadmium	22	<0.4	0.7	150	--	0	0
Chromium	22	3	95	500	190	0	0
Copper	22	1	42	30,000	75	0	3
Lead	22	2	420	1,200	1,100	0	0
Mercury	22	<0.1	0.1	120	--	0	0
Nickel	22	1	87	1,200	15	0	4
Zinc	22	3	380	60,000	170	0	3

In summary, there were no samples that contained metal concentrations above the health-based SAC, however, eight 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

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
Nickel			
SM011116-01	48	5	230
SM011116-02	20	5	230
SM011116-11/12	87	5	290
SM011116-24	63	5	320
Zinc			
SM011116-32	380	75	510
SM011116-34	100	75	95
SM011116-37	110	75	430

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. Based on the analytical results, GEE considers that the elevated zinc concentration at this location does 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, and
- ◇ There will be no ecological exposure pathway available, 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.

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

9.1.2 TRH and BTEX

A total of 17 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	
TRH C6-C10 (F1)	17	<25	<25	45	180	0
TRH >C10 – C16 (F2)	17	<50	<50	110	120	0
TRH >C16 – C34 (F3)	17	<100	<100	2,500	300	0
TRH >C34 – C40 (F4)	17	<100	<100	10,000	2,800	0
Benzene	17	<0.2	<0.2	1	50	0
Toluene	17	<0.5	<0.5	160	85	0
Ethylbenzene	17	<1	<1	55	70	0
Xylenes	17	<2	<2	40	45	0

Based on the soil analytical results, and the fact that there was no obvious hydrocarbon odour noted during the fieldwork, GEE considers that TRH and BTEX does not to pose a contamination issue for the proposed development.

9.1.3 PAHs

A total of 13 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	13	<0.1	<0.1	3	170	0
Benzo(a)pyrene	13	<0.05	0.2	--	0.7	0
Benzo(a)pyrene TEQ	13	<0.5	<0.5	4	--	0
Total PAHs	13	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 development.

9.1.4 OCPs and PCBs

Five 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	5	<0.1	<0.1	10	--	0
Aldrin + Dieldrin	5	<0.1	<0.1	10	--	0
Endrin	5	<0.1	<0.1	20	--	0
Chlordane	5	<0.1	<0.1	90	--	0
Endosulfan	5	<0.1	<0.1	400	--	0
HCB	5	<0.1	<0.1	15	--	0
Methoxychlor	5	<0.1	<0.1	200	--	0
DDE + DDD + DDT	5	<0.1	0.3	600	--	0
DDT	5	<0.1	<0.1	--	180	0
Total PCBs	5	<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 five 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	1	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	--	--	10	--
Dieldrin	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	20	--
Endrin	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	20	--
gamma-Chlordane	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	90	--
alpha-chlordane	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	90	--
Endosulfan I	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	400	--
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	--	--	500	--
pp-DDD	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	600	--
pp-DDT	mg/kg	--	--	--	--	<0.1	--	--	--	--	--	<0.1	--	--	600	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	--	1	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	--	--	--	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.
- ◇ 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 nine borehole locations positioned in accessible areas across the site and targeting areas of potential contamination. It is



noted that the number of sampling points does not satisfy the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards, however, it was considered sufficient as a preliminary assessment 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 22 primary soil samples from the 9 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 development, future users of the site and the environment.

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 ($4.5 < \text{pH} < 6.5$) 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 Stage 1 Preliminary Site investigation 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, with the future development to include a basement (single or multiple levels) and up to six levels above ground. 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 investigation 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 limited sampling and analysis program to characterise potential contamination in accessible areas across the site.

In summary, the Stage 1 PSI completed herein is considered to be sufficient for the purpose of assessing the planning proposal. The limited sampling and analysis program conducted at the site identified no significant contamination issue, however, further investigation in the form of a Stage 2 Detailed Site Investigation (Stage 2 DSI), is warranted and would be appropriate as part of a subsequent Development Application.

Any contamination identified by the Stage 2 DSI (if any) would be required to be addressed in detail as part of the conditions of development consent, and any remediation (if any) carried out prior to any occupation of the site for the proposed land-use.



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

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FIGURES

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

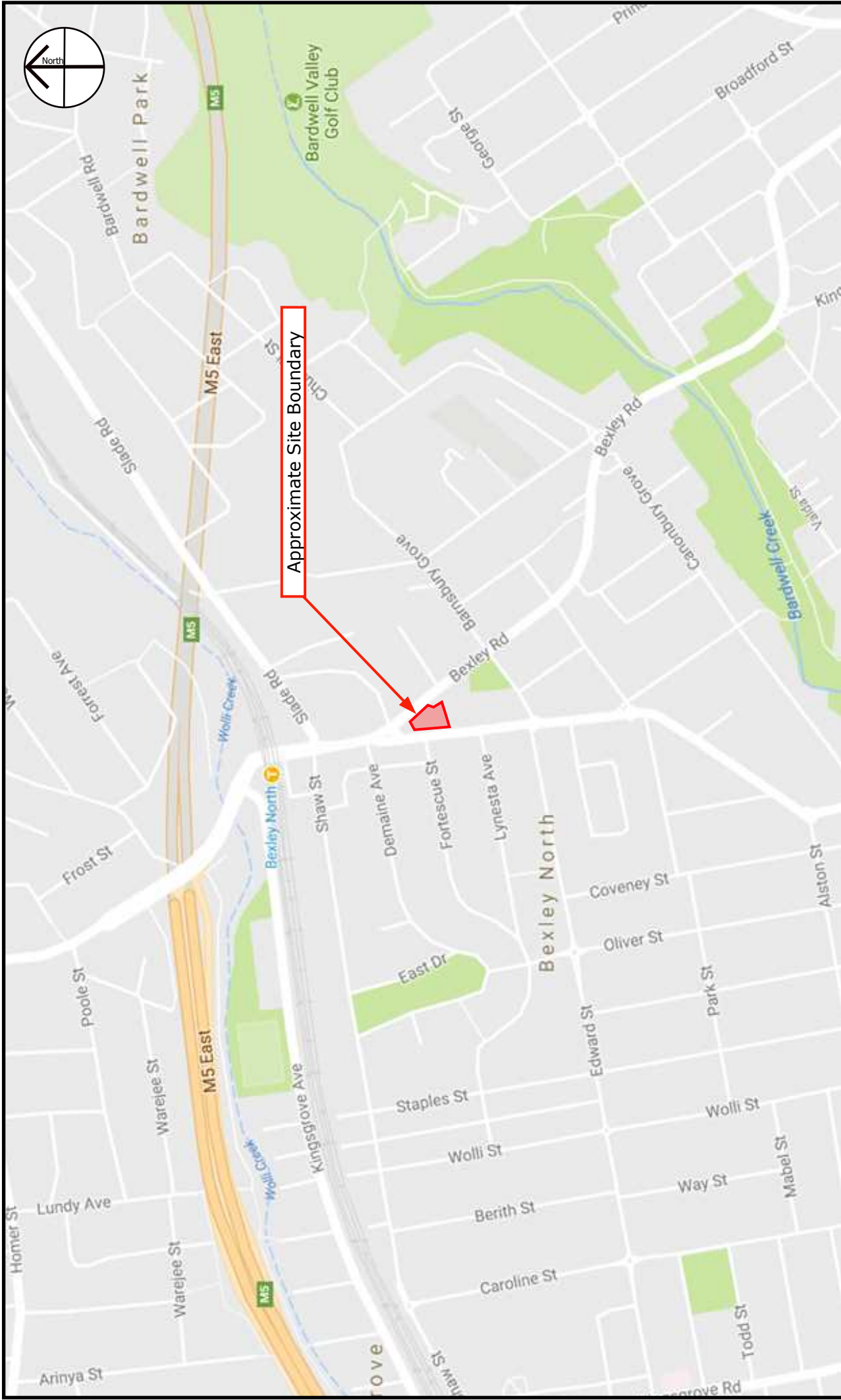


Image Source: ©2016 Google - Google Maps, retrieved 05/08/2016

 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: 8 Nov 2016	FIGURE No. 1
			DRAWN: A. Chiem	JOB No.: E16016BN	REVISION: A



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

 <p>82 BRIDGE STREET LANE COVE NSW 2066 P - 61 (2) 9420 3361 E - info@geoenvironmental.com.au www.geoenvironmental.com.au</p>	TITLE: SITE PLAN 307-311 Bexley Rd & 88-96 New Illawarra Rd Rd Bexley North NSW		SCALE: N.T.S	DATE: 10 Dec 2016	FIGURE No. 2
			DRAWN: A. Chiem	JOB No.: E16016BN	REVISION: A



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

 <div>82 BRIDGE STREET LANE COVE NSW 2066 P - 61 (2) 9420 3361 E - info@geoenvironmental.com.au www.geoenvironmental.com.au</div>	TITLE: UST Locations		SCALE: N.T.S	DATE: 21 Dec 2016	FIGURE No. 3
			DRAWN: A. Chiem	JOB No.: E16016BN	REVISION: A



APPENDIX A

SITE SURVEY



WARNING:

-

LEGEND

	WATER MAIN		SEWER VENT
	TELSTRA PILLAR		SEWER LAMP HOLE
	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 WITH GUTTER
	LIGHT POLE		STORMWATER MANHOLE INCLUDING PIPE SIZE
	HYDRANT		HEADWALL
	RECYCLED WATER		CLOTHES LINE
	WATER METER		TREE: Ø DIAMETER S SPREAD
	STOP VALVE		
	WATER TAP		
	GAS METER		
	GAS DIRECTION MARKER		
	GAS INSPECTION POINT		
	SEWER MANHOLE		
	STREET SIGN		
	PRAM CROSSING		
	VEHICLE CROSSING		
	OVERHEAD ELECTRICITY LINE		
	OVERHEAD TELECOM LINE		
	SEWER LINE		

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THE CLIENT OF THE TERRALINKS GROUP
PTY LTD FOR THE PROJECT FOR WHICH
IT WAS PROVIDED.

TOTAL AREA OF SITE	
VIDE DP's:	3,774.9m ²
BY CALC:	3,870.9m ²

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





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

Disclaimer:

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features. You should obtain independent advice before you make any decision based on the information within the report. The detailed terms applicable to use of this report are set out at the end of this report.

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Location Confidences

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

LC Code	Location Confidence
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



Google earth

Legend

- Site Boundary
- Buffer 150m

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
 © State of New South Wales through the 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
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit
<http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm>

Former Gasworks

Former Gasworks within the report buffer:

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

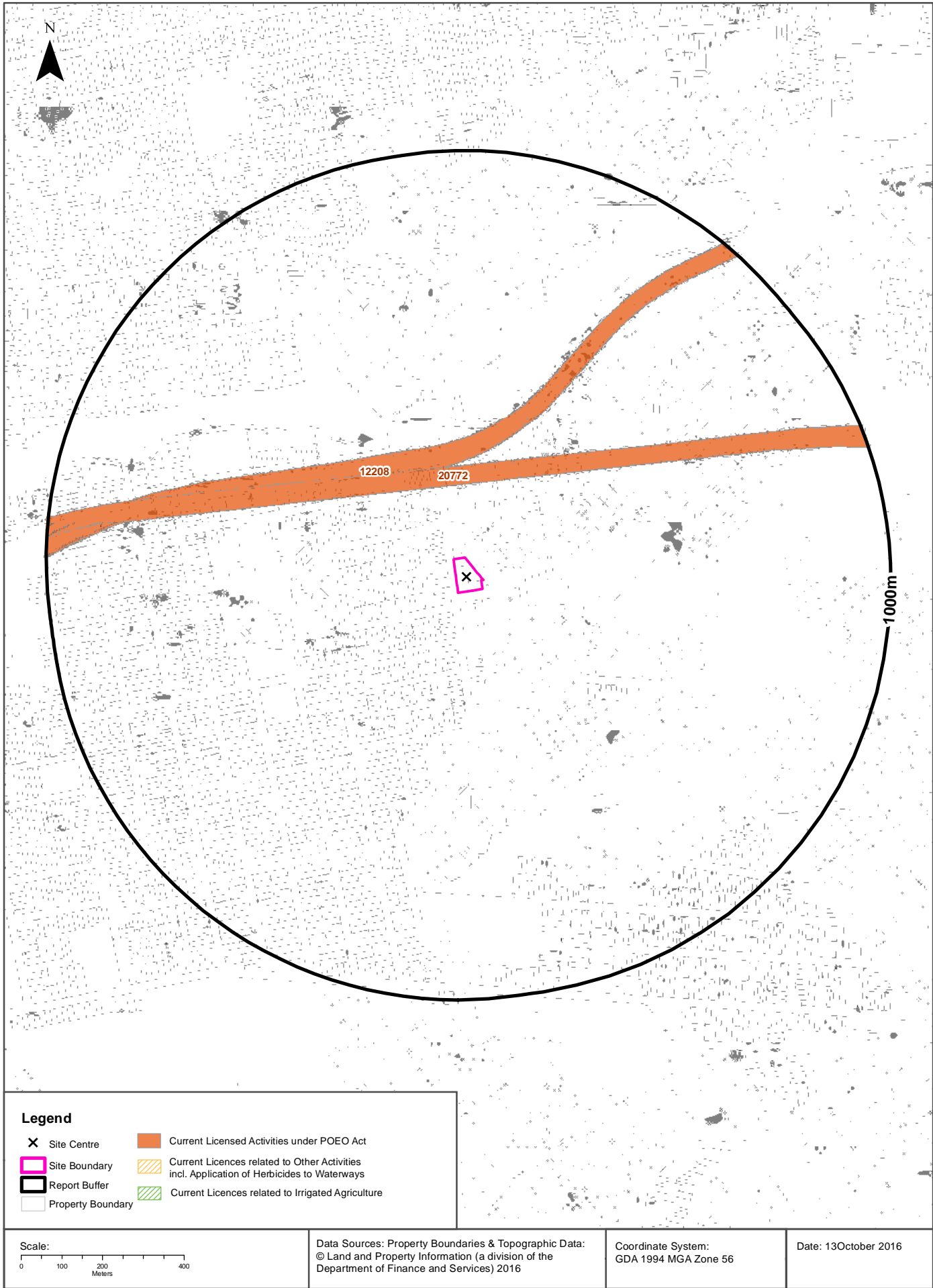
Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

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										

Waste Management Facilities Data Source: Australian Government Geoscience Australia
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>



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:

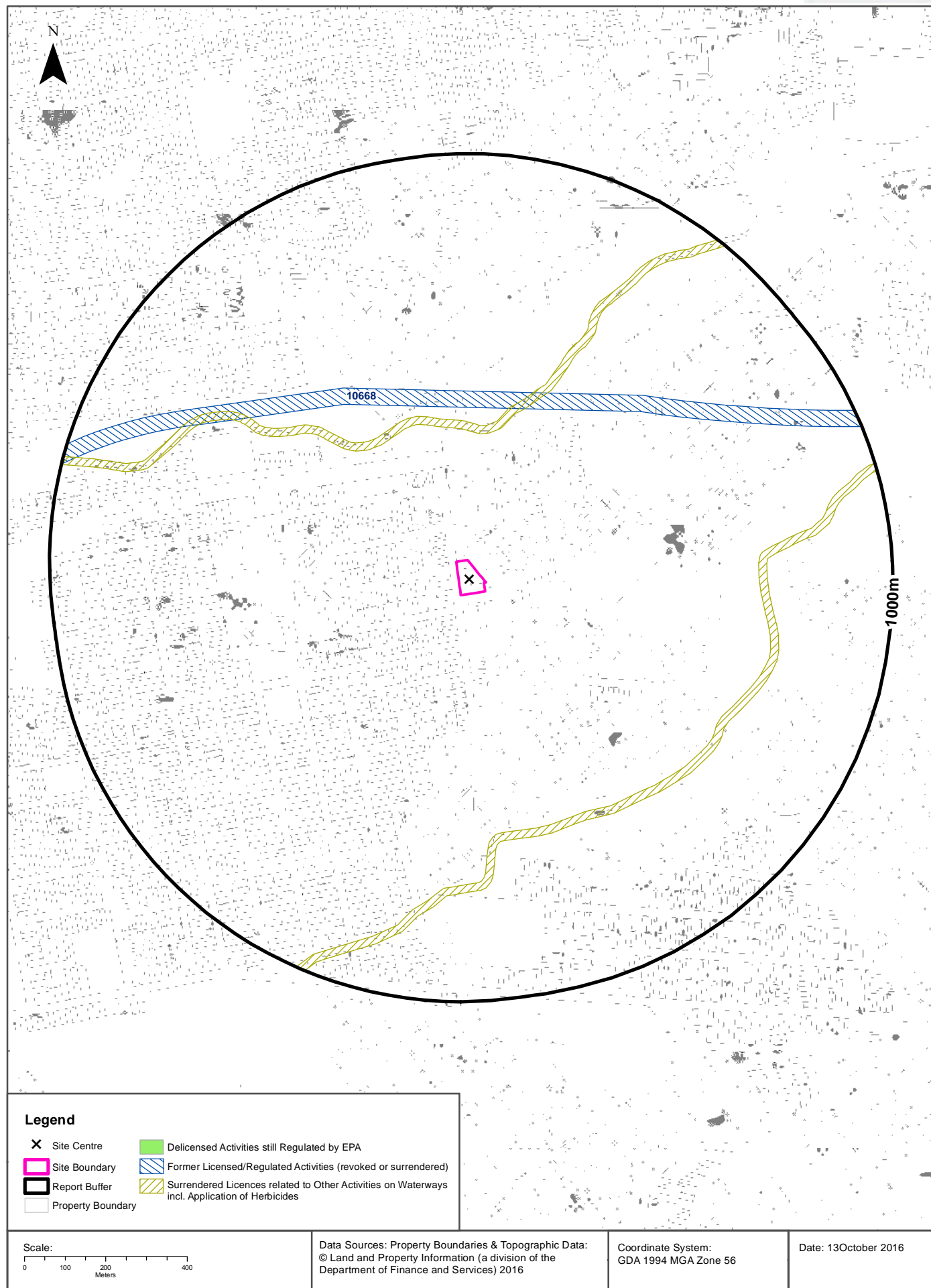
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
20772	CPB CONTRACTORS PTY LIMITED		Between Beverly Hills and St Peters, BEVERLY HILLS, NSW 2209		Road construction	3	180m	North East
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	3	226m	North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

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the 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
© State of New South Wales through the Environment Protection Authority

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

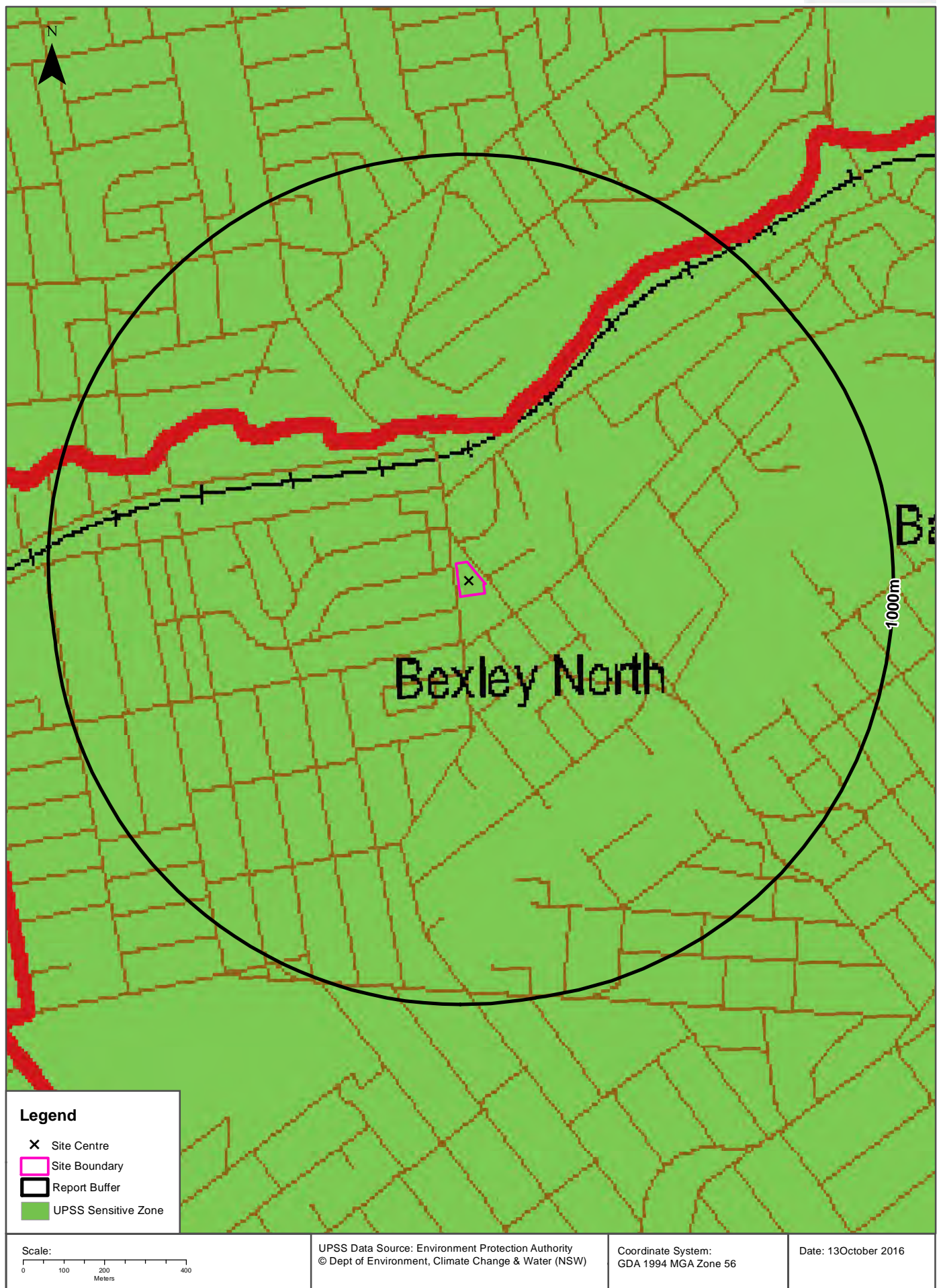
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the report buffer:

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
© State of New South Wales through the Environment Protection Authority

