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Preliminary Site Investigation

Residential Properties on Canberra Ave, Marshall Ave and Holdsworth Ave, St Leonards NSW.

Evergreen Investment Holding Pty Ltd.

18 February 2022

21020

Quality Management

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This report was prepared in accordance with the scope of services set out in the contract between Geosyntec Consultants Pty Ltd (ABN 23 154 745 525) and the client.

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Executive Summary

Geosyntec Consultants Pty Ltd (Geosyntec), formerly Zoic Environmental Pty Ltd, was engaged by Evergreen Investment Holding Pty Ltd (the client) to complete a Preliminary Site Investigation (PSI) with limited soil sampling at 4, 6 & 8 Marshall Avenue; 1, 3 and 5 Canberra Avenue; and 2,4,6 and 8 Holdsworth Avenue, St Leonards NSW. Geosyntec completed initial site investigations for due diligence purposes in March 2021, with additional site works completed in February 2022 to meet Council Development Application (DA) requirements. Works completed for both investigations are detailed in this PSI report.

The objectives of the PSI were to identify the potential for land contamination to occur at the site; whether further investigation is required; and whether the site is, or can be made, suitable for a high-density residential landuse as site zoning.

The scope of works completed for the assessment included a desktop review for the site; site inspection; drilling of boreholes at a total of 14 locations; collection of representative soil samples; collection of representative groundwater samples; laboratory analysis of soil and groundwater samples for identified contaminants of potential concern (COPC); and preparation of this report.

The following is concluded based on the findings of the assessment:

- The site consists of 10 buildings (detached residential dwellings).
- The site has been used for residential purposes prior to 1930.
- Observed site buildings and yard areas appeared to be well maintained in general. Fibre cement sheeting was observed on site structures in areas, which may contain asbestos.
- Household items were observed on the ground surface in areas, although no surface stains, odours or fibre cement fragments were observed.
- No apparent dumping or raised fill areas were observed.
- Inaccessible site areas included access to residential buildings and some private yard areas, which are considered low risk from a contamination perspective.
- The soil profile comprised topsoil / garden soil and dark grey sandy clay, considered likely to comprise reworked natural site soils based on general occurrence across the site. Minor inclusions were noted in areas including gravels (BH1, BH7, BH11, BH12), terracotta (BH7, BH11), sandstone (BH4, BH11, BH13) and concrete fragments (BH12, BH13). Natural light brown silty clay was encountered at depths ranging from 0.2-0.4m bgs at BH2 (north-western portion), and BH4/BH9 (south-eastern portion) respectively.
- Suspected fill soils were observed at BH1, BH12, BH13 (gravelly silty sand) and at BH11 (sand).
- No stains, odours of fibre cement fragments were observed within site soils during sampling.
- Sandstone bedrock was encountered at depths ranging from 0.1m in the western portion to 2.8m in the eastern portion.
- Following statistical analysis, soil analytical data reported all chemical COPC concentrations below the adopted human health criteria for high-density residential landuse.
- Soil analytical data reported all chemical COPC concentrations below the adopted ecological criteria for urban residential landuse, with the exception of benzo-a-pyrene (B(a)P) at 5 locations (BH2, BH5, BH7, BH8 and BH13) at shallow depths (0.1-0.3m bgs). These locations are noted to be generally spread across the site.
- PAH source analysis indicates that PAH impact is likely from an ash or coke source.

- Groundwater COPC reported above the site criteria were limited to various heavy metals including copper, nickel and zinc. These results are considered representative of regional groundwater conditions and are not considered to pose an issue for potential use of the site for a high-density residential landuse.
- Soil analytical data from the preliminary in-situ waste classification indicates topsoil / garden soil at the site meets the classification as General Solid Waste (GSW). This classification should be confirmed during excavation works and prior to disposal. Underlying natural soils and sandstone are considered likely to be suitable for classification as Virgin Excavated Natural Material (VENM), which requires confirmation following removal of fill soils from the site.

The findings of the investigation do not indicate the presence of widespread chemical contamination at the site. Based on the above, it is considered that the site has historically been used for detached residential purposes, and meets the land use suitability for a high-density residential landuse subject to implementation of the following:

- Completion of a hazardous materials (hazmat) survey across the site, and preparation of associated management plans for removal of identified hazardous materials where required.
- Implementation of a Soil Management Plan with an Unexpected Finds Protocol to manage any proposed excavations during future redevelopment works at the site and guide appropriate waste classification and offsite disposal of surplus materials.
- Noting the observed presence of fibre cement sheeting on site structures, following the removal of site buildings, an asbestos clearance across the ground surface by a Licenced Asbestos Assessor will be required.