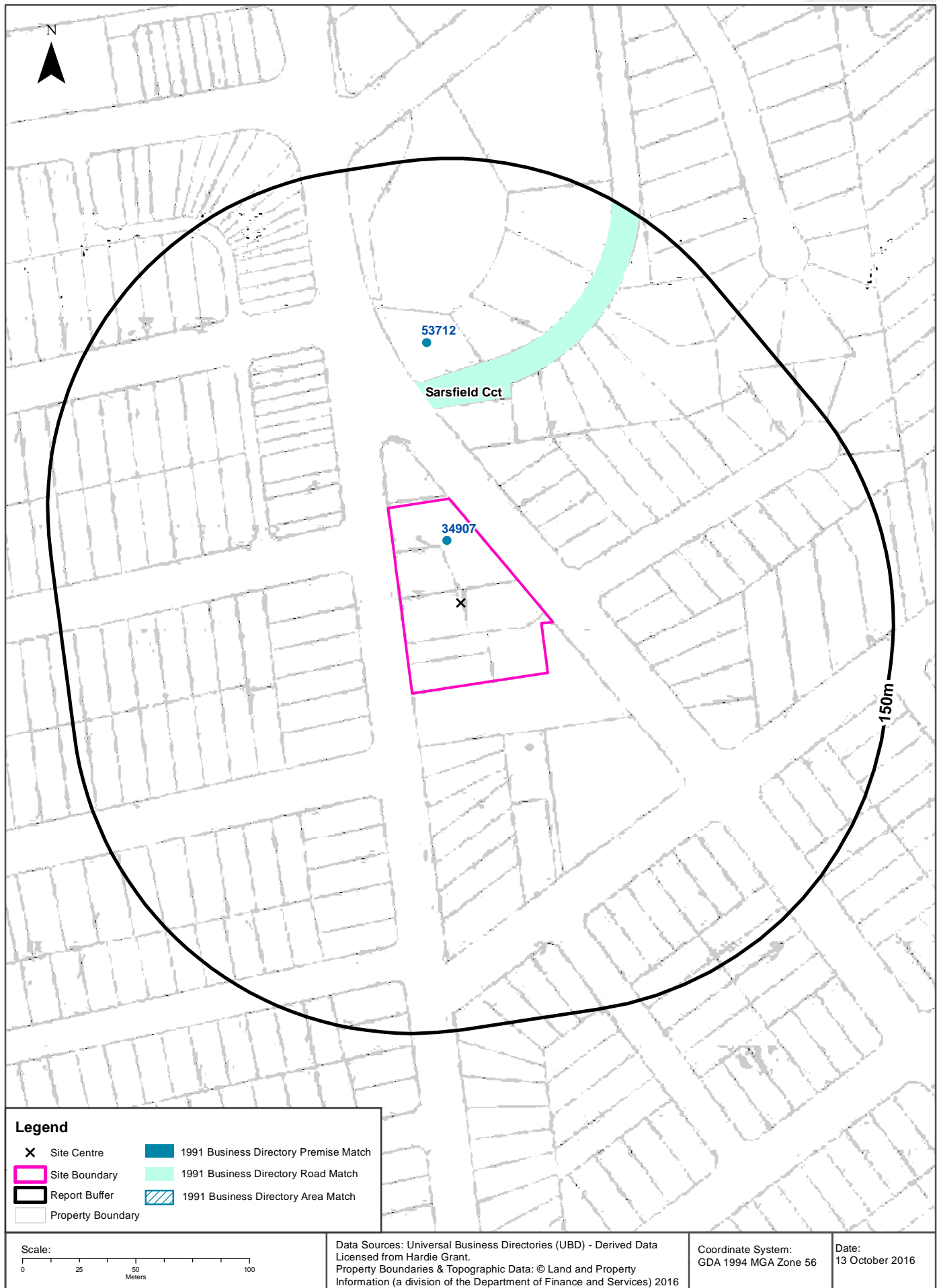
UPSS Sensitive Zones

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



1991 Historical Business Directory Records

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



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

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

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

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

1970 Historical Business Directory Records

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



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 illawarra 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 llawarra 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 illawarra 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 DIST. (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

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

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

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

1950 Historical Business Directory Records

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



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

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

1950 Business Directory Drycleaners & Service Stations

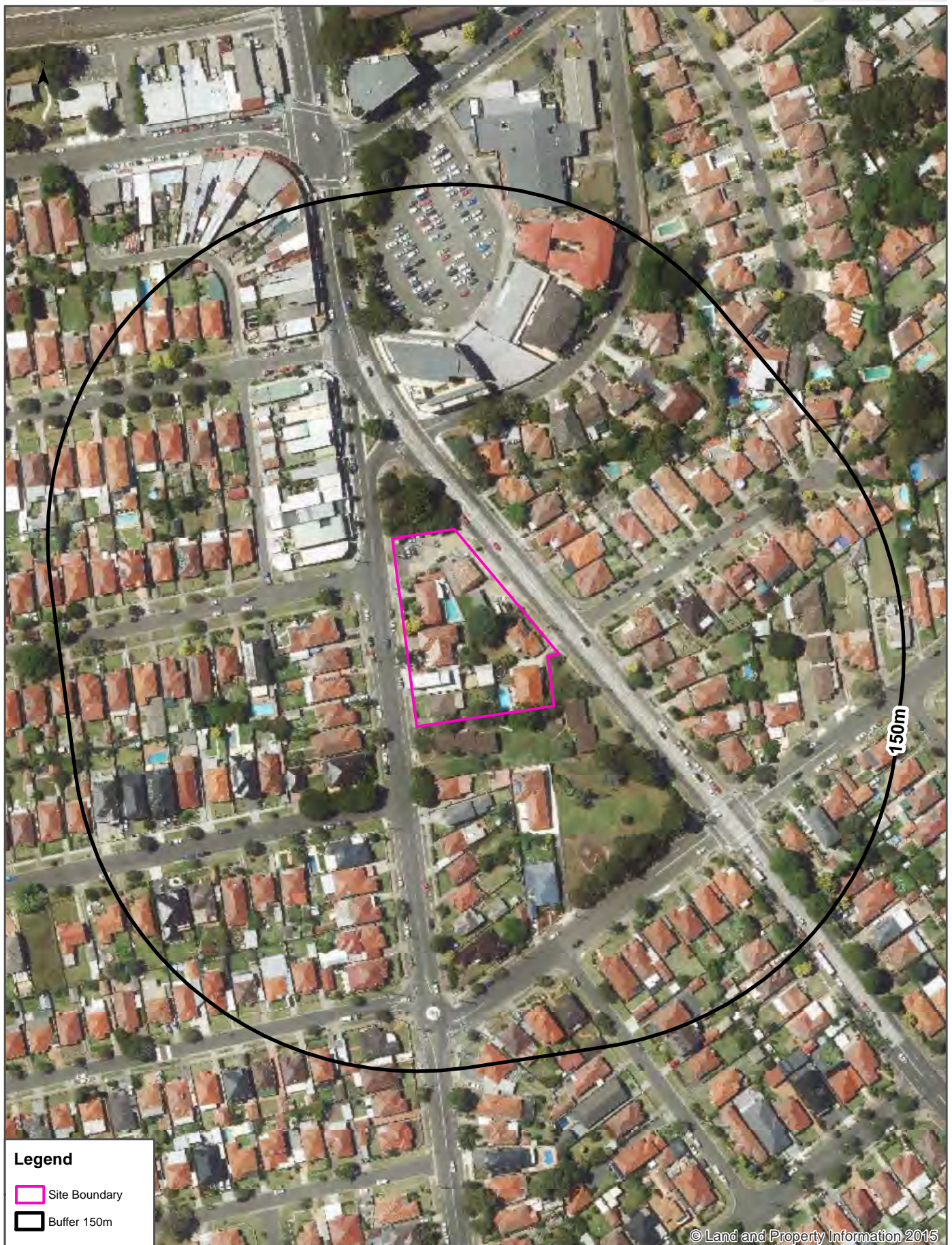
Drycleaners, Motor Garages & Service Stations from the 1950 UBD Business Directory within 1km of the site:

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

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

Aerial Imagery 2014

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



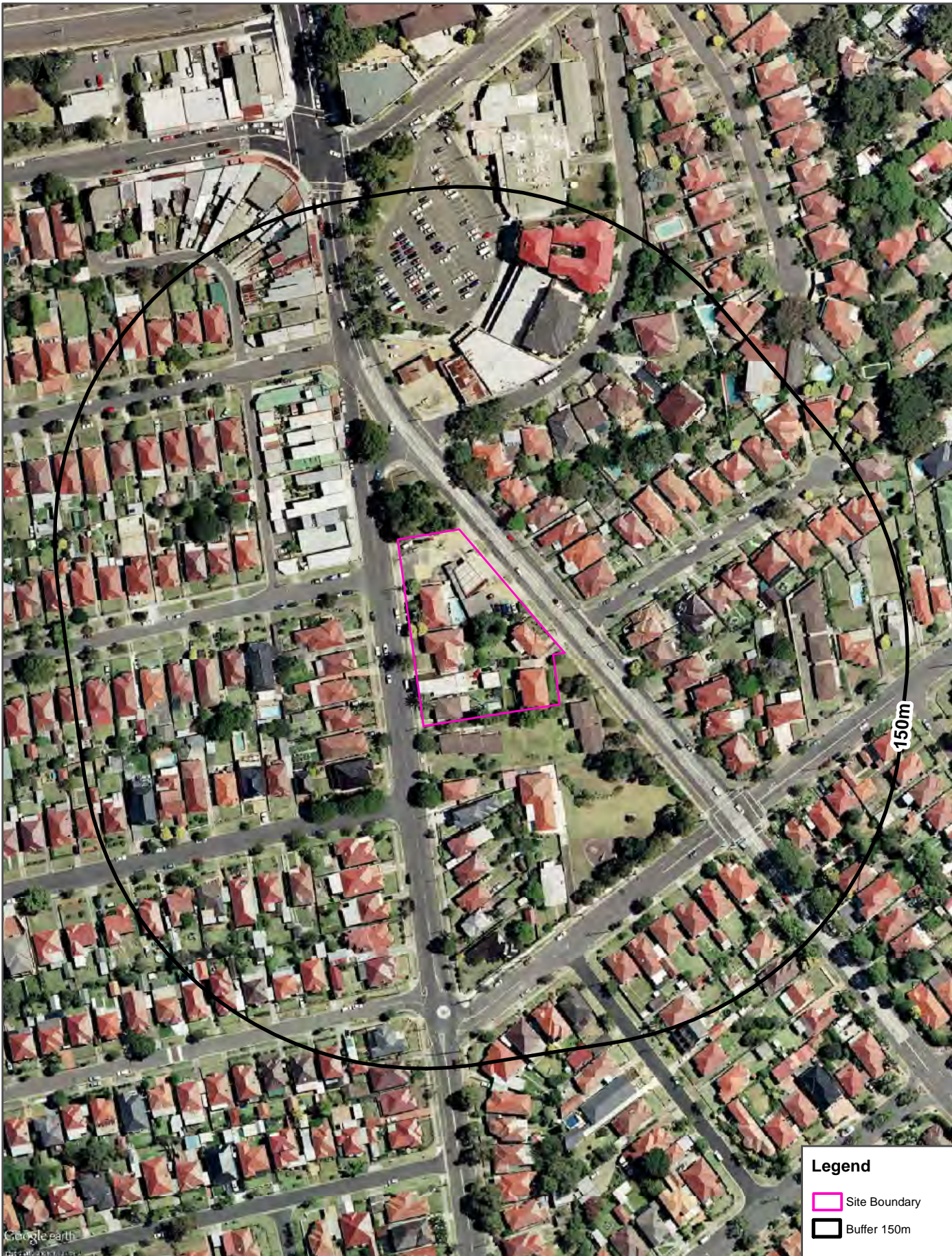
Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System:
GDA 1994 MGA Zone 56

Date: 13 October 2016

Aerial Imagery 2007

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



Google earth

Legend

Site Boundary

Buffer 150m

<p>Scale:</p> <p>0 25 50 100</p> <p>Meters</p>	<p>Data Sources: Aerial Imagery © 2016 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 12October, 2016</p>
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Aerial Imagery 2000

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



<p>Scale:</p> <p>0 25 50 100</p> <p>Meters</p>	<p>Data Sources: Aerial Imagery © 2016 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 12October, 2016</p>
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Aerial Imagery 1991

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: 12 October 2016
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Aerial Imagery 1982

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



Legend

Site Boundary

Buffer 150m

<p>Scale:</p> <p>0 25 50 100</p> <p>Meters</p>	<p>Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 12 October 2016</p>
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Aerial Imagery 1970

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



Legend

Site Boundary

Buffer 150m

<p>Scale:</p> <p>0 25 50 100</p> <p>Meters</p>	<p>Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 12 October 2016</p>
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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: 12 October 2016
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Aerial Imagery 1961

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



Legend

 Site Boundary

 Buffer 150m


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: 12 October 2016
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Aerial Imagery 1955

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



Legend

 Site Boundary

 Buffer 150m

<p>Scale:</p> <p>0 25 50 100</p> <p>Meters</p>	<p>Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 12October 2016</p>
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Aerial Imagery 1943

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



Legend

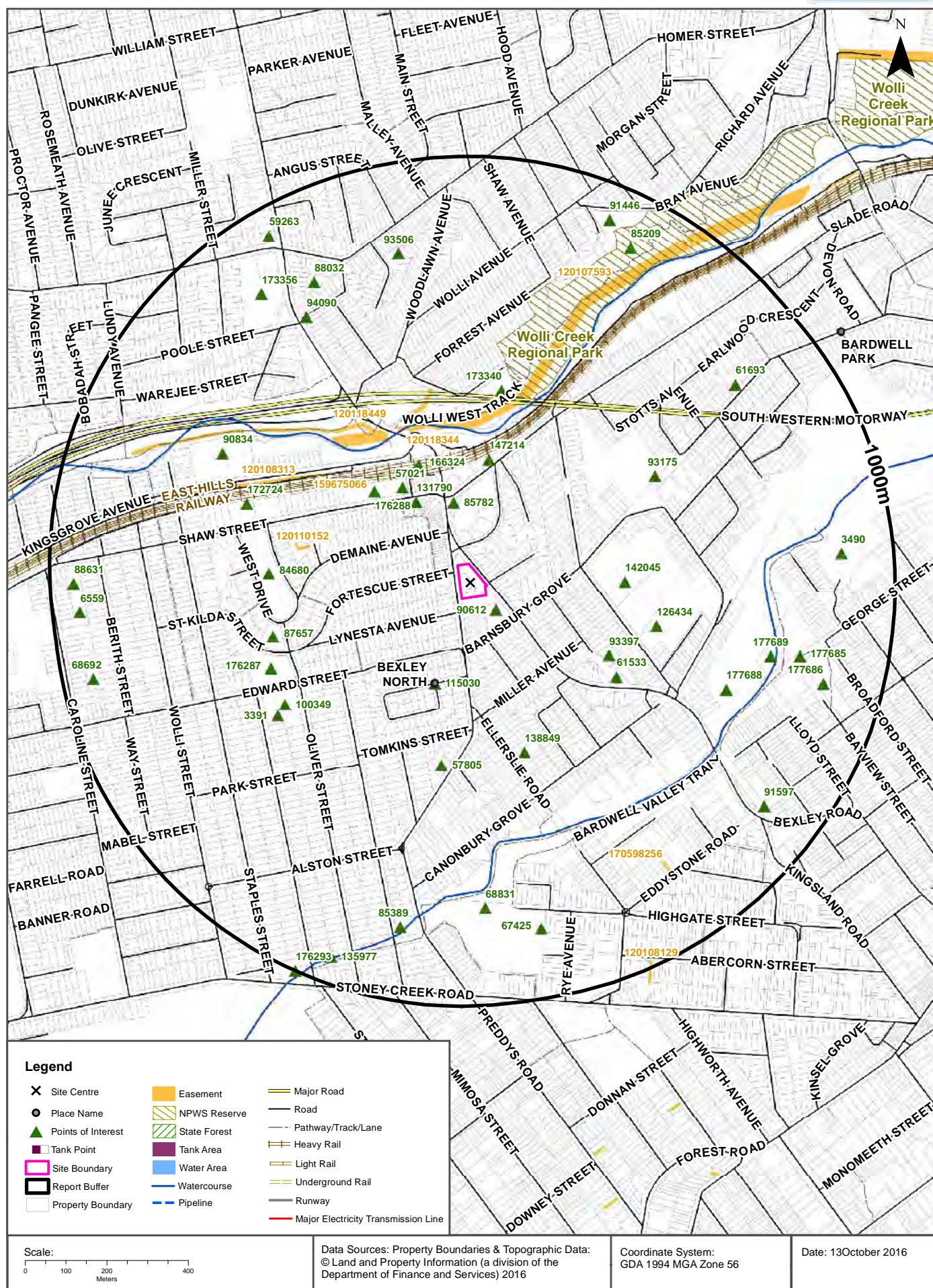
Site Boundary

Buffer 150m

Scale: 0 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: 11 October 2016
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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 Data Source: © Land and Property Information (2015)

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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						

Tanks Data Source: © Land and Property Information (2015)

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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

Easements Data Source: © Land and Property Information (2015)

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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		

State Forest Data Source: © Land and Property Information (2015)

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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the report buffer?

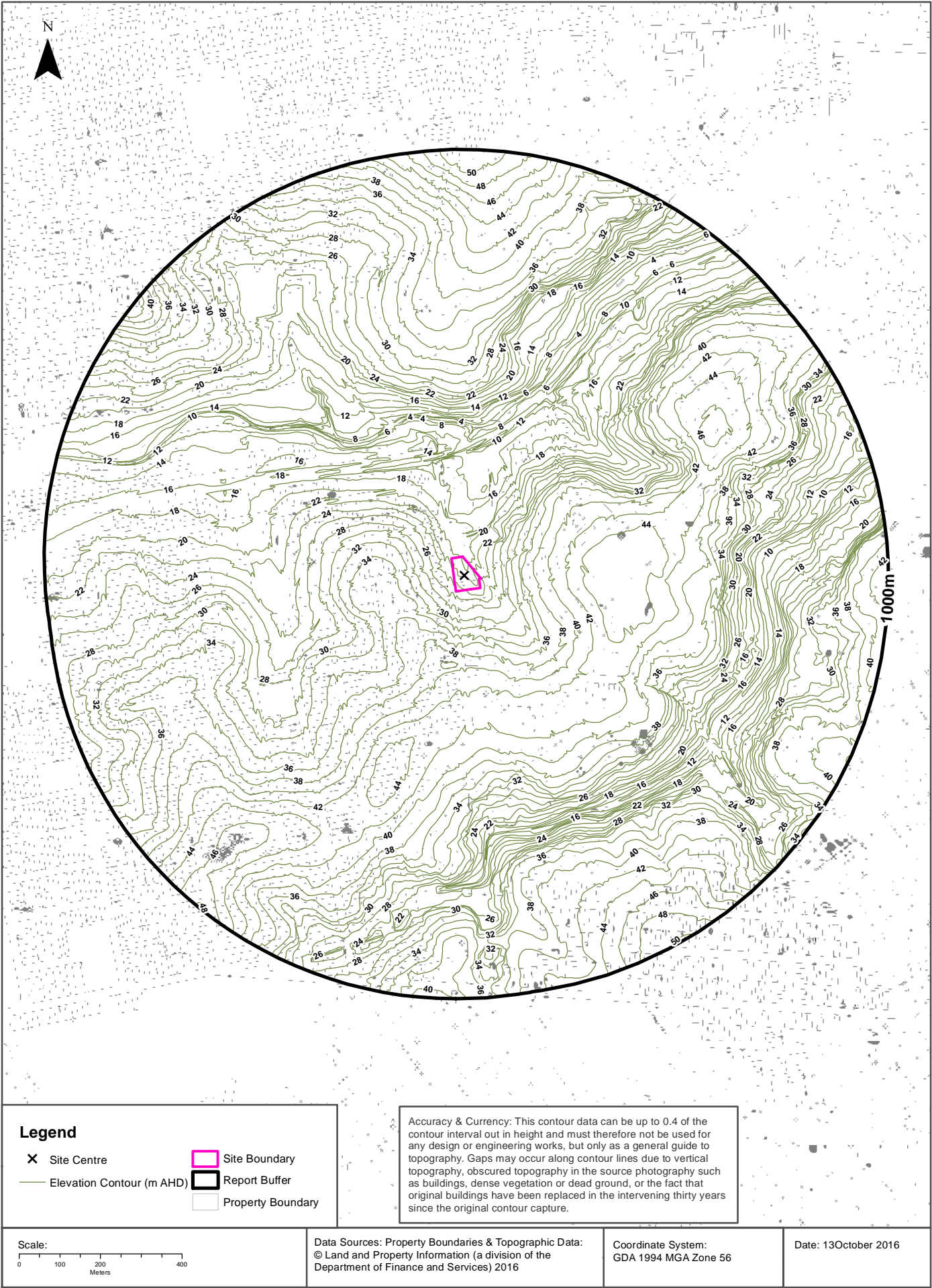
Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N0644	REGIONAL PARK	Wolli Creek Regional Park	25/01/2001	420m	North East

NPWS Data Source: © Land and Property Information (2015)

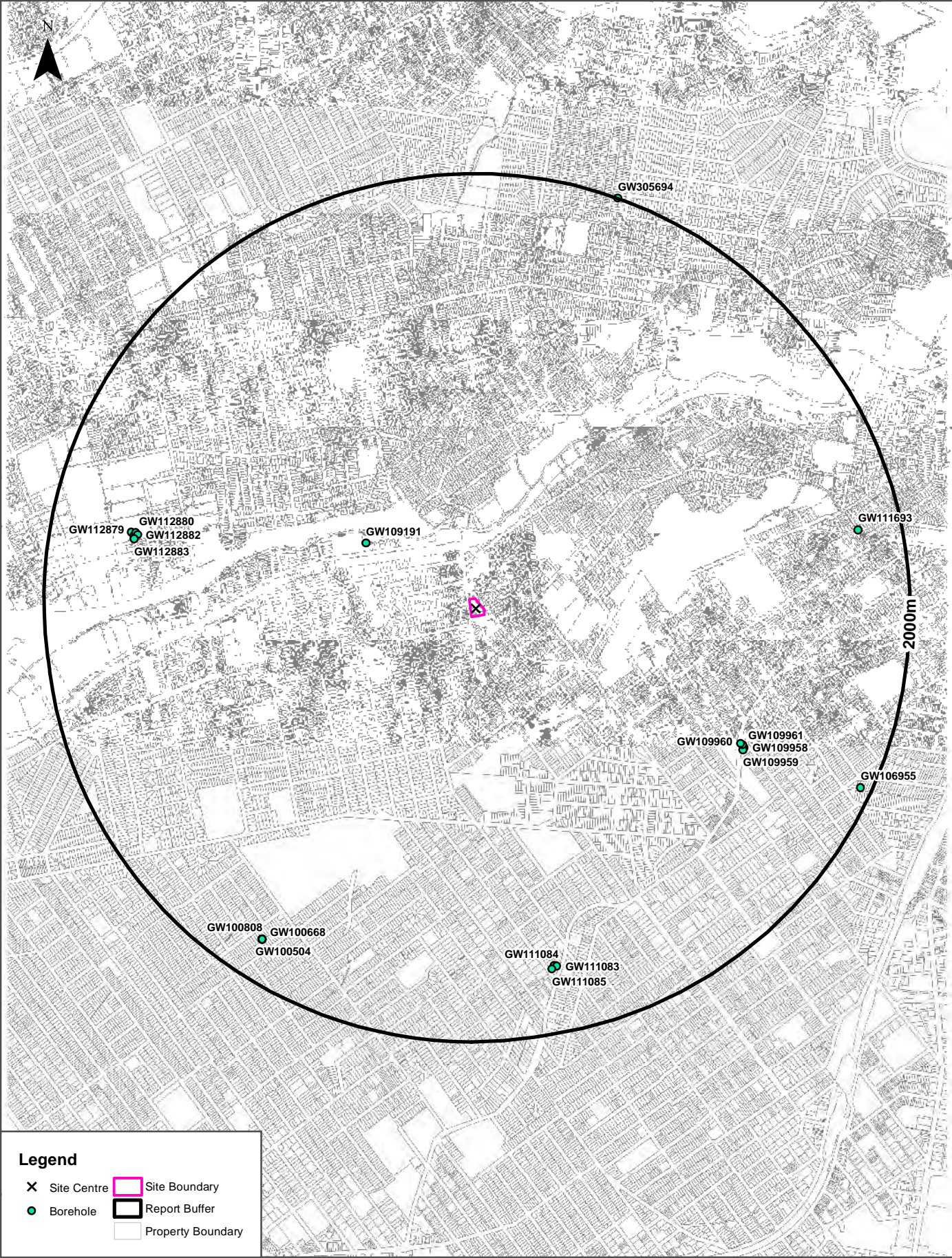
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Elevation Contours (m AHD)

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



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



<p>Scale:</p> <p>0 200 400 800</p> <p>Meters</p>	<p>Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2016</p>	<p>Coordinate System: GDA 1994 MGA Zone 56</p>	<p>Date: 13October 2016</p>
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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

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

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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 Enviroscienc es	13/04/2007	8.00	8.00					1351m	South East
GW109961	10BL601848	Well	Private	Monitoring	HLA Enviroscienc es	12/04/2007	5.80	5.80					1360m	South East
GW109958	10BL601848	Well	Private	Monitoring	HLA Enviroscienc es	12/04/2007	5.20	5.20					1373m	South East
GW109959	10BL601848	Well	Private	Monitoring	HLA Enviroscienc es	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

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

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:

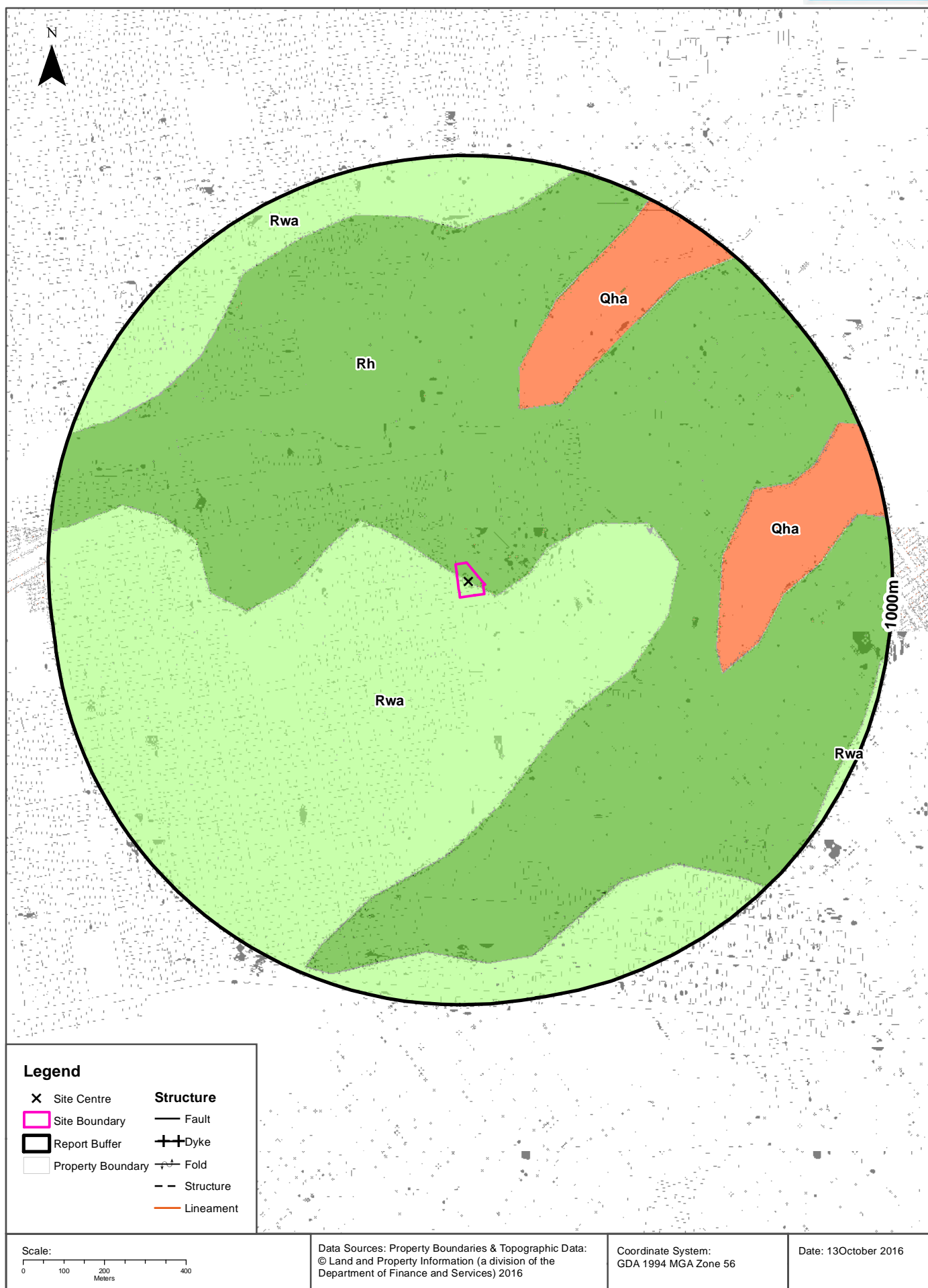
Groundwater No	Drillers Log	Distance	Direction
GW109191	0.00m-1.00m SANDY CLAY 1.00m-4.00m CLAY 4.00m-7.00m SANDSTONE SOFT 7.00m-9.00m SANDSTONE L/BROWN 9.00m-9.50m SANDSTONE AND FINE QUARTZ 9.50m-31.00m SANDSTONE GREY 31.00m-40.00m SANDSTONE AND SHALE BEDDING 40.00m-41.00m SANDSTONE AND FINE QUARTZ 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 PLASTICITY,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

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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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

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Naturally Occurring Asbestos Potential

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

Naturally Occurring Asbestos Potential

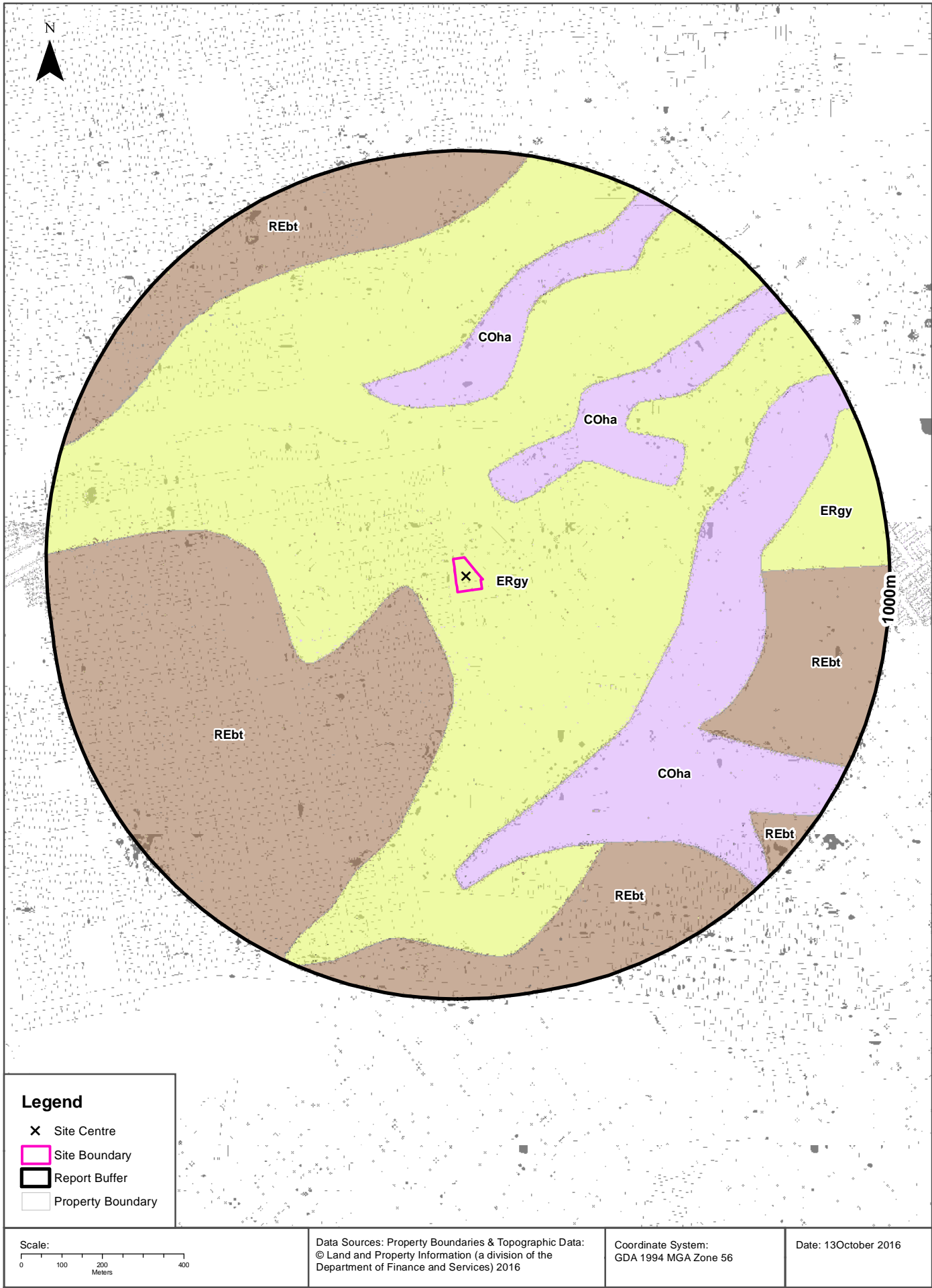
Naturally Occurring Asbestos Potential within the report buffer?

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?

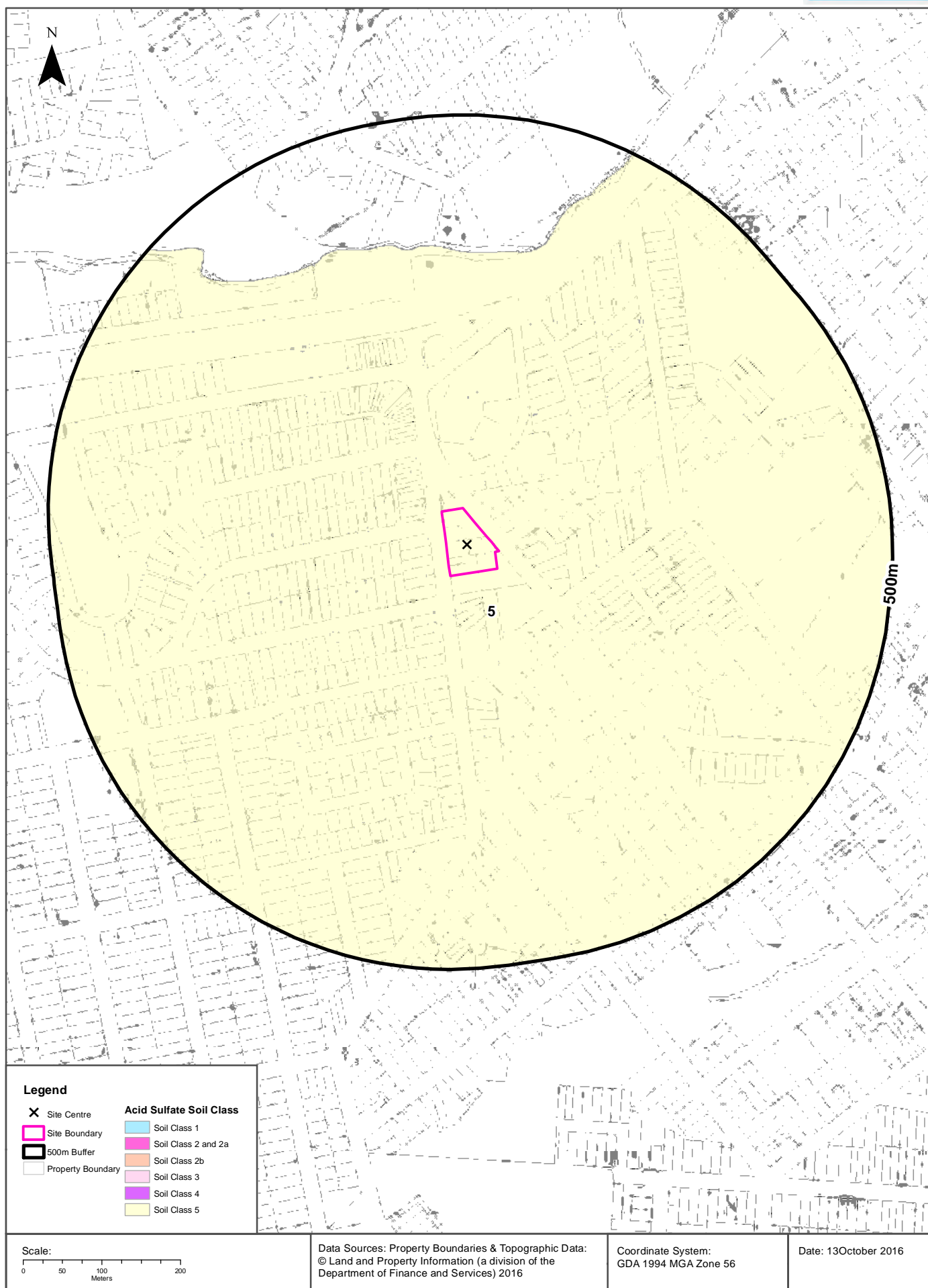
Soil Code	Name	Group	Process	Map Sheet	Scale
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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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				

Acid Sulfate Data Source Accessed 07/10/2016: NSW Crown Copyright - Planning and Environment
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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		

Mining Subsidence District Data Source: © Land and Property Information (2016)
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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

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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

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State Environmental Planning Policy Strategic Land Use Areas

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

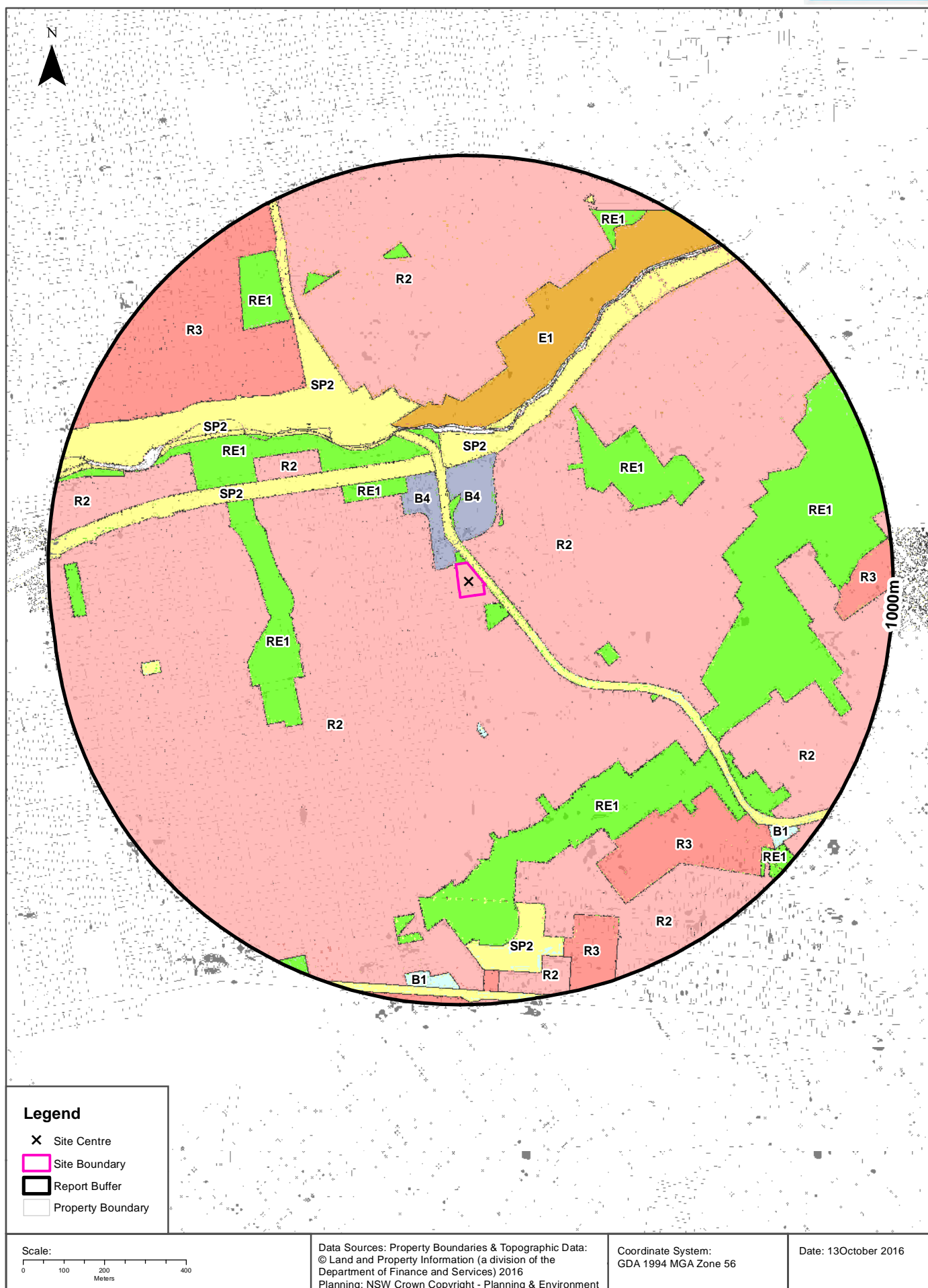
Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
No records within buffer						

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

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LEP Planning Zones

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



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

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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

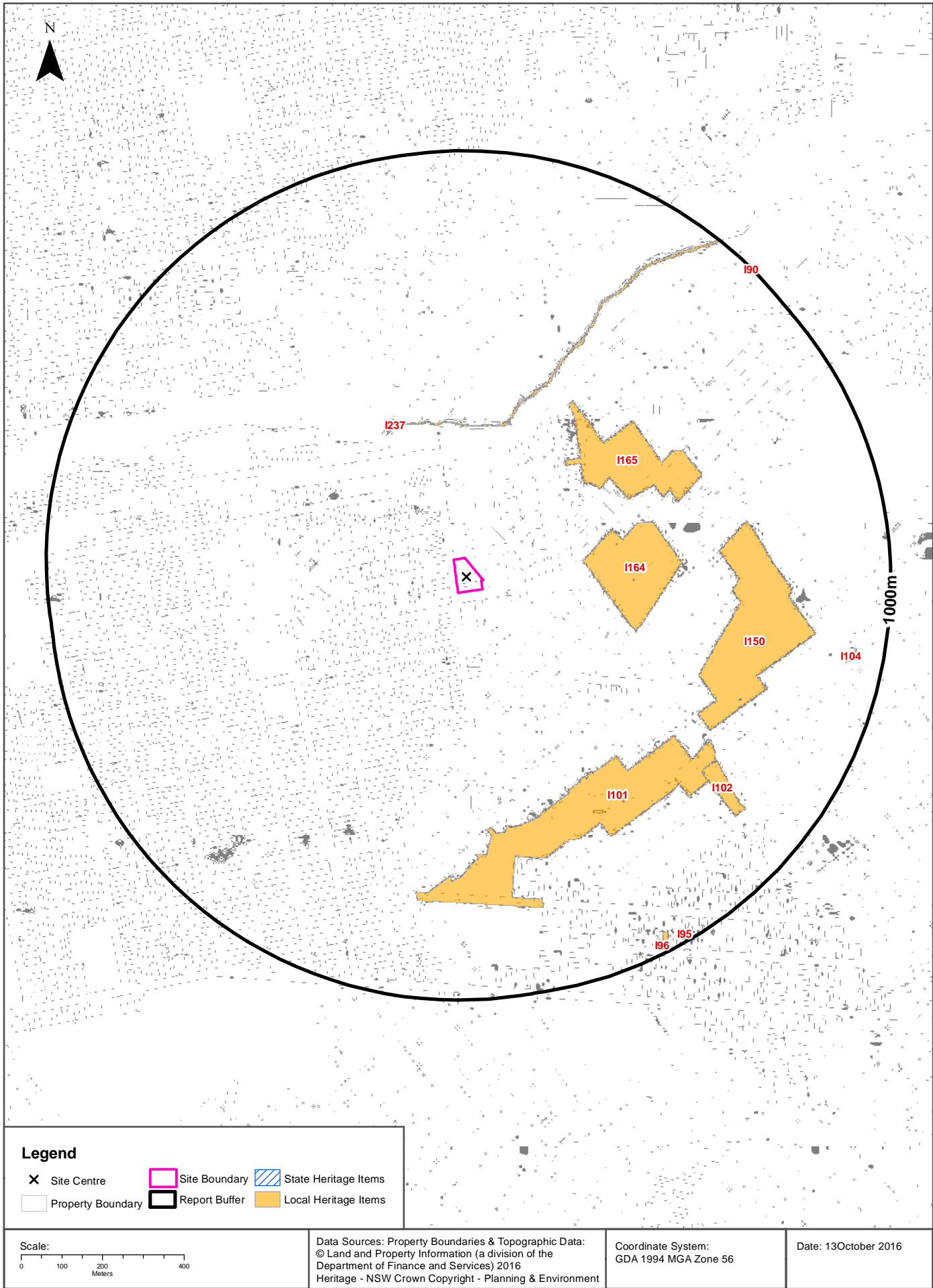
What are the onsite Local Environmental Plan Land Reservation Acquisitions?