It is noted that the identified ecological B(a)P exceedances found in shallow materials across the site appear to be limited to the topsoil / garden soil matrix. Anecdotal information indicates that this may be due to historical placement of ash-based materials in gardens. No B(a)P was noted in natural soils at depth.

Future bulk earthworks associated with site redevelopment, and implementation of the site Soil Management Plan, will enable the identified B(a)P in fill to be managed through offsite disposal. If existing surface soils are to be retained onsite, soil testing for B(a)P will be required to ensure ongoing suitability with consideration of site design plans.

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Appendices

1 Introduction

1.1 Background

Geosyntec Consultants Pty Ltd (Geosyntec), formerly Zoic Environmental Pty Ltd, was engaged by Evergreen Investment Holding Pty Ltd (the client) to complete a Preliminary Site Investigation (PSI) with limited soil sampling at the residential properties listed below (the site).

- 4, 6 & 8 Marshall Avenue, St Leonards NSW.
- 1, 3 and 5 Canberra Avenue, St Leonards NSW.
- 2,4,6 and 8 Holdsworth Avenue, St Leonards NSW.

Geosyntec completed initial site investigations for due diligence purposes in March 2021, with additional site works completed in February 2022 to meet Council Development Application (DA) requirements. Works completed for both investigations are detailed in this PSI report.

The site is zoned as R4 – High Density Residential under the Lane Cove Local Environmental Plan 2009. The site location and layout are shown in Figures 1 and 2 of Appendix A, respectively.

The scope of works detailed in this report is in accordance with relevant guidance made or approved by the NSW EPA.

1.2 Objectives

The objectives of the PSI were to identify:

- The potential for land contamination to occur at the site.
- Whether further investigation is required.
- Whether the site is, or can be made, suitable for a high-density residential landuse (as per site zoning).
- Determine the appropriate waste classification for in-situ soils at the site for offsite disposal.

1.3 Scope of Work

The scope of works completed for the assessment included:

- A desktop review for the site.
- Site inspections completed in March 2021 and February 2022 to assess site conditions (external of buildings and structures only).
- Drilling of boreholes at 10 locations (BH1, BH2, BH3, BH4, BH5, BH7, BH8, BH9, BH10, BH11) for environmental purposes using a ute-mounted rig and hand-auger, to a maximum depth of 1.5m below ground surface (bgs).
- Completion of hand-augers at 4 locations (BH12, BH13, BH14, BH15) to obtain additional soil data for waste classification purposes.
- Collection of representative soil samples from all borehole locations.
- Screening of soil samples using a photoionisation detector (PID).
- Collected of additional soil samples from selected locations to facilitate TCLP analysis.

- Laboratory analysis of selected soil samples for heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc); benzene, toluene, ethylbenzene and xylenes (BTEX); total recoverable hydrocarbons (TRH); polycyclic aromatic hydrocarbons (PAH); organochlorine pesticides (OCP); polychlorinated biphenyls (PCB); and asbestos.
- Laboratory analysis of limited soil samples for TCLP for waste classification purposes.
- Collection and analysis of groundwater samples from two wells installed at the site for geotechnical purposes, containing groundwater considered to be generally representative of regional conditions.
- Laboratory analysis of groundwater samples for heavy metals, TRH/BTEX, PAH, total phenols and volatile organic compounds (VOC).
- Preparation of this report in general accordance with NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land.

2 Site Identification and Description

2.1 Site Identification

Relevant site information and surrounding land use details are provided below.

Table 2.1: Site Identification

Title	Details
Street Addresses / Property Descriptions:	4 Marshall Avenue, St Leonards NSW (Lot 3, Section 3, DP7259). 6 Marshall Avenue, St Leonards NSW (Lot 2, Section 3, DP7259). 8 Marshall Avenue, St Leonards NSW (Lot 1, Section 3, DP7259). 1 Canberra Avenue, St Leonards NSW (Lot 5, Section 3, DP7259). 3 Canberra Avenue, St Leonards NSW (Lot 6, Section 3, DP7259). 5 Canberra Avenue, St Leonards NSW (Lot 7, Section 3, DP7259). 2 Holdsworth Avenue, St Leonards NSW (Lot 42, Section 3, DP7259). 4 Holdsworth Avenue, St Leonards NSW (Lot 41, Section 3, DP7259) 6 Holdsworth Avenue, St Leonards NSW (Lot 40, Section 3, DP7259). 8 Holdsworth Avenue, St Leonards NSW (Lot 39, Section 3, DP7259).
Geographical Coordinates:	-33.825085, 151.193783
Site Size:	Approximately 0.7ha
Local Government Area:	Lane Cove Council
Zoning:	R4 High Density Residential

2.2 Surrounding Land Use

Land uses immediately adjoining the site are described as follows:

Table 2.3: Immediate Site Surrounds

Title	Details
North:	Marshall Avenue with a high density commercial/residential beyond. One low-density residential property is present on the north-eastern corner of the block in which the site is situated.
East:	Canberra Avenue with a bushland strip and railway line beyond. A construction site was present to the east of the sites south-eastern portion.
South:	Low-density residential landuse.
West:	Low-density residential landuse.

3 General Site Condition and Surrounding Environment

Site condition information is summarised below using information presented in the Land Insight and Resources Report (as included in Appendix D) and information gathered during the site assessment.

3.1 Site Conditions

The site condition is presented in Table 3.1.

Table 3.1: General Site Conditions

Title	Details
Site Description	The site comprised 10 low-density residential properties, bound by Canberra Avenue, Marshall Avenue and Holdsworth Avenue. Additional site details are provided in Section 10.1 of this report.
Topography and Drainage:	The site slopes down towards the south-east, ranging from approximately 72-63m AHD. Surface water at the site is anticipated to mostly infiltrate the ground surface through garden areas, or directed to residential stormwater infrastructure. Surface water from sealed driveway areas flows into stormwater kerbing present on proximate roadways. The site was generally at grade to surrounding properties, although retaining walls were present in some properties (noting elevated land across the site's western portion) as discussed in Section 10.1.
Boundary Condition:	The overall site was not bound by fencing. The individual properties within the overall site (10 residential properties) contained short boundary fencing with open driveways.
Vegetation:	Scattered trees and shrubs were present across the residential properties that make up the site. Individual yard areas were mostly grassed.
Presence of Drums, Wastes, and Fill Materials:	No large chemical containers or drums were observed onsite, noting that access to site buildings was not possible. Small detergent containers and empty paint tins were initially observed on the ground surface at 8 Holdsworth Avenue, which were no longer present during the February 2022 inspection Raised ground surfaces indicating potential for filling were not observed.
Odours:	Chemical odours were not observed during the site works.
Condition of Buildings & Roads:	The site contained the following buildings, as shown on Figures 3A, 3B, and 3C, which were observed to be mostly maintained Given the age of site buildings, eaves may contain asbestos. It is noted that access was not possible to the rear portions of 1-3 Canberra Ave, 4-6 Marshall Ave and 4 Holdsworth Ave. • 5 Canberra Avenue: Residential dwelling constructed primarily of brick with tile roofing. A locked steel storage shed was present at the rear of the property. • 3 Canberra Avenue: Residential dwelling constructed primarily of brick with tile roofing. A shed/garage was visible at the rear of the property constructed from brick with steel roofing. • 1 Canberra Avenue: Residential dwelling constructed primarily of brick with tile roofing. A shed/garage was present on the boundary which appeared to be constructed from fibre cement sheeting.

Title	Details
	• 4 Marshall Avenue: Residential dwelling constructed primarily of brick with tile roofing. • 6 Marshall Avenue: Residential dwelling constructed primarily of brick with tile roofing, with a garage at the base of the driveway. • 8 Marshall Avenue: Residential dwelling constructed primarily of brick with tile roofing. • 2 Holdsworth Avenue: Residential dwelling constructed primarily of brick with tile roofing. A brick pool house was present at the rear of the property next to a pool. • 4 Holdsworth Avenue: Residential dwelling constructed primarily of rendered brick with tile roofing. • 6 Holdsworth Avenue: Residential dwelling constructed primarily of rendered brick with tile roofing. • 8 Holdsworth Avenue: Residential dwelling constructed primarily of brick with tile roofing.
Quality of Surface Water:	Surface water was not observed during the investigation.
Flood Potential:	Flood hazard was not identified at the site.
Relevant Local Sensitive Environments:	The nearest water body is Berrys Creek located approximately 400m to the south of site, which flows into Paramatta River located approximately 1km to the south of site.

4 Geology, Hydrogeology and Hydrology

The geology, hydrogeology and hydrology of the site are summarised in this section using information presented in the Land Insight and Resources Report (as included in Appendix D).