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

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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							

Heritage Data Source: NSW Crown Copyright - Planning & Environment

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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

Heritage Data Source: NSW Crown Copyright - Planning & Environment

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Natural Hazards

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

Bushfire Prone Land

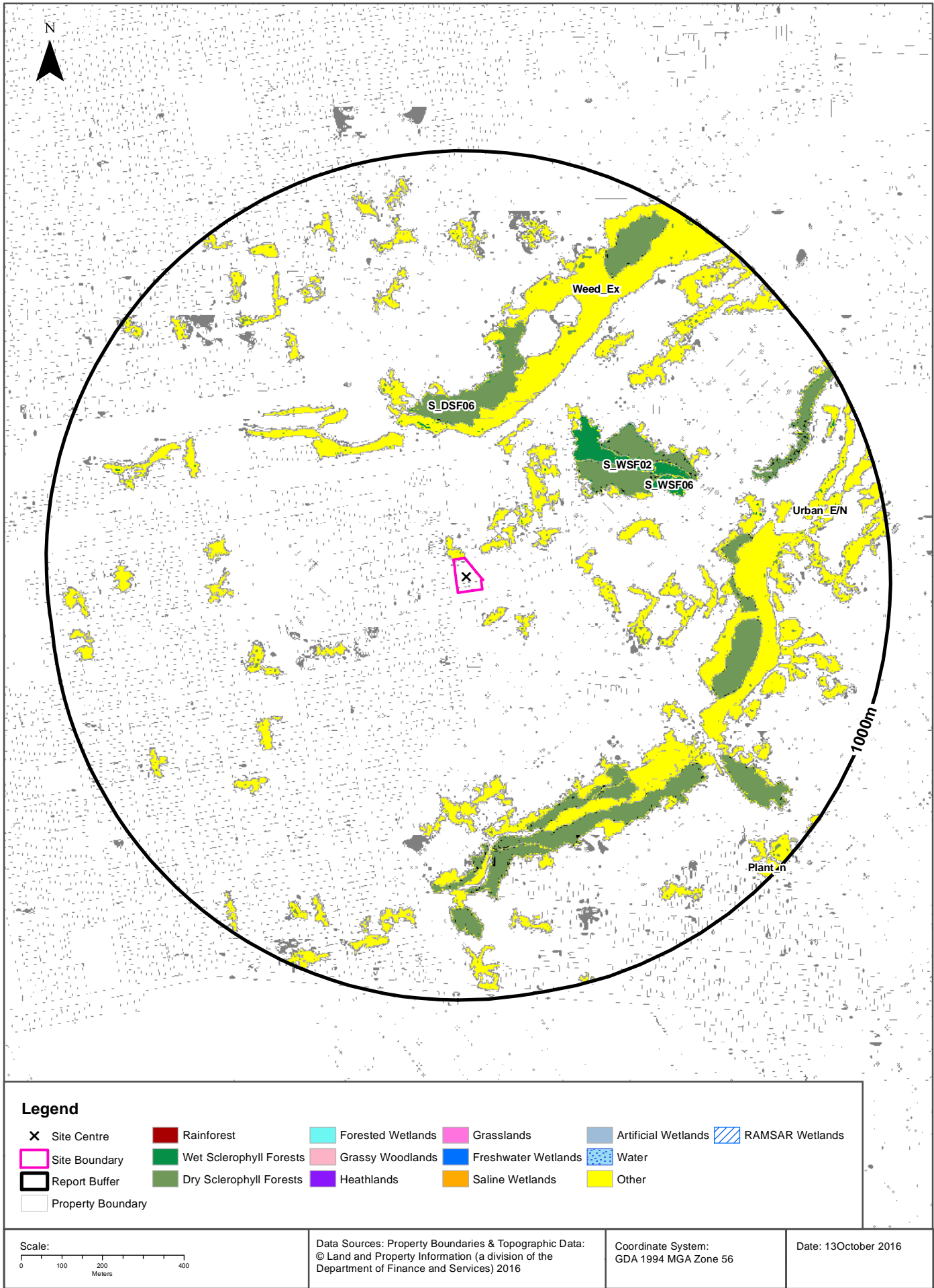
What are the nearest Bushfire Prone Land Categories that exist within the report buffer?

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

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage
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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					

RAMSAR Wetlands Data Source: © Commonwealth of Australia - Department of Environment

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	<i>Litoria aurea</i>	Green and Golden Bell Frog	No	Endangered, Protected	Vulnerable
Amphibia	Myobatrachidae	<i>Crinia tinnula</i>	Wallum Froglet	No	Vulnerable, Protected	
Amphibia	Myobatrachidae	<i>Pseudophryne australis</i>	Red-crowned Toadlet	No	Vulnerable, Protected	
Aves	Acanthizidae	<i>Calamanthus fuliginosus</i>	Striated Fieldwren	No	Endangered, Protected	
Aves	Accipitridae	<i>Hieraaetus morphnoides</i>	Little Eagle	No	Vulnerable, Protected	
Aves	Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Accipitridae	<i>Pandion cristatus</i>	Eastern Osprey	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Anatidae	<i>Stictonetta naevosa</i>	Freckled Duck	No	Vulnerable, Protected	
Aves	Ardeidae	<i>Botaurus poiciloptilus</i>	Australasian Bittern	No	Endangered, Protected	Endangered
Aves	Artamidae	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	No	Vulnerable, Protected	
Aves	Burhinidae	<i>Burhinus grallarius</i>	Bush Stone-curlew	No	Endangered, Protected	
Aves	Burhinidae	<i>Esacus magnirostris</i>	Beach Stone-curlew	No	Critically Endangered Species, Protected	
Aves	Cacatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Cacatuidae	<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	No	Vulnerable, Protected, Category 2 Sensitive Species	
Aves	Cacatuidae	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	No	Vulnerable, Protected, Category 2 Sensitive Species	
Aves	Charadriidae	<i>Charadrius leschenaultii</i>	Greater Sand-plover	No	Vulnerable, Protected	V,C,J,K
Aves	Charadriidae	<i>Charadrius mongolus</i>	Lesser Sand-plover	No	Vulnerable, Protected	E,C,J,K
Aves	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	No	Endangered, Protected	
Aves	Columbidae	<i>Ptilinopus superbus</i>	Superb Fruit-Dove	No	Vulnerable, Protected	
Aves	Diomedidae	<i>Diomedea exulans</i>	Wandering Albatross	No	Endangered, Protected	E,J
Aves	Estrildidae	<i>Stagonopleura guttata</i>	Diamond Firetail	No	Vulnerable, Protected	
Aves	Falconidae	<i>Falco subniger</i>	Black Falcon	No	Vulnerable, Protected	
Aves	Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	No	Vulnerable, Protected	
Aves	Haematopodidae	<i>Haematopus longirostris</i>	Pied Oystercatcher	No	Endangered, Protected	
Aves	Laridae	<i>Onychoprion fuscata</i>	Sooty Tern	No	Vulnerable, Protected	
Aves	Laridae	<i>Sternula albifrons</i>	Little Tern	No	Endangered, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Meliphagidae	<i>Anthochaera phrygia</i>	Regent Honeyeater	No	Critically Endangered Species, Protected	Critically Endangered
Aves	Meliphagidae	<i>Epthianura albifrons</i>	White-fronted Chat	No	Vulnerable, Protected	
Aves	Meliphagidae	<i>Epthianura albifrons</i>	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	<i>Petroica boodang</i>	Scarlet Robin	No	Vulnerable, Protected	
Aves	Petroicidae	<i>Petroica phoenicea</i>	Flame Robin	No	Vulnerable, Protected	
Aves	Psittacidae	<i>Glossopsitta pusilla</i>	Little Lorikeet	No	Vulnerable, Protected	
Aves	Psittacidae	<i>Lathamus discolor</i>	Swift Parrot	No	Endangered, Protected, Category 3 Sensitive Species	Critically Endangered
Aves	Psittacidae	<i>Neophema pulchella</i>	Turquoise Parrot	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Rostratulidae	<i>Rostratula australis</i>	Australian Painted Snipe	No	Endangered, Protected	Endangered
Aves	Scolopacidae	<i>Calidris alba</i>	Sanderling	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Scolopacidae	<i>Calidris ferruginea</i>	Curlew Sandpiper	No	Endangered, Protected	CE,C,J,K
Aves	Scolopacidae	<i>Calidris tenuirostris</i>	Great Knot	No	Vulnerable, Protected	CE,C,J,K
Aves	Scolopacidae	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Scolopacidae	<i>Limosa limosa</i>	Black-tailed Godwit	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Scolopacidae	<i>Xenus cinereus</i>	Terek Sandpiper	No	Vulnerable, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Strigidae	<i>Ninox strenua</i>	Powerful Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Tytonidae	<i>Tyto novaehollandiae</i>	Masked Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Mammalia	Balaenidae	<i>Eubalaena australis</i>	Southern Right Whale	No	Endangered, Protected	Endangered
Mammalia	Dasyuridae	<i>Dasyurus viverrinus</i>	Eastern Quoll	No	Endangered, Protected	Critically Endangered
Mammalia	Dugongidae	<i>Dugong dugon</i>	Dugong	No	Endangered, Protected	
Mammalia	Molossidae	<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	No	Vulnerable, Protected	
Mammalia	Otariidae	<i>Arctocephalus pusillus doriferus</i>	Australian Fur-seal	No	Vulnerable, Protected	
Mammalia	Peramelidae	<i>Perameles nasuta</i>	Long-nosed Bandicoot population in inner western Sydney	No	Endangered Population, Protected	
Mammalia	Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	No	Vulnerable, Protected	Vulnerable
Mammalia	Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	No	Vulnerable, Protected	Vulnerable
Mammalia	Vespertilionidae	<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	<i>Myotis macropus</i>	Southern Myotis	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	No	Vulnerable, Protected	
Reptilia	Cheloniidae	<i>Chelonia mydas</i>	Green Turtle	No	Vulnerable, Protected	Vulnerable
Flora	Asteraceae	<i>Senecio spathulatus</i>	Coast Groundsel	No	Endangered, Protected	
Flora	Campanulaceae	<i>Wahlenbergia multicaulis</i>	Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	No	Endangered Population	
Flora	Casuarinaceae	<i>Allocasuarina diminuta</i> subsp. <i>mimica</i>	<i>Allocasuarina diminuta</i> subsp. <i>mimica</i> L.A.S.Johnson population in the Sutherland and Liverpool local government areas	No	Endangered Population	
Flora	Convolvulaceae	<i>Wilsonia backhousei</i>	Narrow-leafed <i>Wilsonia</i>	No	Vulnerable, Protected	
Flora	Dilleniaceae	<i>Hibbertia stricta</i> subsp. <i>furcatula</i>		No	Endangered, Protected	
Flora	Elaeocarpaceae	<i>Tetratheca juncea</i>	Black-eyed Susan	No	Vulnerable, Protected	Vulnerable
Flora	Ericaceae	<i>Epacris purpurascens</i> var. <i>purpurascens</i>		No	Vulnerable, Protected	
Flora	Ericaceae	<i>Leucopogon exolasius</i>	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 triglochoides		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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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**

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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

A handwritten signature in black ink, appearing to read 'J McDonnell', written in a cursive style.

Yours Sincerely
James McDonnell
12 October 2016

Locality : BEXLEY NORTH

Cadastral Records Enquiry Report

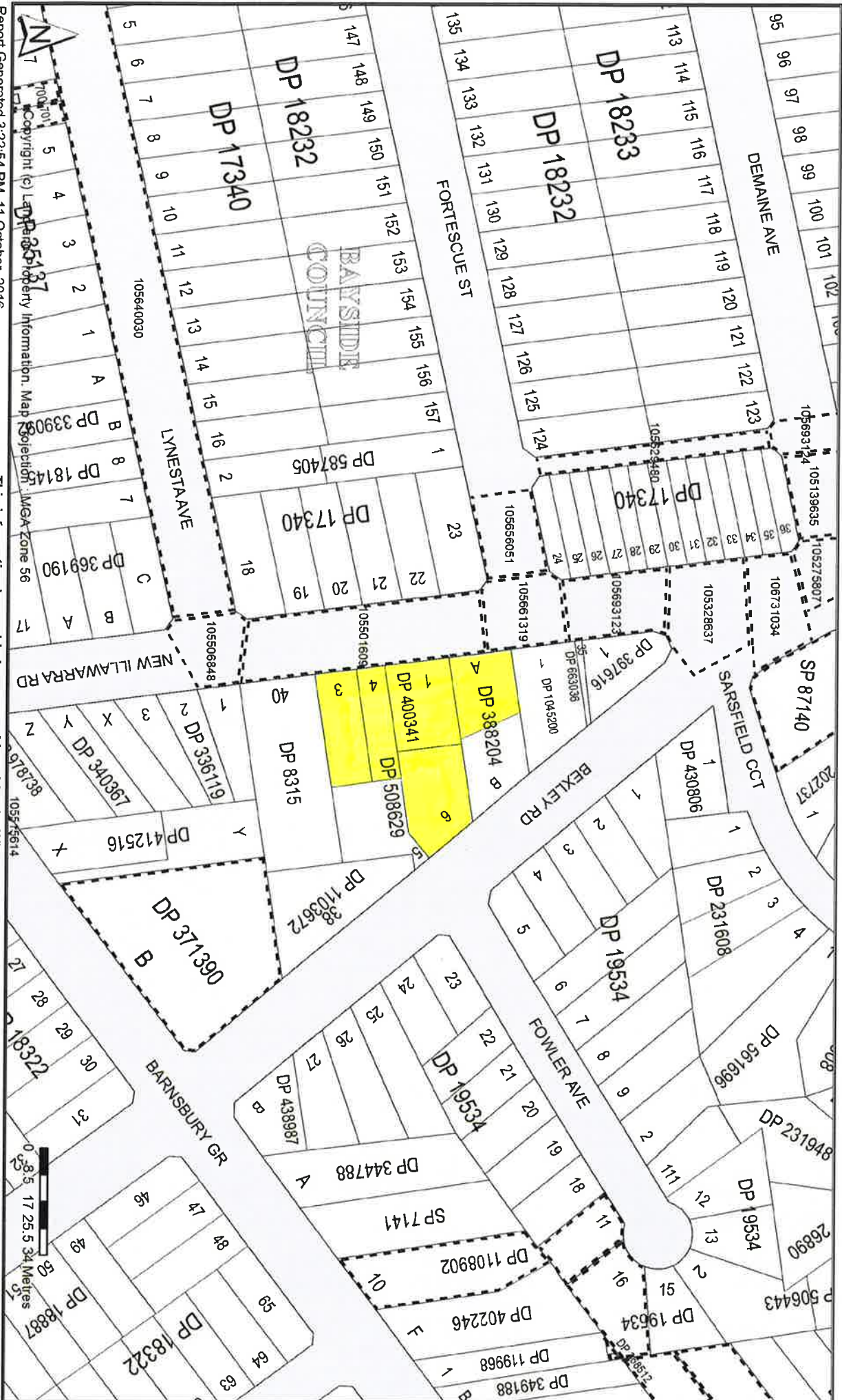
Requested Parcel : Lot 1 DP 400341

LGA: BAYSIDE

Parish : ST GEORGE

Identified Parcel : Lot 1 DP 400341

County : CUMBERLAND



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 ***

PSH-GROLLY-Bexley North

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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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Ref:PSH-GROLLY-Bexley_North /Src:H

Form: 01T

Release: 3.3

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TRANSFERNew South Wales
Real Property Act 1900**AD949119D**

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the Registrar 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	1529
Client No: 92046394	
Duty: <u>44850</u>	Trans No: <u>LA48914</u>
Asst details: _____	

(A) **FOLIO OF THE REGISTER**

1/400341

(B) **LODGED BY**Document
Collection
Box

232

Name, Address or DX, Telephone, and LLPN if any

LLPN:123835G
CSB

Reference:

821781406

CODES

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.

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

Signature of witness:

Signature of transferor:

Name of witness:

Address of witness:

Y JOHN A. MONAHAN
41 WABASH AVE
CROMER, NSW 2099

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

Signature:

Signatory's name:

Signatory's capacity:

Nancy Wahlquisttransferee'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 ***

PSH-GROLLY-Bexley North

PRINTED ON 12/10/2016

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09792073

NEW SOUTH WALES

Application No. 3427

Prior Title Volume 2847 Folio 78

CERTIFICATE OF TITLE

PROPERTY ACT, 1900, as amended.



Vol. 9792 Fol. 73

ID 1st Edition issued 28-8-1964

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 First Schedule.

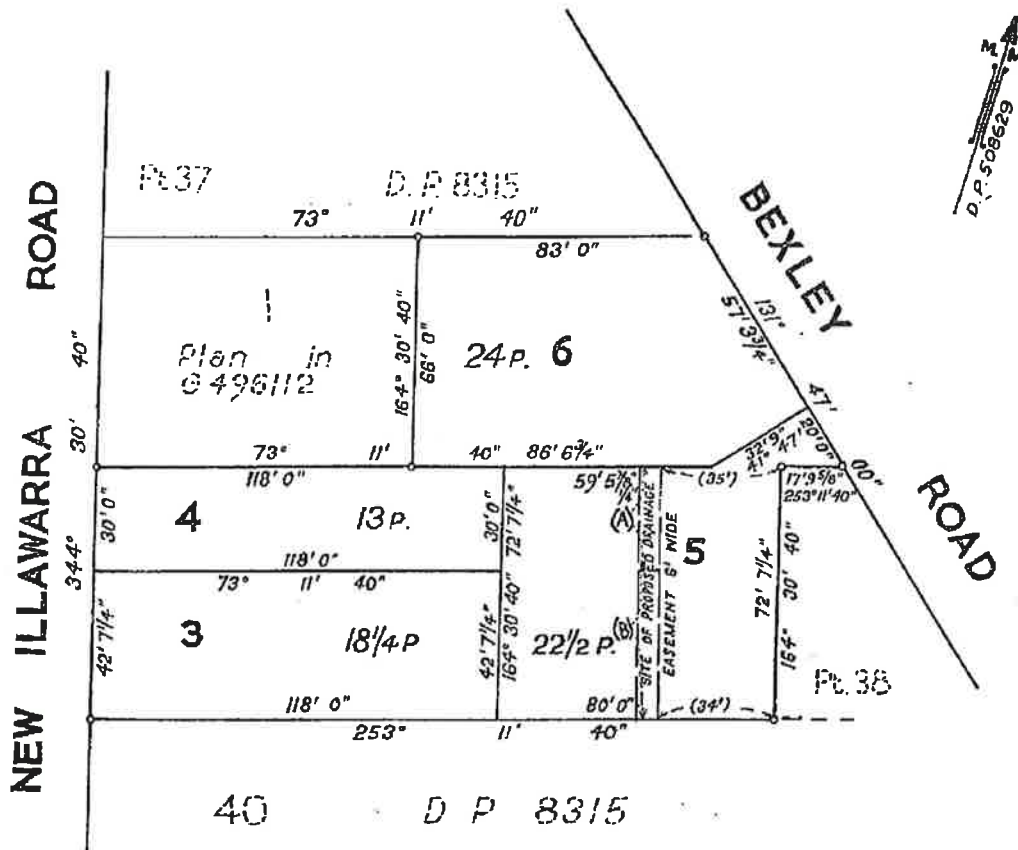
Witness

R.B. Latta

CANCELLED
Jawatson
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.~~

Jawatson
Registrar General

SECOND SCHEDULE (continued overleaf)

- CR 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
Registrar General

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

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REGISTERED PROPRIETOR

FIRST SCHEDULE (continued)

BY 1008 V.C.M. PUBLIC ADMINISTRATOR

INSTRUMENT
NATURE 1 NUMBER 1 DATE ENTERED Signature of Registrar General

Amie Elizabeth Gibbons of Bexley North, widow
John Angelo Popovich of Bexley North, Railway Employee and Anica Popovich, his wife, as joint tenants.

Notice of Death - Q274551

12-7-1977

Transfer

Q361858

29-9-1977

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

INSTRUMENT
NATURE 1 NUMBER 1 DATE PARTICULARS ENTERED Signature of Registrar General CANCELLATION

M

Mortgage Q361859 P

to N.S.W. Permanent Building Society Limited.

29-9-1977



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 ***

PSH-GROLLY-Bexley North

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TRANSFEE

5095443 B

New South Wales
Real Property Act 1900

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

\$2.00

SR66

(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) TRANSFEE

T

TS

(s/13 LGA)

TW

(Sheriff)

JOSEPH AWADA and NARIMAN AWADA

TENANCY:

JOINT TENANTS

(G)

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

25/6/93

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

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

BY HER ATTORNEY KITTY YELEN
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

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NEW SOUTH WALES

Application No. 3427

Prior Title Volume 5005 Folio 46

CERTIFICATE OF TITLE

PROPERTY ACT, 1900, as amended.



09792074

Vol. 9792 Fol. 74

ID

1st Edition issued 28-8-1964



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

A.B. Letta

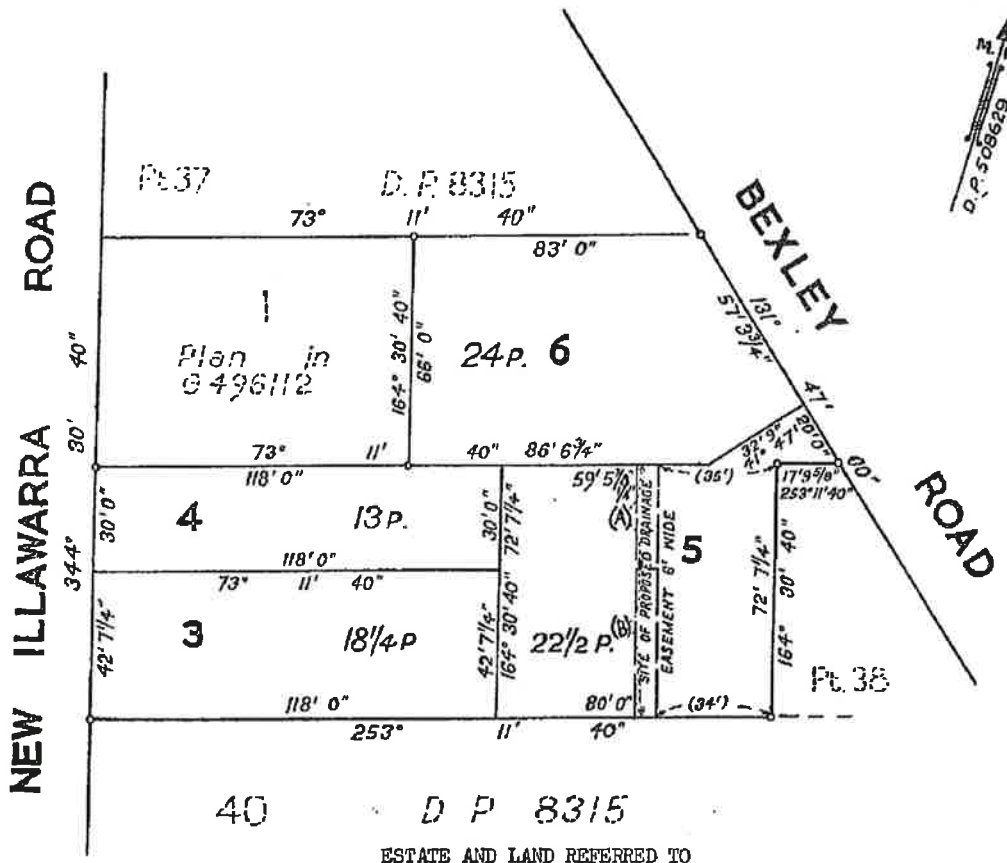
CANCELLED

Registrar General.