Table 4.1 Subsurface Conditions

Title	Details
Geology Map Conditions:	The Sydney Geological Mapping Sheet indicates that the site is underlain by Wianamatta Ashfield Shale consisting of black to light grey shale and laminite.
Soil Map Conditions:	Western Portion Located on undulating to rolling low hills on Wianamatta Group shales with local relief 50-80 m and slopes 5–20%. Soils generally comprise shallow to moderately deep (<100cm) Red Podzolic Soils on crests, moderately deep (70–150 cm) Red and Brown Podzolic Soils on upper Slopes, deep (>200 cm) Yellow Podzolic Soils and Gleyed Podzolic Soils along drainage lines. Limitations include water erosion hazard, localised steep slopes, localised mass movement hazard, localised surface movement potential, localised impermeable highly plastic soil, moderately reactive. Eastern Portion Located on gently undulating rises on Wianamatta Group shales with local relief to 30 m and slopes usually >5%. Soils generally comprise shallow to moderately deep (>100cm) hardsetting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines. Limitations include localised seasonal waterlogging, localised water erosion hazard, moderately reactive highly plastic subsoil, localised surface movement potential.
Acid Sulfate Soils (ASS):	The Atlas of Australian Acid Sulfate Soil indicates an extremely low probability of occurrence at the site.
Salinity:	Australian Soil Resource Information System (ASRIS) hydrogeological landscape mapping indicates that salinity hazard was not identified at the site.
Summary of Registered Bores:	No registered groundwater bores are located within a 500m radius of the site.
Depth to Groundwater:	Geotechnical groundwater wells installed at the site indicate the following standing water levels (SWL): Northern boundary (MW01/BH1): 13.57m below ground surface (bgs). South-western boundary (MW05/BH5): 4.42m bgs.
Direction and Rate of Groundwater Flow:	Based on regional topography groundwater is expected to flow towards lower terrain to the south-east of site, from which terrain slopes south towards Berrys Creek.
UPSS Groundwater Sensitive Zone:	The site is not located in a UPSS environmentally sensitive zone.
Use of Water Abstraction:	Available information indicates that no water abstraction takes place on the site.
Nearest Water Body:	The nearest water body is Berrys Creek located approximately 400m to the south of site.

5 Site History

Available information on site history is summarised in Table 5.1 below.

Table 5.1: Summary of Site History

Title	Details
EPA Records:	The site and areas within 500m of the site are not listed on the NSW EPA's register of contaminated sites and have not been notified as contaminated to the NSW EPA.
POEO Act	Current and/or expired licences under the POEO Act (1997) exist for the trainline to the east; metro tunnel excavation works to the east; and the North Shore Private Hospital to the north. These sites are considered unlikely to have impacted the site due to distance and regulation of associated activities by the EPA.
Land Use Records	The site is not listed as having been a dry cleaner, motor garage, or service station in the historical business directories.
Summary of Aerial Photographs (on-site and adjacent sites):	**1930**: The site contained what appeared to be residential dwellings with yard areas, although resolution was poor. Surrounding areas appeared primarily residential in nature. The trainline was visible to the east of site. **1943**: The site contained residential dwellings with current land division apparent (i.e. 10 properties). Additional residential development was apparent in surrounding areas. **1956**: The site and surrounding areas appeared similar to the previous photograph. **1965**: The site appeared similar to the previous photograph. A building had been constructed to the east of site, beyond Canberra Ave. **1976**: The site and surrounding areas appeared similar to the previous photograph. **1986**: The site appeared similar to the previous photograph. Pools were visible in central portions. Surrounding areas appeared similar to the previous photograph. **1998**: Additional construction appeared to have taken place at 2 Holdsworth Ave, including construction of the pool house. Surrounding areas appeared similar to the previous photograph. **2012**: Additional construction appears to have taken place at 4 Marshall Ave with a larger dwelling apparent. Large buildings had been constructed to the south-east of site, beyond Canberra Ave. **2018**: The site appeared similar to the previous photograph. Development was visible to the north of site, beyond Marshall Ave. **2021**: The site appeared similar to the previous photograph. Development to the north was complete, beyond Marshall Ave. A construction site was present to the east of site, beyond Canberra Ave.
SafeWork NSW Dangerous Goods Licenses/ USTs/ ASTs:	A Dangerous Goods search was not completed as part of the investigation. Based on current landuse, it is considered unlikely that any underground storage tanks are present at the site.
Inventory of Chemicals and Wastes and their Location:	No documentation was made available. Based on current landuse, widespread chemical use is not anticipated at the site. It is noted that resident garages, which were not accessible during the investigation, may contain household chemicals which are considered unlikely to have contaminated the site.
Description of Manufacturing / Industrial Processes and Location:	Available information does not indicate the occurrence of manufacturing or industrial activities at the site.
Product Spill and Loss History:	No documentation regarding spill or product loss was available for review
Discharges to Land, Air & Water:	No documentation regarding discharge to land, air and water was available for review
Complaint History:	No documentation regarding complaint history was available for review.