PLAN SHOWING LOCATION OF LAND

SEE AUTO FOLIO



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, *Plumber*.

Lawson

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. A375153.0

Lawson

Registrar General

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WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

FIRST SCHEDULE (continued)

BT 1000 Y. G. M. FLIGHT. GOVERNMENT ROUTES


... and Stavropoulos and Maria Stavropoulos as joint tenants by Transfer W907583. Registered 4-6-1987.

Signature of Registrar General

SEE AUTO FOLIO

GALE

SECOND SCHEDULE (continued)

SECOND SCHEDULE (continued)						
INSTRUMENT NUMBER		DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
H907584			Mortgage to St. George Building Society Ltd., Registered 4-6-1987			
X499338			Mortgage to Westpac Savings Bank Limited, Registered 29-4-1988.			Discharged

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	0776720	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 ***

PSH-GROLLY-Bexley North

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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 ***

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CERTIFICATE OF TITLE

PROPERTY ACT, 1900, as amended.

NEW SOUTH WALES

Application No. 3427

Prior Title Volume 7339 Folio 235

Vol. 9792 Fol. 76

ID

1st Edition issued 28-8-1964



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. Letta

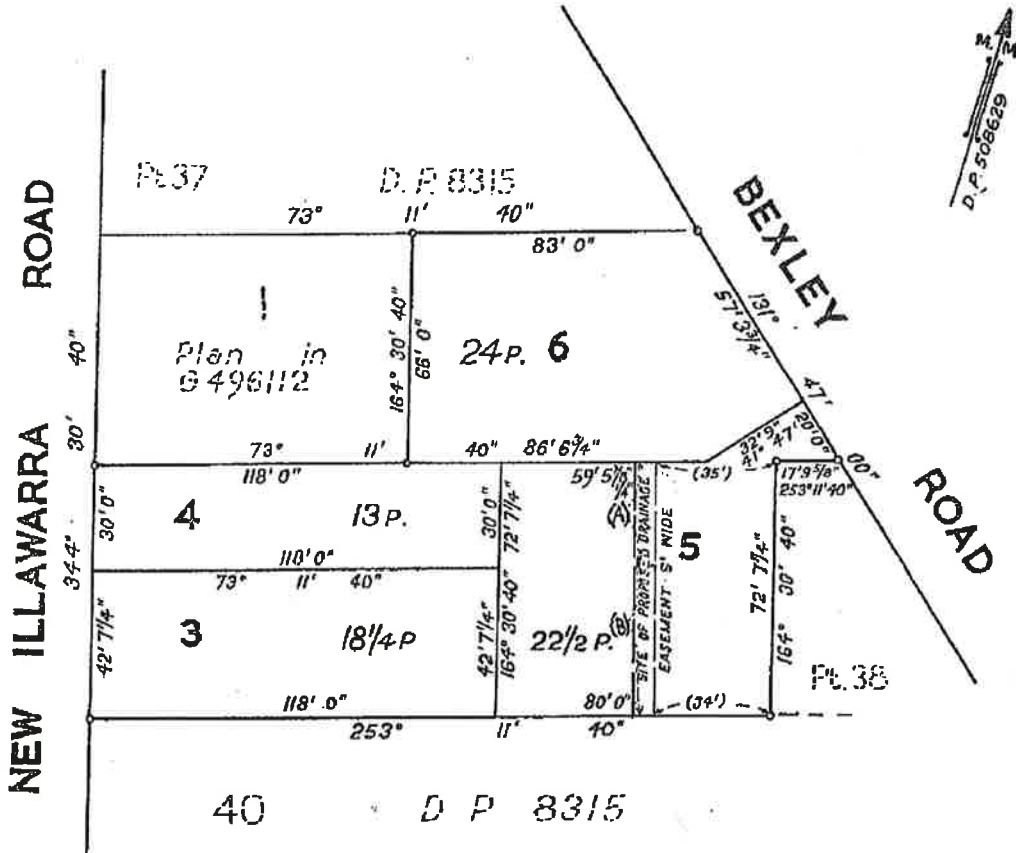
CANCELLED
Jawatson

Registrar General.



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 Chaandler on 19-10-1831.

FIRST SCHEDULE (continued overleaf)

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

Jawatson

Registrar General

SECOND SCHEDULE (continued overleaf)

- GR 1. Reservations and conditions, if any, contained in the Crown Grant(s) above referred to.
AP 2. Conditions created by Transfer No. 4489100.
~~3. Mortgage No. J124362 to St. George & Cronulla Permanent Co-operative Building and Investment Society Limited Entered 8-11-1962. Discharged J749114~~

Jawatson

Registrar General

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FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Robert Raymond Giddings of Berkeley North, Printer and Robert John Giddings his wife as joint tenants

Accepting from the estate of Berley North Clerk and Clerk Henry Giddings of the Berkeley North as joint tenants
from Berley North, Giddings and Giddings, Married Women, of the Berkeley North as joint tenants
Enrique Cavanna and Guadalupe Cavanna as joint tenants by Transfer W605643. Registered 15-3-1985

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

NATURE	INSTRUMENT NUMBER	DATE	PARTICULARS		ENTERED	ENTERED	CANCELLATION
Mortgage	3749115	17-8-1964	to Bank of New South Wales Savings Bank Limited		28-9-1964		
Mortgage	W650074	9-5-1969	To H.M. Laminated Boarding Works Limited		25-5-1969		
Mortgage	W650074	9-5-1969	for the use of Laminated Boarding Works Limited		25-5-1969		
Mortgage	W605643	15-3-1985	for the use of Laminated Boarding Works Limited		15-3-1985		
Mortgage	W605643	15-3-1985	for the use of Laminated Boarding Works Limited		15-3-1985		

FORM No. 62

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

ST 1008 V. C. M. REGISTRAR GENERAL PRINTER

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 ***

PSH-GROLLY-Bexley North

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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

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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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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 1955)	H.C. Sleight 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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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. Sleight 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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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. Sleight 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

County : CUMBERLAND



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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	0303685	TRANSFER	EDITION 1
15/12/1995	0759266	TRANSFER	
15/12/1995	0759267	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	
22/8/2003	9686995	CAVEAT	EDITION 7
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

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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 ***

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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 ***

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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 ***

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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 ***

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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	
22/8/2003	9686995	CAVEAT	EDITION 5
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

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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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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

<u>Date of Acquisition and Term held</u>	<u>Registered Proprietor(s) & occupations where available</u>	<u>Reference to title at acquisition and sale</u>
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:

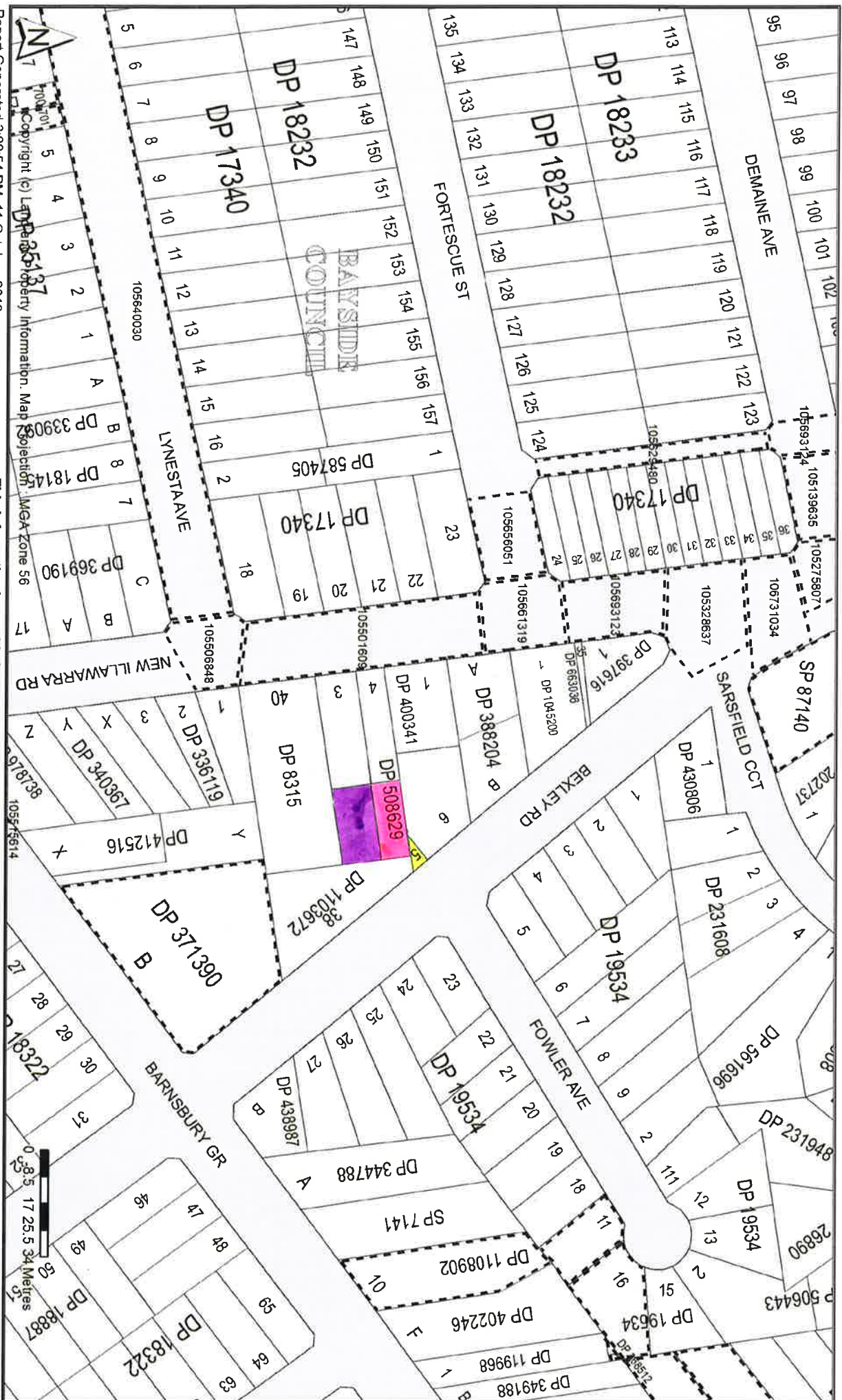
- 16.7.1963 J601625 – Easement for Drainage
- 27.5.19363 J601626 – Easement for Drainage

Leases: -NIL



Yours Sincerely
James McDonnell
12 October 2016

County : CUMBERLAND



Form 1

OFFICE USE ONLY

PLAN OF

DP 508629

subdivision of Lots A & B on TC 718333
& Lot 2 on TG 496112

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

Mun. Shire City of Rockdale

Title System: Torrens

Town or Locality: Bexley North

Purpose: Subdivision

Path of St. George

Ref. Map: Bexley

County of Cumberland

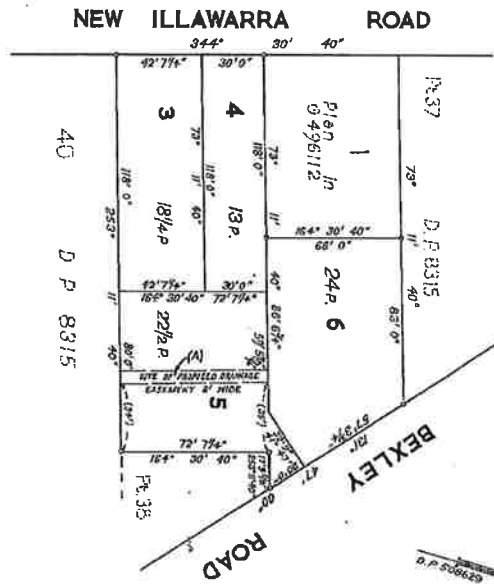
Leaf Plan: C718333(1)+496112(PA)

CONVERSION TABLE APPROVED BY
AUSTRALIAN GOVERNMENT

FEET INCHES	METRES
7 1/4	0.189
6	1.829
17 9 5/8	5.486
20	6.096
30	9.144
32	9.754
35	10.364
42 7 1/4	12.986
48 9 1/4	17.469
57 5 1/4	18.117
66 1 1/4	20.117
72 1 1/4	22.117
75	22.861
85	25.909
85 5 3/4	26.394
118	35.966
AC RD	30 M
13	38.8
18 1/4	461.6
22 1/2	569.1
24	607

WARNING. Plan Drawing only to appear in this space.

WARNING. Plan Drawing only to appear in this space.



Signatures, Seals and Statements of Deductions 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 3 marked 'E' for proposed drainage easement of width 5' with a depth of 3' 6" as shown.

P. Davis
P. Davis
P. Davis

M. R. O.

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NEW SOUTH WALES

Application No. 3427

Prior Titles Volume 2847 Folio 78

Volume 5005 Folio 46

Volume 7339 Folio 235

CERTIFICATE OF TITLE

PROPERTY ACT, 1900, as amended.



Vol. 9792 Fol. 75

ID 1st Edition issued 28-8-1964

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

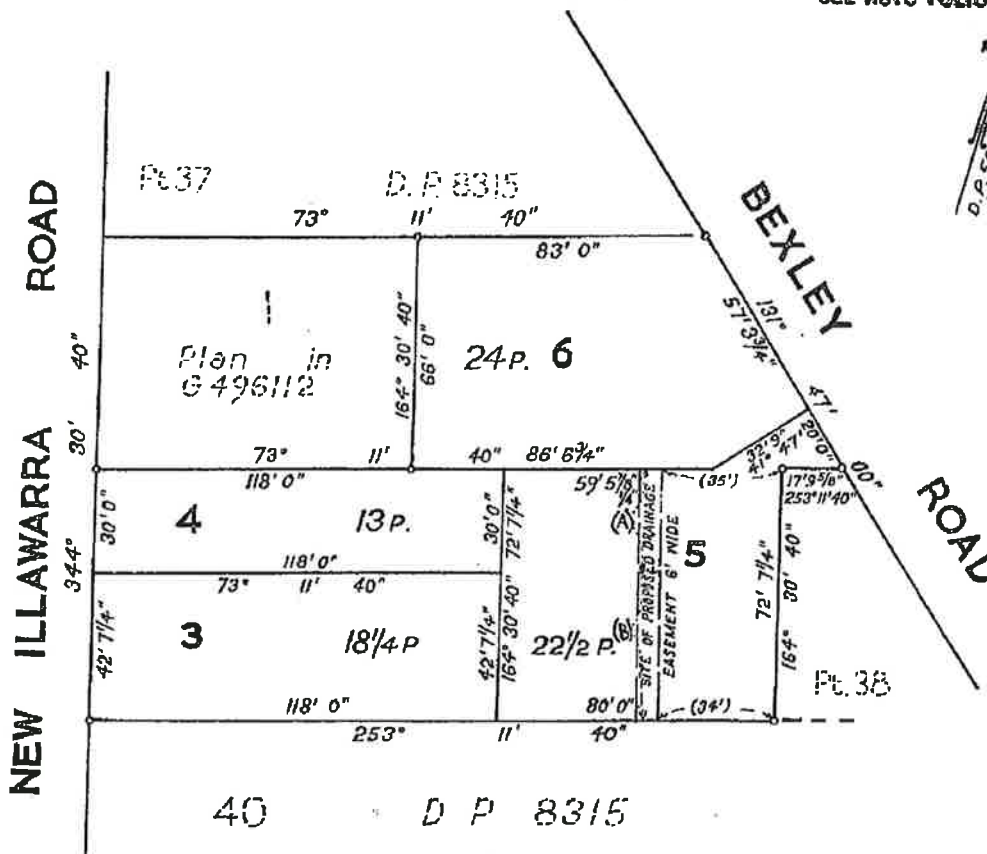
CANCELLED

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.~~

Jawatson

Registrar General

SECOND SCHEDULE (continued overleaf)

- PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON
- GR 1. Reservations and conditions, if any, contained in the Crown Grant(s) above referred to.
 - CV 2. Covenant created by Transfer No. A375153 affecting part.
 - AA 3. Conditions created by Transfer No. A489100 affecting part.
 - ED(A) 4. Easement for Drainage created by Transfer No. J601625 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. J601626 affecting the piece of land 6 feet wide designated (B) shown in the plan hereon.

Jawatson

Registrar General

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

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Frank Xavier Gamble and Eleonora Gamble as joint tenants by Transfer S573912. Registered 15-7-1981.

THE

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

NATURE	INSTRUMENT NUMBER	DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
<i>Theravaya</i>	<i>4244073</i>	<i>20.11.1984</i>	<i>to Commercial Savings Bank of Australia and New Zealand Banking Group Limited</i>	<i>25.1.1989</i>	<i>[Signature]</i>	Discharged S218622
Mortgage	5304594		to Australia and New Zealand Banking Group Limited	31.3.1984	<i>[Signature]</i>	Discharged S573911
S573913			Mortgage to Bank of New South Wales Savings Bank Limited. Registered 15.7.1983.		<i>[Signature]</i>	Discharged T216682
T216683			Mortgage to Bank of New South Wales. Registered 2.9.1982.		<i>[Signature]</i>	Discharged M451773
T450686			Mortgage to Westpac Banking Corporation. Registered 21.3.1983.		<i>[Signature]</i>	Discharged M451772
M452957			Mortgage to Westpac Banking Corporation. Registered 13.5.1984.		<i>[Signature]</i>	Discharged M451771
M276396			Granted by F.C. Finance Pty. Limited. Registered 19.4.1985.		<i>[Signature]</i>	Withdrawn M276370

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

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PHONE: (02) 9261 5211 FAX: (02) 9264 7752
www.hazlett.com.au



Ref:PSH-GROLLY-Bexley_North /Src:H

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) TENANTS 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

WILLIAM CHAN & CO

Suite 207, 661 George Street, Sydney

Reference (optional):

CODES

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) TRANSFEE

WO TSANG

AND YUET KWONG TSANG

TENANCY: JOINT TENANTS

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 [Signature]

Name of witness: JENNY LIU FUNG YING TSANG

Address of witness: 10A, EDWARD STREET, WILLOUGHBY

N.S.W. 2068

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.

Signature of witness:

[Signature]

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:

[Signature]

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

Signature of transferee:

Wo Kong X [Signature]

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

Page 1 of
number additional
pages sequentially

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

ALL HANDWRITING MUST BE IN BLOCK CAPITALS.

File with
8816233

Our Ref: 8816233



**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
8816233

DAMMHOLZ & CO. (HAYMARKET OFFICE)
SOLICITORS

ABN 70 200 622 953

HUGO AHWEE

2nd FLOOR
661 GEORGE STREET
SYDNEY NSW 2000
AUSTRALIA

Your Ref: 8816230-33

Our Ref: HA

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

5 September 2002

New South Wales
Land Title Office
Queens Square
Sydney

Dear Sirs

Re: Transfer severing tenancy
Your ref: 8816230-33

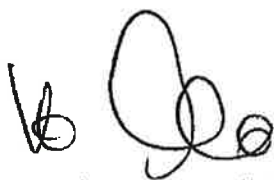
F.1

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



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.

Signature of Fat Tsang

.....

Before me:

Signature of Michael Joseph Wakim
MICHAEL JOSEPH WAKIM
a Justice of the Peace

File
8816233

DAMMHOLZ & CO. (HAYMARKET OFFICE)
SOLICITORS

ABN 70 200 622 953

(PREVIOUSLY WILLIAM CHAN & CO)

Your Ref:

Our Ref:

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

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

Land Title Office
Sydney

17 September 2002

Dear Sirs

Re: Your File Ref No 8816230-33

(A) 102/857628

Fat TSang transfer of $\frac{1}{2}$ share to Kevin Tsang

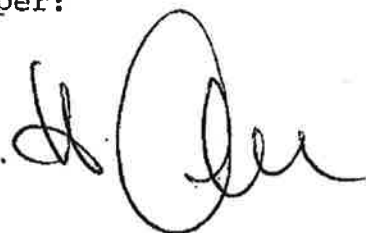
(B) 5/508629

Fat Tsang transfer of $\frac{1}{2}$ 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:



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 Yuet Kwong TSANG MELISSA TSANG 18 Edward Street, Willoughby NSW 2068 POB N136 (mobile) 0412 686 086 BEXLEY NORTH NSW 2207 Reference:	CODE 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.

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

Signature of witness:

Signature of surviving joint tenant:

Name of witness: Melissa TSANG

Address of witness: 311a Bexley Road
Bexley North NSW 2207

(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 MUST BE IN BLOCK CAPITALS.
LAND AND PROPERTY MANAGEMENT AUTHORITY

Office use only—
Evidence sighted and returned:

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

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

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





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) 91500 892 Business fax number (02) 91500 892
Business email address sanhilb@plusnet.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 Street

307-309 BEXLEY ROAD

Suburb/Town/Locality

Postcode

BEXLEY NORTH 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

Name

(04) 02 408 623FUAD AHMED

Nature of site (eg petrol station, warehouse etc)

PETROL STATION

Nature of primary business activity

ABN Number (if any)

Website details (if any)

47856421234

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

Code

Description

5321AUTOMOTIVE 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.

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	31,200L

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
0021	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	27,600L

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)
5	Underground tank	3	10,000L

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	0000	L

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
6	Underground tank	3	2000L

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	2000	L

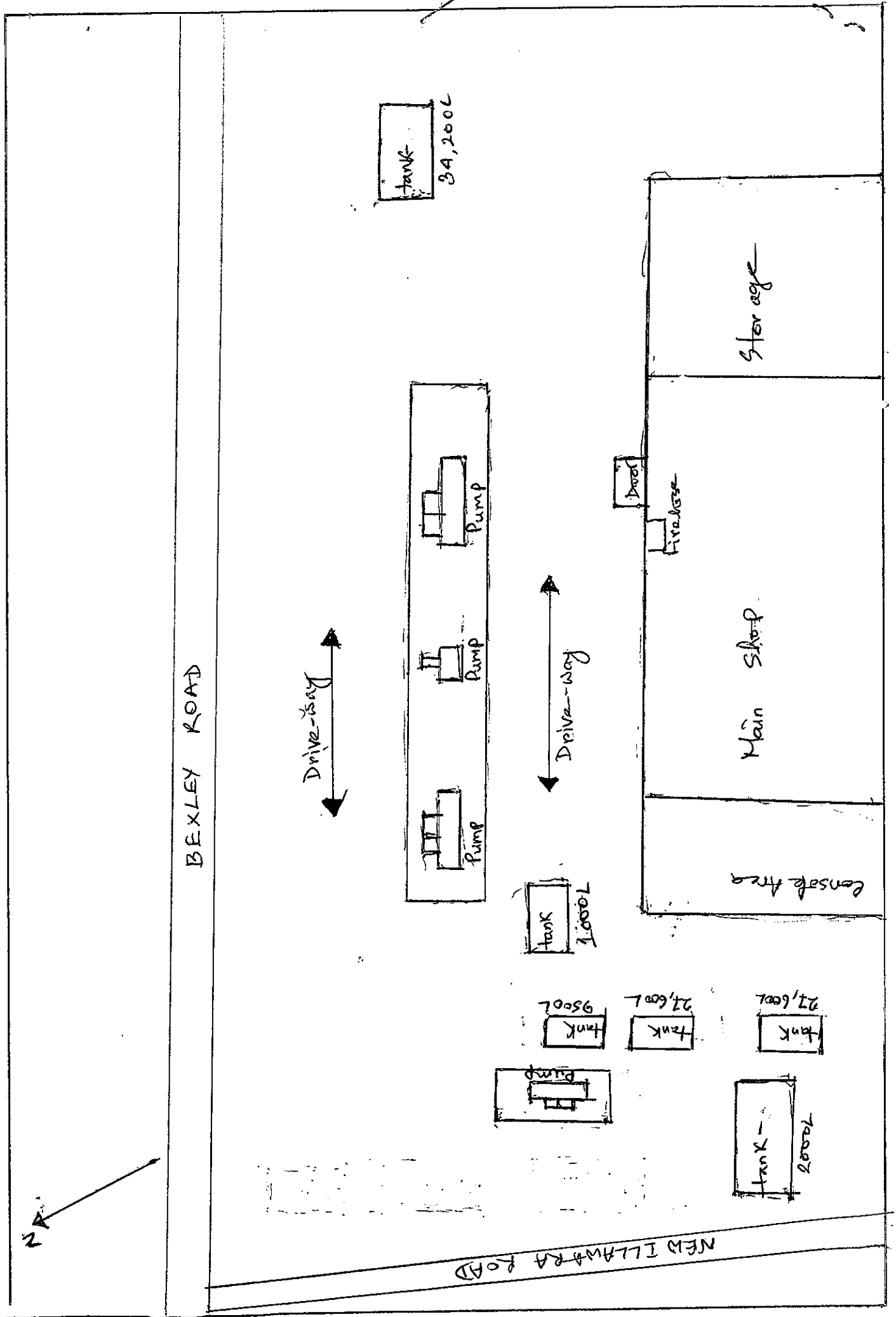
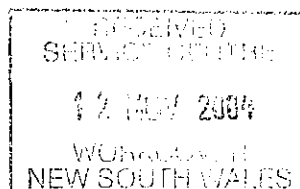


fig- BEXLEY PETROLEUM, 309 BEXLEY ROAD, BEXLEY ROAD, NSW - 2207



168 - 517-B

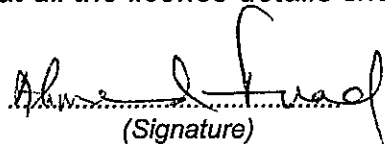


Licence No. 35/007066

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)

for: AHMED F & RAHMAN M

FUAD AHMED
(Please print name)

10/11/04
(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

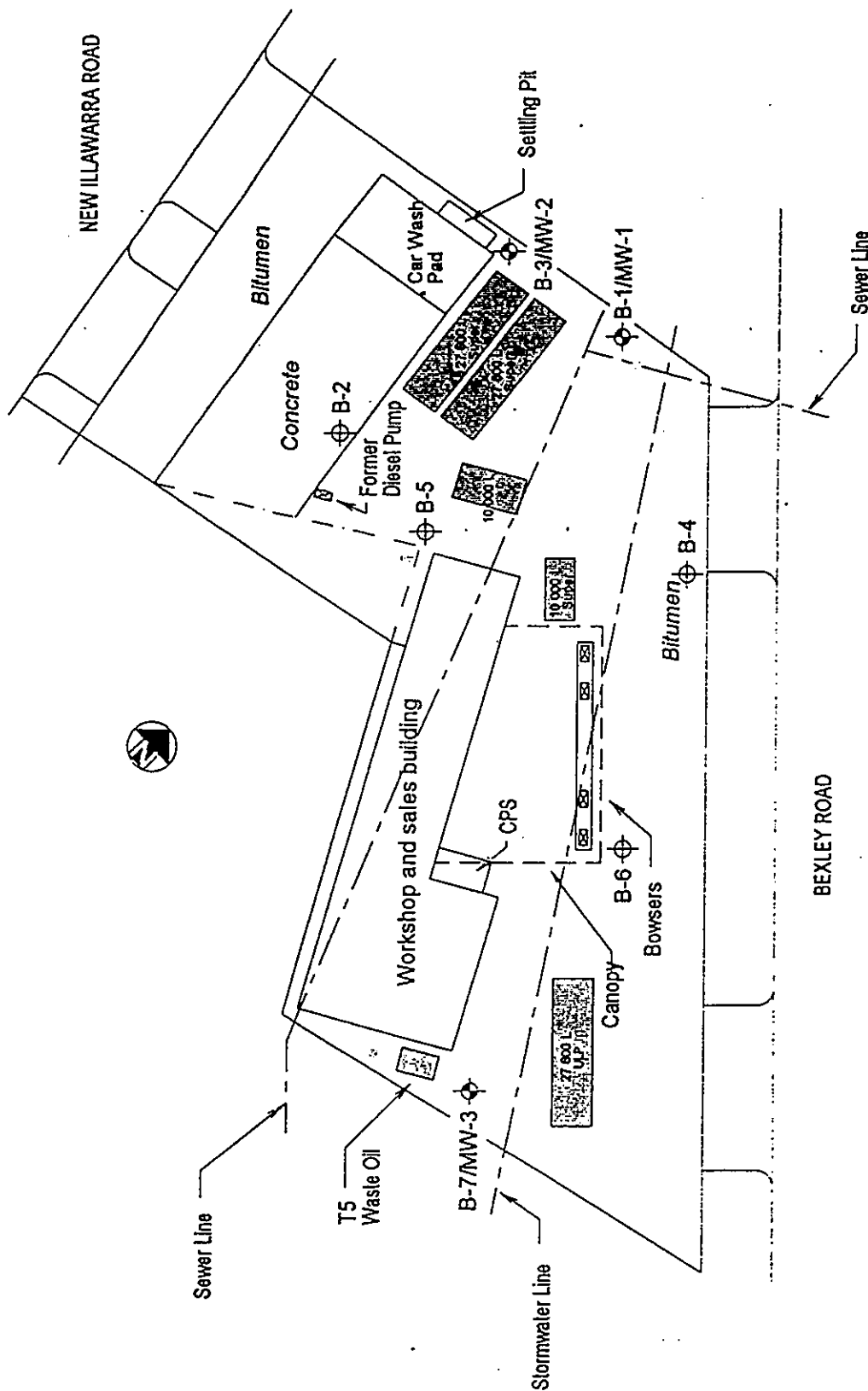
Major Supplier of Dangerous Goods AUSTRALIAN (CALTEX)

Emergency Contact for this Site FUAD AHMED Ph. 0408 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;
 Dwg. No. 226 Sh. 10

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

EAKWOOD.

BEXLEY ROAD.

BEXLEY.

35/007066

TANK AIR
VENTS
3 FT. HIGH.

FILL
POINTS

NEW ILLAWARRA ROAD.

MOTOR SPIRIT PUMPS

6M.

7M.

15M.

A/G.
KEROSENE
TANKS.

* SWITCHBOARD

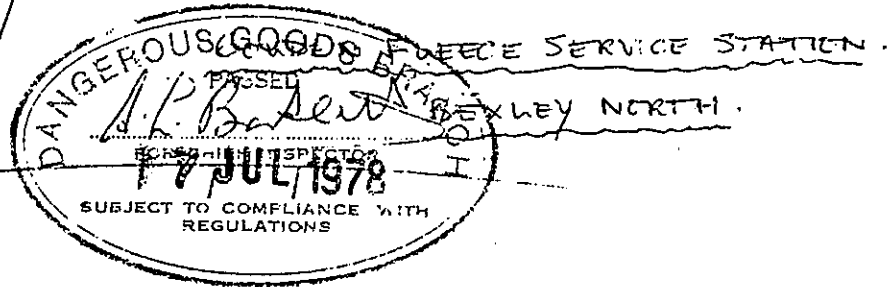
PROPOSED
VIG. M/TANK.

25M

5M

6M.

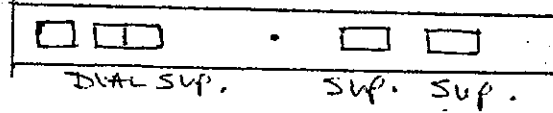
3M



GFSS BEXLEY NTH.

BEXLEY RD.

STD.



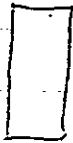
2000 SUPER.

FILL POINTS.

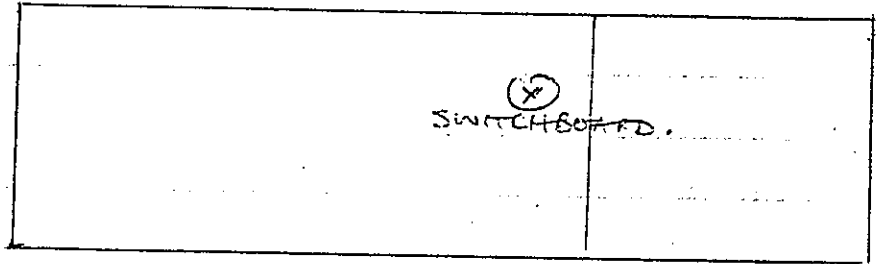
X
X
X



6000 SUPER.



2000 STD.



SWITCHBOARD.

← 4. m. →

PROPOSED
6000 GAL.
SUPER.

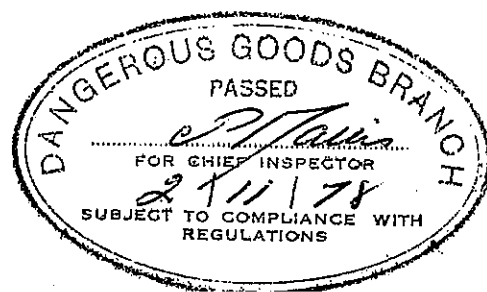
DISTILLATE

500 v/c.



GFSS. BEXLEY NORTH.

NEW ILLAWARRA RD.



FOR THE KEEPING OF DANGEROUS GOODS

Application is hereby made for—
described below.

*a licence (or amendment of the licence)

*the transfer of the licence

for the keeping of dangerous goods in or on the premises

FEE: \$10.00 per Depot for new licence.

\$10.00 for amendment or transfer.

(*delete whichever is not required)

Name of Applicant in full (see over)	NF NOMENT 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)	Cm. 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

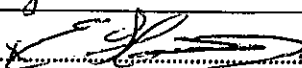
Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (see over)	Storage capacity LITRES	Dangerous goods	C & C Office use only
			Product being stored	
1	Undergr. Tank	27800	Petrol 3.1	2006 120.6
2	✓ ✓	27800	N 3.1	202034
3	✓ ✓	29000	3.1	202093
4	✓ ✓	29000	3.1	202093
5	✓ ✓	2500	Keros 3.2	202023
6	Cylinder Store	420	LP Gas 2.1	70042
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.
DAERA 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. 35007066.2 (F3)

Application is hereby made for premises described below.

*the transfer of the licence

(*delete whichever is not required)

FEE: \$10.00 per Depot

8859 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 Rd 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 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	
			Product being stored	C & C Office use only
1	Underground	27850	3.1 (Petrol)	2.0202
2	"	27850	3.1 PETROL	2.0203
3	"	10,000	3.1 PETROL	2.0204
4	"	10,000	3.1 PETROL	2.0205
5	"	2,000	3.2 KEROSENE	2.0206
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.S.

Have premises previously been licensed?

Yes

If known, state name of previous occupier

op oboue

Licence No.

07066

Signature of applicant

Date

21/2/79

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

Brooks

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

~~the transfer of the licence~~
(*delete whichever is not required)

FEE: \$10.00 per Depot

Name of Applicant in full (see over)	Surname <u>SLOANE</u> Given Names <u>BRYAN COLIN</u>
Trading name or occupier's name (if any)	<u>2415 21/00/00 B3A</u>
Postal address	<u>BE 415 STORAGE Golden Hill Service Station</u>
Telephone number of applicant	<u>309 Berley Rd, Berley North</u> Postcode <u>2207</u>
Address of the premises in or on which the depot or depots are situated (including street number, if any)	STD Code <u>502 2223</u> Number <u>506659</u>
Nature of premises (see over)	<u>309 Berley Rd Berley North</u> Postcode <u>2207</u>
	<u>Service Station</u>

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 <u>20 00 120 6</u>	
			Product being stored	C & C Office use only
1	<u>underground tank</u>	<u>27.800</u>	<u>Acid 3.1</u>	<u>2 020 34</u>
2	<u>✓</u>	<u>27 800</u>	<u>✓</u>	<u>2 020 34</u>
3	<u>✓</u>	<u>10.000</u>	<u>✓</u>	<u>2 020 14</u>
4	<u>✓</u>	<u>10 000</u>	<u>✓</u>	<u>2 020 14</u>
5	<u>✓</u>		<u>✓</u>	<u>2 020 33</u>
6	<u>✓</u>	<u>2500</u>	<u>Acid 3.2. Keros</u>	
7	<u>Cylinder Store</u>	<u>200 LT</u>	<u>Acid 2.1</u>	
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. 350070662

Signature of applicant X B Sloan

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 Brooks

Name of Occupier MOUBARAK (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 120 Bexley & New Hawwarra Rd North Bexley Postcode 2207

Occupation Service Station Prop.

Nature of Premises S/S

Particulars of construction of depots and maximum quantities of inflammable liquid and/or dangerous goods to be kept 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	<u>Underground tank</u>			<u>30000</u>								
2				<u>10000</u>								
3				<u>10000</u>								
4												
5												
6												
7												
8												
9												
10												
TOTAL												

PUBLIC REVENUE A/c

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

Insert water capacity of tanks or cylinders.

Name of Company supplying inflammable liquid H. C. Steigh

(Date) 30.3.76

Receipt No. 5614

Have premises previously been licensed? Yes

If known, state name of previous occupier Raymond P.

Signature of applicant Peter Moubarak

Date _____

CERTIFICATE OF INSPECTION

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

Signature of Inspector George Edward Black

Date 24.3.76

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.

R/c 9937
8400.
ch 24/8

GAVANAS PETROS

2. Trading Name (if any)

Golden Fleece Mineral Depot

3. Locality of the premises in which the depot or depots are situated

No. or Name

Street

Town

Berley & New Illawarra Rd

North Berley

as above

Postcode 2207

4. Postal address

5. Occupation

8/1st hsh

8/25

6. Nature of premises (dwelling, garage etc.)

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	2x1000000 ays 2PC										40	
5												
6												
7												
8												
9												
10												

PUBLIC REVENUE A/c

4.00

(Date)

Receipt No.

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

Signature of applicant

X 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

Signature of Inspector

hsh

premises described below.

(*delete whichever is not required)

FEE: \$10.00 per Depot

1590 3/07/79 038

1592 3/07/79 038

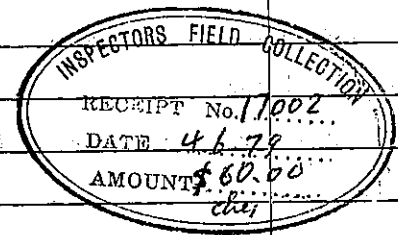
Amended Renewal

Name of Applicant in full (see over)	Surname <u>HARDY</u>	Given Names <u>LESLIE</u>
Trading name or occupier's name (if any)	<u>GOLDEN FLEECE</u> <u>5/5 Stn. BEXLEY</u> <u>TF</u>	
Postal address	Postcode	
Telephone number of applicant	STD Code <u>02</u>	Number
Address of the premises in or on which the depot or depots are situated (including street number, if any)	<u>enr. BEXLEY Rd. & NEW ILLAWARRA</u> <u>BEXLEY</u> Postcode <u>2207</u>	
Nature of premises (see over)	<u>SERVICE STATION</u>	

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	C & C Office use only
1	<i>Underground Tank</i>	<i>27850</i> ✓	<i>3.1</i>	<i>2 020 34</i>
2	✓	<i>27850</i> ✓	<i>3.1</i>	<i>2 020 34</i>
3	✓	<i>10000</i> ✓	<i>3.1</i>	<i>2 020 14</i>
4	✓	<i>10000</i> ✓	<i>3.1</i>	<i>2 020 14</i>
5	✓	<i>2500</i>	<i>3.2</i>	<i>2 020 23</i>
6	<i>Cylinder store</i>	<i>420</i>	<i>2.1</i>	<i>7 100 42</i>
7				
8				
9				
10				
11				
12				



Name of company supplying flammable liquid (if any) HCS

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

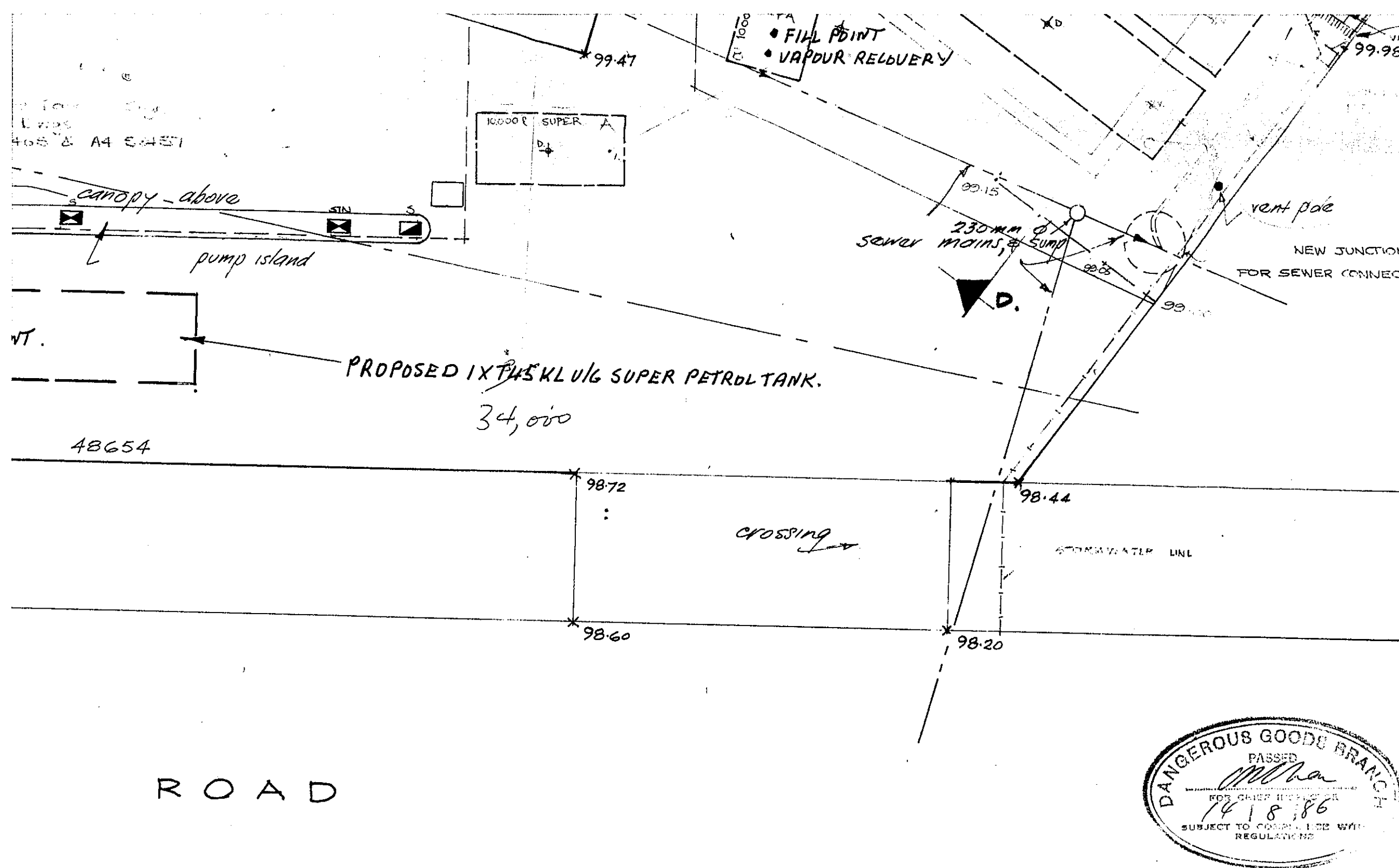
For external explosives magazine(s), please fill in side 2.

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



DATE	REVISION
29.5.78	Reduced levels added, all water meter & S.P.s, Slab 5

STATE MANAGER	OPERAT MANAGER
DATE	DATE
SALES MANAGER	BRANCH ENGINEER
DATE	DATE

GOLDEN FLI PETROLEUM

A DIVISION OF
H. C. SLEIGH LIMITED
160 QUEEN STREET
MELBOURNE VICTORIA
TELEPHONE 60 052

EXIST. SERVICE S
ON BEXLEY ROAD,
NORTH

SITE PLAN

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

CALTEX DRG NO A1 55554 E

NOTE: All reduced levels are shown in metres.

E

F

G

H

stormwater
drainage line

TYPE 100
100mm dia
A2 50405 & A4 5045

canopy

DUAL HIGH SIGN,
REFLECTIVE NO
A4-GRUB

DIP POINT.

2m

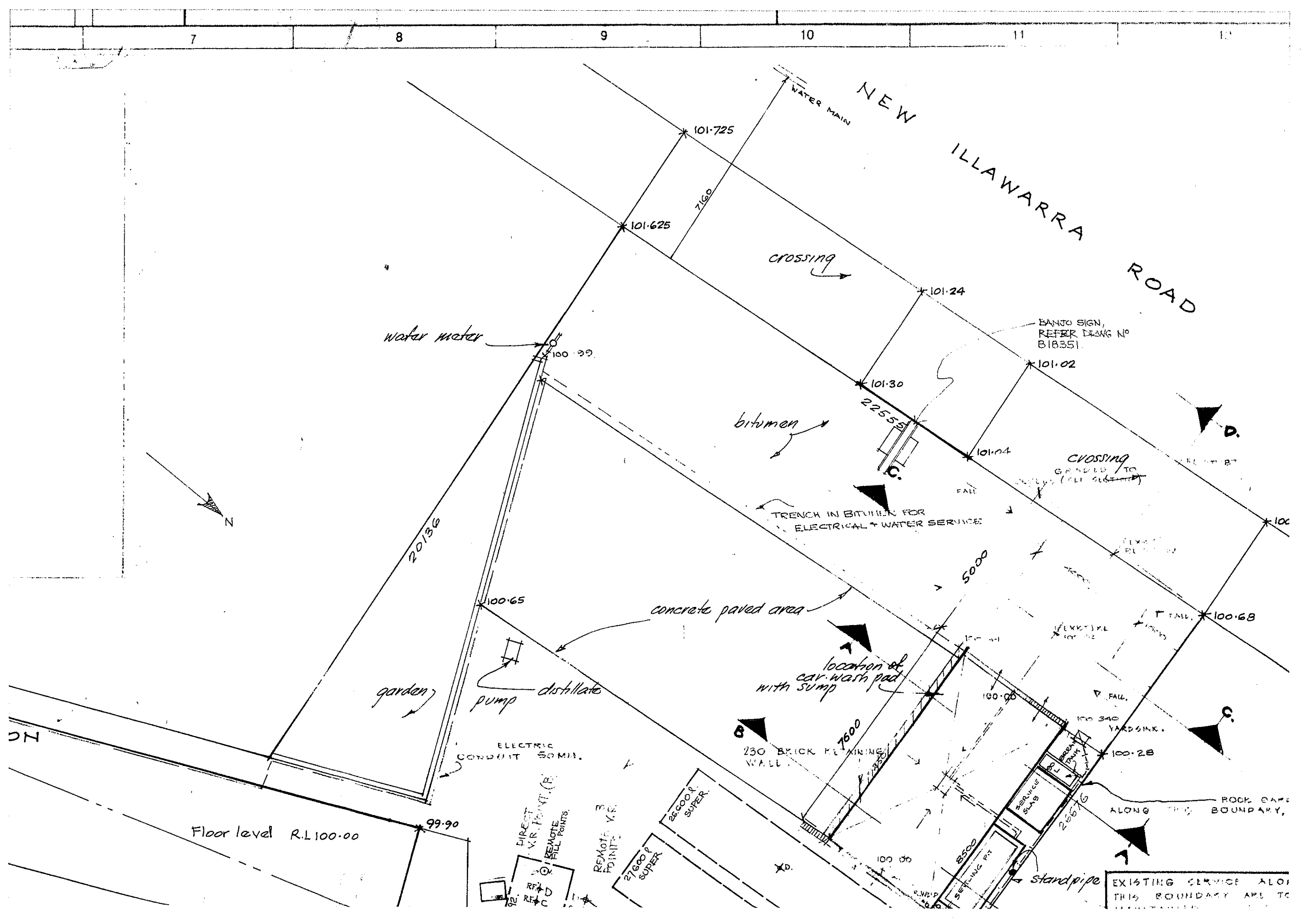
VENT

2m.

48654

crossing

BEXLEY



7

8

9

10

11

12

NEW ILLAWARRA ROAD

WATER MAIN

101.725

101.625

7160

CROSSING

101.24

water meter

100.99

BANTO SIGN, REFER DIAG NO B18351

101.02

101.30

bitumen

2255

101.04

CROSSING GRADED TO EXIST (SEE SHEET)

FALL

TRENCH IN BITUMEN FOR ELECTRICAL + WATER SERVICE

20136

100.65

concrete paved area

5000

garden

pump distillate

location of car wash pad with sump

100.00

100.68

100.02

FALL

100.340 YARDS SINK

100.28

ROCK GARDEN BOUNDARY, ALONG THIS

Floor level R.L 100.00

99.90

ELECTRIC CONDUIT 50MM.

DIRECT V.R. POINT (B) REMOTE FILL POINTS

REMOTE POINTS V.R.

26000 SUPER

27600 SUPER

230 BRICK RETAINING WALL

7600

100.00

100.02

100.04

100.06

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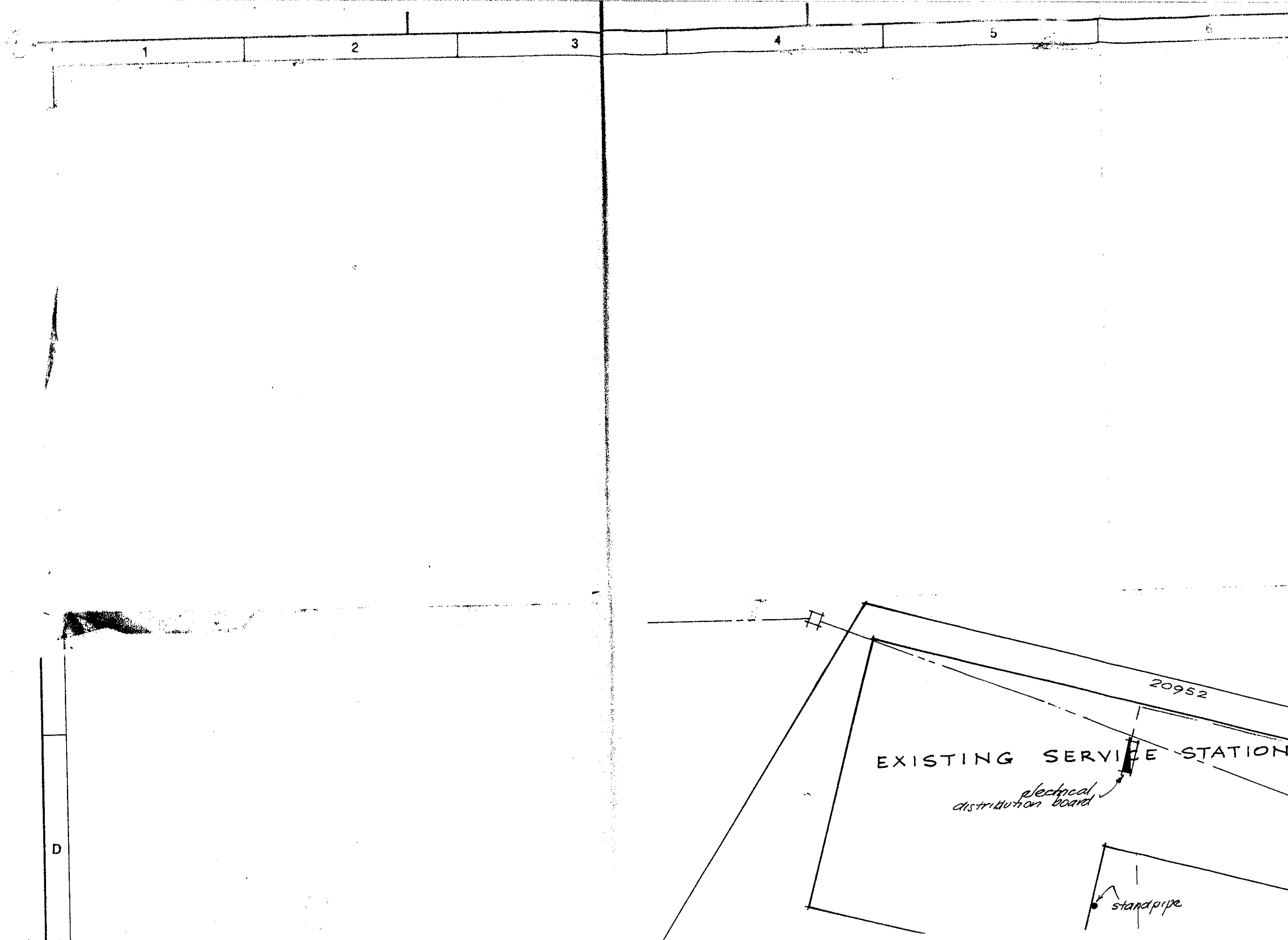
100.468

100.470

100.472

100.474

100.476



1

2

3

4

5

6

D

EXISTING SERVICE STATION

electrical
distribution board

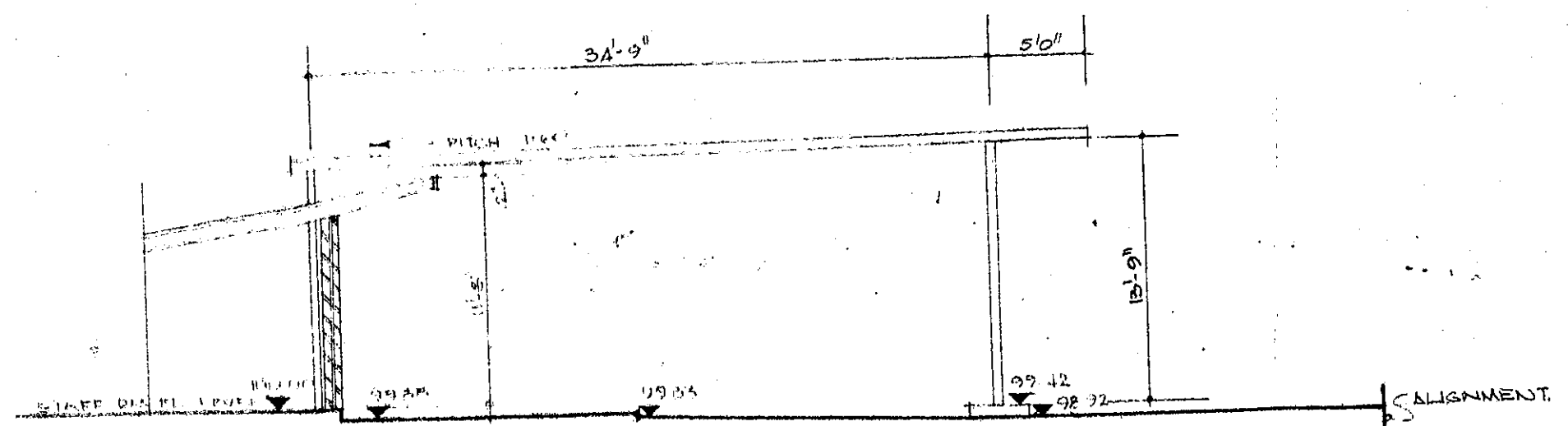
20952

stand pipe

ABANDON. 2X 1000 g^l TANKS.

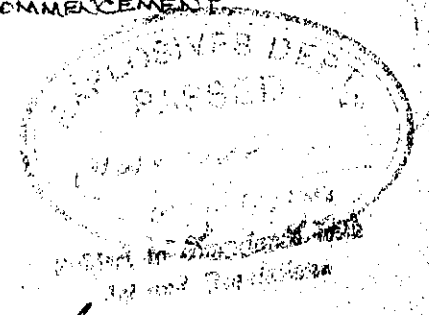
BOUND

INK.



ELEVATION

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



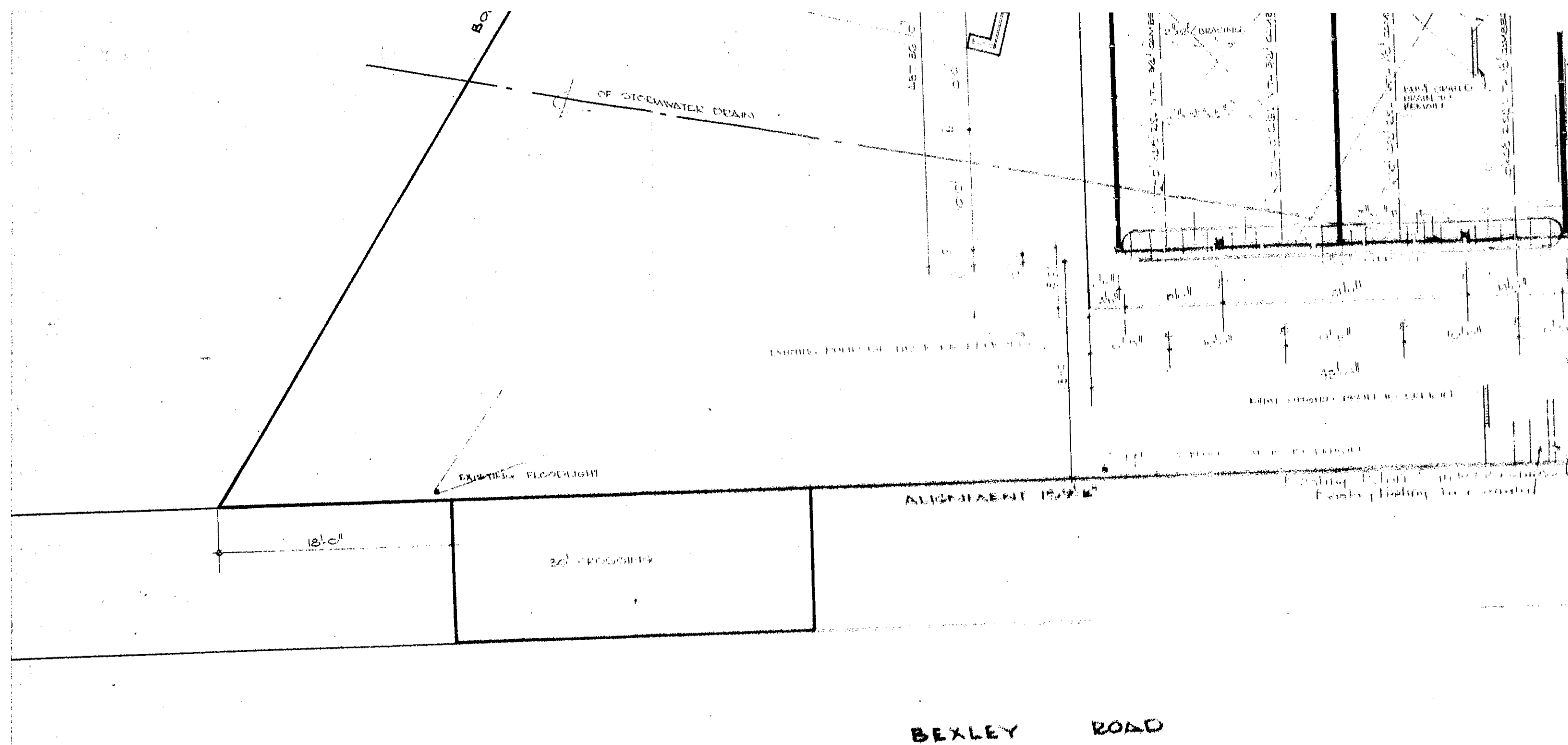
Exp. Dept.

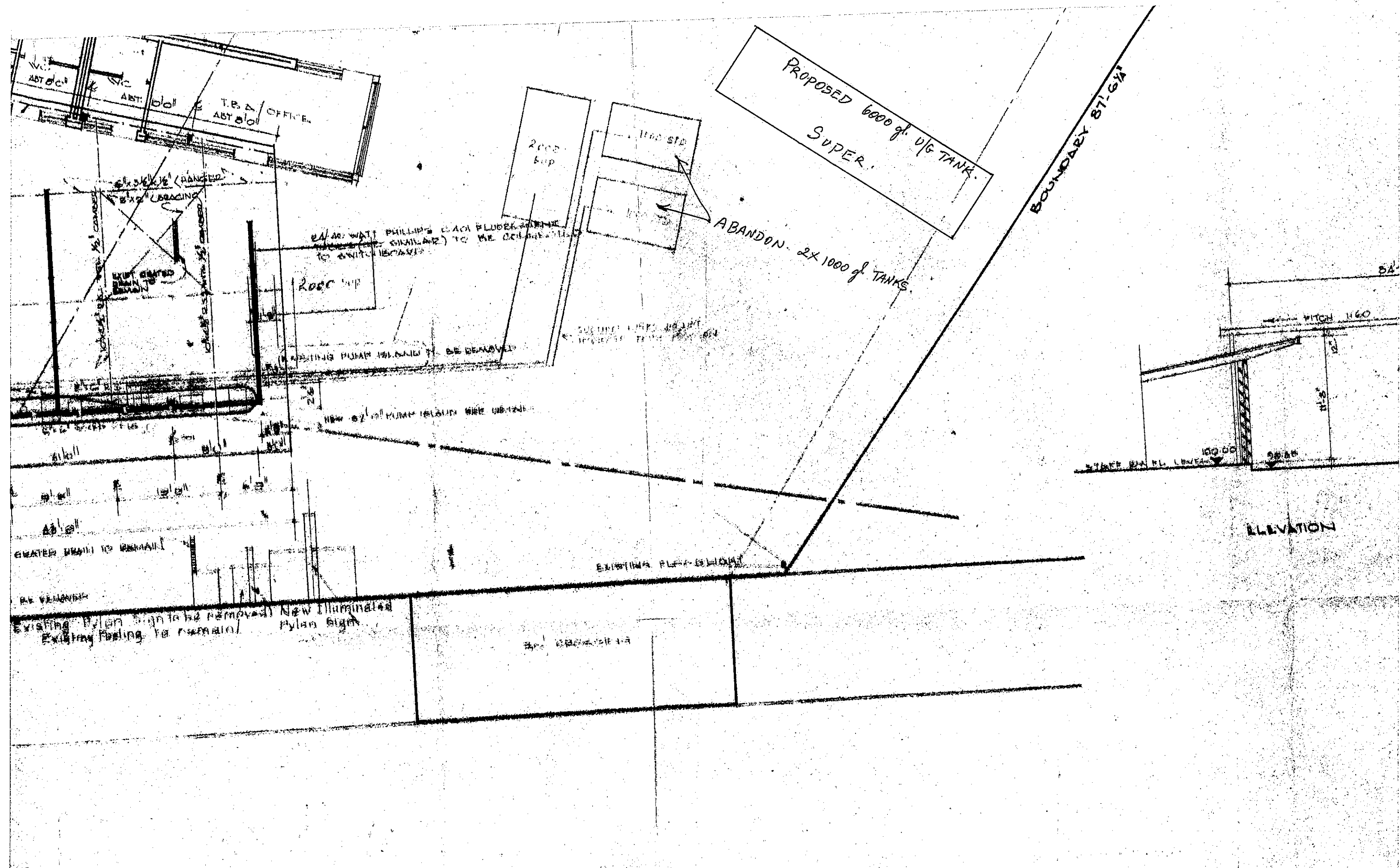
C	13-64	Sky Sign removed. New Illuminated Pylon Sign added.	RAG
B	4-3-65	5'0" WELDING ON CANOPY & EXTRA SUPER PUMP IN PLACE OF STANDARD PUMP	
A	5-1-65	PLANK & LAND DETAIL ADDED - CANOPY STRUCTURE & SIZE	LTG
		REVISED NOTES ADDED	
NO	DATE	REVISIONS	

GOLDEN FLEECE SERVICE STATION
BEXLEY RD & NEW BLANWARRE RD BEXLEY, NTH

CANOPY ADDITIONS	SCALE	CHECKED	DWG. NO.
	DATE 2-6-64	APPROVED	22609/1
	DRAWN		

H. C. SLEIGH LIMITED SYDNEY TELEPHONE 24853







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

Identify contamination at the site which would pose an unacceptable risk as defined by relevant guidelines endorsed by the NSW Office of Environment and Heritage (references D3, D4 and D5) for the proposed residential land-use for the site and/or that would impact upon anticipated receiving environments.



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 4,200m² 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
Location / Site: 307-311 Bexley Rd & 88-96 New Illawarra Rd

Project Number: E16016BN
Client: Tony Soueid

Drilling Company: Total Drilling
Drill Method: CC to 0.19m, SFA (TC-Bit) to EOH
Equipment: Hanjin D&B

Date Started: 1/11/2016
Date Completed: 1/11/2016

Ground Level: -----
Easting: -----
Northing: -----

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests	Observations / Comments
										ID No.	
CC		0.2					CONCRETE SLAB.				
		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									
		1.6								SMC011116-4 1.3-1.5m	
		1.8							very moist		
		2.0									
		2.2									
		2.4									
		2.6									
		2.8					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	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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**

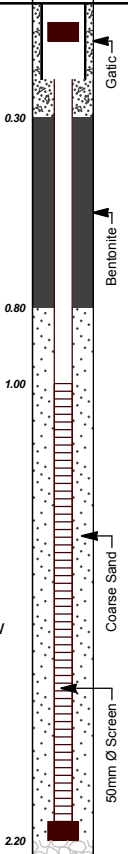
Project Name: **Geotechnical and Contamination Assessment**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd**

Project Number: **E16016BN**
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	Observations / Comments	Well Details	Well Construction
										ID No.			
CC		0.2				Fill	CONCRETE SLAB.						
		0.4					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			
		0.6											
		0.8								SMC011116-7 0.6-0.7m			
		1.0											
		1.2								SMC011116-8 0.9-1.0m			
		1.4											
		1.6											
		1.8											
		2.0								SMC011116-9/10 1.8-2.0m			
		2.2				Natural	SANDSTONE - orange brown & pale grey, medium to coarse.						
		2.4											
		2.6					Hole Terminated at 2.40m Practical refusal.						
		2.8											
		3.0											

Water seepage noted below 1.6m.



Moisture	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361



Hole ID. **BH103**
Hole Depth: **1.40 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd**

Project Number: **E16016BN**
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	Observations / Comments
										ID No.	
Solid Flight Auger		0.2				Fill	ASPHALT. FILL- Gravelly Clayey Sand, dark grey and brown.	loose	moist	SMC011116-11/12 0.1-0.25m	
		0.4				Fill					
		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				Fill					
		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	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361



Hole ID. **BH104**
Hole Depth: **1.20 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd**

Project Number: **E16016BN**
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		0.2					CONCRETE SLAB.				
Solid Flight Auger		0.4				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.
		0.6				Fill	FILL- Sand, yellow brown, fine to coarse grained sand.	loose	moist	SMC011116-16 0.5-0.65m	
		0.8				Fill	FILL- Sand, dark brown, fine to coarse grained sand, trace gravel.	loose	moist	SMC011116-17 0.8-0.95m	
		1.0				Fill					
		1.2					Hole Terminated at 1.20m Refusal on concrete.				Bore dry upon completion.
		1.4									
		1.6									
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Moisture	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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**

Monitoring Well Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361



Hole ID: **BH105**
Hole Depth: **2.40 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd**

Project Number: **E16016BN**
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	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests	Observations / Comments	Well Details	Well Construction
										ID No.			
CC		0.2				Fill	CONCRETE SLAB. 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											
		2.0								SMC011116-23 1.8-2.0m			
		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											

Moisture	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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 1:50:32 PM

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361



Hole ID. **BH106**
Hole Depth: **2.20 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd**

Project Number: **E16016BN**
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	Observations / Comments
										ID No.	
Solid Flight Auger		0.2				Fill	ASPHALT. 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	
		0.4									
		0.6									
		0.8									
		1.0				Natural	Sandy CLAY - orange brown, fine to medium grained sand.	stiff	moist	SMC011116-25/26 0.7-0.9m	
		1.2									
		1.4									
		1.6									
		1.8									
		2.0					SANDSTONE - grey & orange brown, medium to coarse.			SMC011116-27 1.3-1.5m	
		2.2					Hole Terminated at 2.20m Practical refusal.				Bore dry upon completion.
		2.4									
		2.6									
		2.8									
		3.0									

Moisture	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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**

Monitoring Well Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361



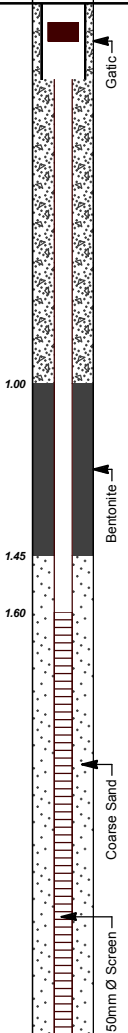
Hole ID. **BH107**
Hole Depth: **2.80 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd**

Project Number: **E16016BN**
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	Observations / Comments	Well Details	Well Construction
							Surface: Grass						
		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											
		1.2					Sandy CLAY - red brown & orange brown, medium to coarse grained sand, medium to coarse gravel.	stiff	moist				
		1.4											
		1.6				Natural	SANDSTONE - grey & orange brown, medium to coarse.			SMC011116-31 1.5-1.6m			
		1.8											
		2.0					SANDSTONE - pale grey, medium to coarse, weak zone, increased moisture.						
		2.2											
		2.4											
		2.6											
		2.8								SMC011116-35 2.5-2.8m			
		3.0					Hole Terminated at 2.80m Practical refusal.						



Moisture	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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 1:50:34 PM

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361



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					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	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361



Hole ID. **BH109**
Hole Depth: **1.35 m**
Sheet: **1 of 1**

Project Name: **Geotechnical and Contamination Assessment**
Location / Site: **307-311 Bexley Rd & 88-96 New Illawarra Rd**

Project Number: **E16016BN**
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	Additional Comments
D Dry Dp Damp SM Slightly Moist M Moist VM Very Moist W Wet Sd Saturated	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**

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
	PORCELLANITE		GNEISS		SHALE / CLAYSTONE		MUDSTONE
	CLAYSTONE		MUDSTONE / CLAYSTONE		SHALE / SILTSTONE		IRONSTONE
							SHALE / SANDSTONE

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



APPENDIX G

FIELD DATA SHEETS

GROUNDWATER SAMPLING FIELD DATA

WELL ID:

CW01

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA

PROJECT NUMBER: E16016BN

LOCATION / SITE: Boxley North Metro
Petrol

CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50

WELL SCREEN INTERVAL (m):

CASING STICK UP (+) / DOWN (-) m:

CONDITION

Damage: YES ☒ NO

Well Locked: YES ☒ NO

Water Around Well:

YES ☒ NO

(Comments Below):

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 μ S/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	<input checked="" type="radio"/> Foot Valve	Bailer	Other:
DATE & TIME:	11/11/16	15:15				
SAMPLE ID:	ACM1116-03					
FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or μ S/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	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. Chwen

SIGNATURE

[Signature]

GROUNDWATER SAMPLING FIELD DATA

WELL ID:

QW02

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA

PROJECT NUMBER: E160/63N

LOCATION / SITE: Berkey North Metro
Petrol

CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50

WELL SCREEN INTERVAL (m):

CASING STICK UP (+) / DOWN (-) m:

CONDITION

Damage: YES / NO

Well Locked: ☒ YES ☐ NO

Water Around Well:

YES / NO

(Comments Below)

Well ID Visible: YES ☒ NO

Cap on PVC: YES / NO

Water Between PVC and Gatic/ Monument. YES / NO

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL):

m BTOC or m BGL or m BTOM

FREE PRODUCT:

Yes or ☒ No

Thickness (m):

TOTAL DEPTH OF WELL (TD):

m BTOC or m ~~BOL~~ or m BTOM

PURGING DETAILS / OBSERVATIONS

[illegible]

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	mBTOG mBGL / mBTOM	
SAMPLE ID:	AG111116 -04		Blind Replicate ID			
			Split Duplicate ID			
FINAL WATER QUALITY READINGS:	DO (mg/L)	EC mS/cm or μ S/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
	1.06	620	6.09	-82.3	22.5	
DESCRIPTION:	Colour green - tan	Turbidity moderate	Odour hydrocarbon	Other		

PURGE VOLUME CALCULATOR:

$$\text{Length of Water Column (m)} = \text{TD (m)} - \text{SWL (m)} =$$

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

^k A. Chwem

SIGNATURE

SIGNATURE 

GROUNDWATER SAMPLING FIELD DATA

WELL ID:

BH102

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA

PROJECT NUMBER: E16016BN

LOCATION / SITE: Berley North Metro
Petrol

CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50	WELL SCREEN INTERVAL (m):	CASING STICK UP (+) / DOWN (-) m:
CONDITION	Damage: YES NO	Well Locked: YES NO
(Comments Below):	Well ID Visible: YES NO	Cap on PVC: YES NO
		Water Around Well: 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 μ S/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	—
10:45	SL							

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 μ S/cm	pH (standard units)	Redox (mV)	TEMP. ($^{\circ}$ C)	TURB. (NTUs)
	1.60	1048	5.86	-55.3	22.0	
DESCRIPTION:	Colour: grey-brown	Turbidity: slightly	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:

BH 105

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA

PROJECT NUMBER: E16016 BN

LOCATION / SITE: Bexley North

CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50

WELL SCREEN INTERVAL (m):

CASING STICK UP (+) / DOWN (-) m:

CONDITION

Damage: YES / NO

Well Locked: YES/ NO

Water Around Well:

YES ☒ NO

(Comments Below):

Well ID Visible: YES / NO

Cap on PVC YES / NO

Water Between PVC and Gatic/ Monument: YES / NO

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL):

m BTOC or m BGL or m BTOM

FREE PRODUCT:

Yes or **No**

Thickness (m):

TOTAL DEPTH OF WELL (TD):

m BTOC or m BGL or m BTOM

PURGING DETAILS / OBSERVATIONS

[illegible]

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)		mBTQC / mBGL / mBTOM	
SAMPLE ID:				Blind Replicate ID			
				Split Duplicate ID			
FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or μ S/cm		pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
DESCRIPTION:	Colour	Turbidity		Odour	Other		

PURGE VOLUME CALCULATOR:

$$\text{Length of Water Column (m)} = \text{TD (m)} - \text{SWL (m)} =$$

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

SIGNATURE _____

GROUNDWATER SAMPLING FIELD DATA

WELL ID:

BH107

PROJECT INFORMATION

PROJECT NAME: Stage 2 ESA

PROJECT NUMBER: E16016BN

LOCATION / SITE: Bedley North
Metro Petrol

CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50

WELL SCREEN INTERVAL (m):

CASING STICK UP (+) / DOWN (-) m:

CONDITION

Damage: YES ☒ NO

Well Locked: YES ☒ NO

Water Around Well: YES ☒ NO

(Comments Below):

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 μ S/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
Equilibrium Requirements			$\pm 10 \%$	$\pm 3 \%$	± 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 <input checked="" type="radio"/> mBGL / mBTOM	
SAMPLE ID:	AC111116-01		Blind Replicate ID: AC111116-01 AC111116-02			
			Split Duplicate ID:			
FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or μ S/cm	pH (standard units)	Redox (mV)	TEMP (°C)	TURB. (NTUs)
	2.42	1093	4.88	-91.0	22.5	
DESCRIPTION:	Colour: brown	Turbidity: medium	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

[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	<p>A sample collected at the same time and from the same sampling point as the corresponding primary sample¹, 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:</p> $\text{RPD (\%)} = 100 \times \frac{\text{Result No. 1} - \text{Result No. 2}}{\text{Mean Result}}$	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	<p>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:</p> $\text{RPD (\%)} = 100 \times \frac{\text{Result No. 1} - \text{Result No. 2}}{\text{Mean Result}}$	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	<p>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 400°C. For water sampling programs trip blanks comprise pre-washed glass vials containing distilled or de-ionised water with appropriate preservatives.</p> <p>The USEPA has shown that cross-contamination only occurs with volatile organics (reference 5), therefore, trip blanks are only analysed for volatile organics.</p>	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	<p>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.</p> <p>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.</p> <p>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.</p>	Used to monitor VOC losses during transit.	Industry standard is 1 trip spike per batch of primary samples where volatile concentrations are being measured.
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Table H1 Continued

Type	Description	Purpose	Recommended Frequency
LABORATORY QC SAMPLES			
Laboratory Duplicate	<p>Laboratory duplicates are field samples which are prepared and analysed in the same manner twice.</p> <p>The assessment of laboratory duplicates is undertaken by calculating the (RPD) which is defined as:</p> $\text{RPD (\%)} = 100 \times \frac{\text{Result No. 1} - \text{Result No. 2}}{\text{Mean Result}}$	Determines analytical precision for a sample batch	NATA specifies 1 per 10 samples for trace element and inorganic analysis
Laboratory Control Sample (LCS)	<p>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.</p> <p>Assessment of LCS is undertaken by calculating the percent recovery (%R) of the spike which is defined as:</p> $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR)} - \text{Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	Determines analytical accuracy and precision for a batch of samples	NATA specifies 1 per batch of up to 20 samples
Surrogates	<p>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:</p> $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spiked Sample Result (SSR)}}{\text{Concentration of Spike Added (SA)}}$	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	<p>Field samples spiked with a known concentration of a target analytes and carried through the entire preparation and analysis.</p> <p>Matrix spike samples are assessed by calculating the percent recovery (%R) of the spike which is defined as:</p> $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR)} - \text{Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	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

- ◇ One blind replicate (SM011116-10)
- ◇ 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
	TRH/BTEX - 1 per 17 primary samples (6.7%)	--
	PAHs - 1 per 13 primary samples (7.7%)	--
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		1/11/2016	1/11/2016	RPD
Sample Identification		SM011116-09	SM011116-10	
Analyte	Units			
Total Metals				
Arsenic	mg/kg	9	12	29%
Cadmium	mg/kg	<0.4	<0.4	--
Chromium	mg/kg	20	20	0%
Copper	mg/kg	10	14	33%
Lead	mg/kg	48	33	37%
Mercury	mg/kg	<0.1	<0.1	--
Nickel	mg/kg	3	4	29%
Zinc	mg/kg	87	30	97%
Polycyclic Aromatic Hydrocarbons				
Naphthalene	mg/kg	<0.1	<0.1	--
Acenaphthylene	mg/kg	<0.1	<0.1	--
Acenaphthene	mg/kg	<0.1	<0.1	--
Fluorene	mg/kg	<0.1	<0.1	--
Phenanthrene	mg/kg	<0.1	<0.1	--
Anthracene	mg/kg	<0.1	<0.1	--
Fluoranthene	mg/kg	<0.1	<0.1	--
Pyrene	mg/kg	<0.1	<0.1	--
Benz(a)anthracene	mg/kg	<0.1	<0.1	--
Chrysene	mg/kg	<0.1	<0.1	--
Benzo(b&k)fluoranthene	mg/kg	<0.2	<0.2	--
Benzo(a)pyrene	mg/kg	<0.05	<0.05	--
Indeno(1.2.3.cd)pyrene	mg/kg	<0.1	<0.1	--
Dibenz(a.h)anthracene	mg/kg	<0.1	<0.1	--
Benzo(g.h.i)perylene	mg/kg	<0.1	<0.1	--
TOTAL PAHs	mg/kg	NIL(+)VE	NIL(+)VE	--
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				
F1 (C6-C10)	mg/kg	<25	<25	--
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 - Split Replicate Results

Sample Date		1/11/2016	1/11/2016	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
Laboratory Report Number:		156541
Sample ID		Trip Blank
Analyte	Units	
BTEX		
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
meta- & para-Xylene	mg/kg	<2
ortho-Xylene	mg/kg	<1
Total Petroleum Hydrocarbons		
C6 - C9 Fraction	mg/kg	<25
C10 - C14 Fraction	mg/kg	<50
C15 - C28 Fraction	mg/kg	<100
C29 - C36 Fraction	mg/kg	<100

Notes:

--- Not Analysed

SOIL - Trip Spike Results

Laboratory:		Envirolab
Laboratory Report Number:		156541
Sample ID		Trip Spike
Analyte	Units	
BTEX		
Benzene	mg/kg	95%
Toluene	mg/kg	96%
Ethylbenzene	mg/kg	97%
meta- & para-Xylene	mg/kg	97%
ortho-Xylene	mg/kg	93%

Notes:

--- Not Analysed

WATER - Blind Replicate

Sample Date		11/09/2016	11/09/2016	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	--
Acenaphthylene		<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
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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.

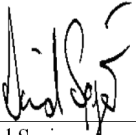
Analysis Details:

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
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



vTRH(C6-C10)/BTEXN in Soil Our Reference: Your Reference	UNITS ----- -	156541-1 SM011116-01	156541-2 SM011116-02	156541-4 SM011116-04	156541-6 SM011116-06	156541-9 SM011116-09
Date Sampled Type of sample	----- Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 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: Your Reference	UNITS ----- -	156541-10 SM011116-10	156541-11 SM011116-11	156541-12 SM011116-13	156541-14 SM011116-15	156541-16 SM011116-17
Date Sampled Type of sample	----- Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 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	UNITS	156541-17	156541-19	156541-20	156541-23	156541-24
Our Reference:	-----	SM011116-18	SM011116-20	SM011116-21	SM011116-24	SM011116-25
Your Reference	-					
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	UNITS	156541-28	156541-32	156541-34	156541-37	156541-38
Our Reference:	-----	SM011116-29	SM011116-32	SM011116-34	Trip Blank	Trip spike
Your Reference	-					
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	UNITS	156541-1	156541-2	156541-5	156541-6	156541-9
Our Reference:	-----	SM011116-01	SM011116-02	SM011116-05	SM011116-06	SM011116-09
Your Reference	-					
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	UNITS	156541-10	156541-11	156541-12	156541-14	156541-15
Our Reference:	-----	SM011116-10	SM011116-11	SM011116-13	SM011116-15	SM011116-16
Your Reference	-					
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	UNITS	156541-16	156541-17	156541-19	156541-20	156541-23
Our Reference:	-----	SM011116-17	SM011116-18	SM011116-20	SM011116-21	SM011116-24
Your Reference	-					
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	UNITS	156541-6	156541-14	156541-17	156541-28	156541-32
Our Reference:	-----	SM011116-06	SM011116-15	SM011116-18	SM011116-29	SM011116-32
Your Reference	-					
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
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 Type of sample	----- -	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	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
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	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	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: 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 Type of sample	----- -	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 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: 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 Type of sample	----- -	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 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: 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 Type of sample	----- -	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 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: 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 Type of sample	----- -	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 Soil	1/11/2016 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: Your Reference	UNITS ----- -	156541-36 SM011116-37
Date Sampled Type of sample	----- -	1/11/2016 Soil
Date prepared	-	07/11/2016
Date analysed	-	07/11/2016
pH 1:5 soil:water	pH Units	6.2

CEC						
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	-	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:	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	-	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:	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	-	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:	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	-	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:	UNITS	156541-36
Your Reference	-----	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

MethodID	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.

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Soil						Base II Duplicate II %RPD		
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 ₂₈ - 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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
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]

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base II Duplicate II %RPD		
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]

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QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Misc Inorg - Soil						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
CEC						Base II Duplicate II %RPD		
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/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	106%
Exchangeable K	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	88%
Exchangeable Mg	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	102%
Exchangeable Na	meq/100 g	0.1	Metals-009	<0.1	[NT]	[NT]	LCS-4	83%

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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]

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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%

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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 ₂₈ - 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

Client Reference: E16016BN

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

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 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	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		Provide as much information about the sample as you can 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200 Job No: 156 S41 Date Received: 2/11/16 Time Received: 11:30am Received by: S KON Temp: Cool/Ambient Cooling: Ice/icepack 14°C Security: intact/Broken/None
2	SM011116-02	1/11/2016	soil jar								1						1	1	
3	SM011116-03	1/11/2016	soil jar															1	
4	SM011116-04	1/11/2016	soil jar																
5	SM011116-05	1/11/2016	soil jar																
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		
Relinquished by (company): Geo-Environmental Engineering Print Name: S. McCormack Date & Time: 02-Nov-16 Signature:				Received by (company): ELS Print Name: Steph Date & Time: 2/11/16 (11:30am) Signature: SK										Samples Received: Cool or Ambient (circle one) Temperature Received at: (if applicable) Transported by: Hand delivered / courier Page No: 1 of 3					

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	Contact: Aileen Hie
Phone: 0431 480 980	<i>Note: Inform lab in advance if urgent turnaround is required - surcharge applies</i>	

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	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
13	SM0111116-14	1/11/2016	Soil jar																
14	SM0111116-15	1/11/2016	Soil jar					1									1		
15	SM0111116-16	1/11/2016	Soil jar								1						1		
16	SM0111116-17	1/11/2016	Soil jar	1													1		
17	SM0111116-18	1/11/2016	Soil jar						1								1		
18	SM0111116-19	1/11/2016	Soil jar																
19	SM0111116-20	1/11/2016	Soil jar	1													1		
20	SM0111116-21	1/11/2016	Soil jar								1						1	1	
21	SM0111116-22	1/11/2016	Soil jar																
22	SM0111116-23	1/11/2016	Soil jar																
23	SM0111116-24	1/11/2016	Soil jar	1													1	1	
24	SM0111116-25	1/11/2016	Soil jar								1						1	1	
25	SM0111116-26	1/11/2016	Soil jar																

Relinquished by (company): Geo-Environmental Engineering	Received by (company): ELS
Print Name: S. McCormack	Print Name: STEPH
Date & Time: 23-Aug-16	Date & Time: 28/11/16 1130
Signature:	Signature: SK

Samples Received: Cool or Ambient (circle one)
 Temperature Received at: (if applicable)
 Transported by: Hand delivered / courier
 Page No: 2 of 3

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 <i>Note: Inform lab in advance if urgent turnaround is required - surcharge applies</i>			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		1			
37	Trip Blank	1/11/2016	Soil jar																		
38	Trip Spike	1/11/2016	Soil jar														1				
Relinquished by (company): Geo-Environmental Engineering Print Name: S. McCormack Date & Time: 23-Aug-16 Signature:				Received by (company): ELS Print Name: STEPH Date & Time: 2/11 130 Signature: SK										Samples Received: Cool or Ambient (circle one) Temperature Received at: (if applicable) Transported by: Hand delivered / courier Page No: 3 of 3							



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



Envirolab Reference: 157226
Revision No: R 00

vTRH(C6-C10)/BTEXN in Water Our Reference: Your Reference	UNITS ----- -	157226-1 AC111116-01	157226-2 AC111116-02	157226-3 AC111116-03	157226-4 AC111116-04	157226-5 AC111116-05
Date Sampled Type of sample	----- water	11/11/2016 water	11/11/2016 water	11/11/2016 water	11/11/2016 water	11/11/2016 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: Your Reference	UNITS ----- -	157226-6 AC111116-06	157226-7 Trip Blank	157226-8 Trip Spike
Date Sampled Type of sample	----- water	11/11/2016 water	11/11/2016 water	11/11/2016 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	UNITS ----- -	157226-1 AC111116-01	157226-2 AC111116-02	157226-3 AC111116-03	157226-4 AC111116-04	157226-5 AC111116-05
Date Sampled Type of sample	----- -	11/11/2016 water	11/11/2016 water	11/11/2016 water	11/11/2016 water	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:	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
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 <i>p</i> -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	UNITS ----- -	157226-1 AC111116-01	157226-2 AC111116-02	157226-3 AC111116-03	157226-4 AC111116-04	157226-5 AC111116-05
Date Sampled Type of sample	----- -	11/11/2016 water	11/11/2016 water	11/11/2016 water	11/11/2016 water	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	UNITS ----- -	157226-6 AC111116-06
Date Sampled Type of sample	----- -	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

MethodID	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	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Water						Base II Duplicate II %RPD		
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
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	157226-3	100 110 RPD: 10	LCS-W1	115%
TRHC 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	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Water						Base II Duplicate II %RPD		
Date extracted	-			16/11/2016	[NT]	[NT]	LCS-W1	16/11/2016
Date analysed	-			16/11/2016	[NT]	[NT]	LCS-W1	16/11/2016
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	100%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	96%
TRHC 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	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
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]

Client Reference: E16016BN

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Phenolics in Water						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
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%
QUALITYCONTROL	UNITS	Dup. Sm#		Duplicate		Spike Sm#	Spike % Recovery	
svTRH (C10-C40) in Water				Base + Duplicate + %RPD				
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%	

Client Reference: E16016BN

QUALITYCONTROL 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%
QUALITYCONTROL 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%

Client Reference: E16016BN

QUALITYCONTROL 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		
QUALITYCONTROL 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.



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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

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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



Envirolab Reference: 157226-A
Revision No: R 00

Cations in water Dissolved Our Reference: Your Reference	UNITS ----- -	157226-A-1 AC111116-01	157226-A-2 AC111116-02	157226-A-3 AC111116-03	157226-A-4 AC111116-04	157226-A-5 AC111116-05
Date Sampled Type of sample	----- -	11/11/2016 water	11/11/2016 water	11/11/2016 water	11/11/2016 water	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	mgCaCO ₃ /L	140	140	160	150	330

Cations in water Dissolved Our Reference: Your Reference	UNITS ----- -	157226-A-6 AC111116-06
Date Sampled Type of sample	----- -	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	mgCaCO ₃ /L	200

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.

Client Reference: E16016BN

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Cations in water Dissolved						Base Duplicate %RPD		
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	mgCaCO ₃ /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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Measurement Uncertainty estimates are available for most tests upon request.

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 - Method: TRH C6-C36 - LTM-ORG-2010	Sydney	Nov 08, 2016	14 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Nov 07, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Nov 07, 2016	14 Day
Polycyclic Aromatic Hydrocarbons - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Nov 08, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Nov 07, 2016	14 Day
Metals M8 - Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS	Sydney	Nov 07, 2016	28 Day
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Nov 01, 2016	14 Day

Company Name: Geo-Environmental Engineering P/L
Address: 82 Bridge St
Lane Cove
NSW 2066
Project Name: E16016BN

Order No.:
Report #: 521920
Phone: 02 9592 0218
Fax: 02 9519 9140

Received: Nov 1, 2016 6:00 PM
Due: Nov 9, 2016
Priority: 5 Day
Contact Name: Stephen McCormack

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

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. 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
Benzo(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](#).

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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.