Title	Details
Sewer and Service Plans:	No service plans were reviewed as part of this investigation
Permits, Licenses and Approvals:	None provided for the site.
Summary of Previous Land Use & Chronological List	The site has been used for residential purposes prior to 1930.
Integrity Assessment	Reviewed sources of information were in general agreement. This degree of consistency suggests that the historical assessment described above has an appropriate level of accuracy. Supporting records are included in Appendices D.

6 Conceptual Site Model

6.1 Known or Potential Sources of Contamination

The following table presents a summary of potentially contaminating activities that have occurred at the site, associated contaminants of potential concern (COPC) and potential pathways based on high-density residential landuse (as zoned).

Table 6.1 Summary of Potentially Contaminating Activities

Activity	Potential Contaminants
Fill soils at the site.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc); total recoverable hydrocarbons (TRH); benzene, toluene, ethylbenzene, and xylene (BTEX); polycyclic aromatic hydrocarbons (PAH), including benzo(a)pyrene, organochlorine pesticides (OCP); polychlorinated biphenyls (PCB); and asbestos.
Potentially hazardous construction materials.	Asbestos, lead.

6.2 Potentially Affected Media

Given the nature of the potentially contaminating activities outlined in Table 6.1, the following media could be potentially affected:

- Soil.
- Surface water.
- Groundwater.

6.3 Potential Human and Ecological Receptors

Potential human receptors may include:

- Current and future site users.
- Future site workers – during redevelopment.
- Neighbouring properties.

Potential environmental receptors may include:

- Vegetated site areas.
- Groundwater.
- Berrys Creek.

6.4 Potential Exposure Pathways

Human Receptors - High Density Residential

The site may be used for high-density residential landuse in the future, consistent with zoning. Potential exposure pathways of identified COPC to human receptors under this landuse include:

- Site construction and maintenance workers: Potential inhalation of dust, dermal contact/incidental ingestion of soil and surface water (excavations), and/or groundwater (excavations).
- Neighbouring Site Users: Potential inhalation of dust during site works.

The site and surrounding areas are serviced by reticulated water. Groundwater well registration records reported no instances of groundwater abstraction for human drinking purposes proximate to the site. This is therefore not considered to be a potential pathway for human receptors.

Flora and Aquatic Ecosystem

Potential soil chemical impacts are considered to present a low risk to flora as where vegetation currently exists onsite, flora appears not to be unduly affected by current site conditions.

The nearest surface water receptor is Berrys Creek, located approximately 400m to the south of the site.

7 Sampling Analysis and Quality Plan

7.1 Data Quality Objectives

The data quality objectives (DQO) process is a systematic planning tool based on the scientific method for establishing criteria for data quality and for developing data collection designs. The DQO defines the experimental process required to test a hypothesis. By using the DQO process to plan the investigation effort, the relevant parties can improve the effectiveness, efficiency and defensibility of a decision in a resource and cost-effective manner.

The DQO process consists of seven steps, which are designed to clarify the study objectives, define the appropriate type of data and specify tolerable levels of potential decision errors. The seven-step DQO process adopted for the works was as follows:

- Step 1 – Defining the Problem. The first step in the DQO process is to 'define the problem' that has initiated the investigation;
- Step 2 – Identify the Decision. The second step in the process is to define the decision statement that the study will attempt to resolve;
- Step 3 – Identify Inputs to the Decision. In this step, the different types of information needed to resolve the decision statement are identified;
- Step 4 – Define the Study Boundaries;
- Step 5 – Develop a Decision Rule;
- Step 6 – Specify Limits on Decision Errors; and
- Step 7 – Optimise the Design for obtaining the Data.

These Steps have been followed for the investigation, with DQO and DQI presented in Appendix E.

7.2 Sampling and Analysis Plan

The rationale behind the sampling and analysis plan is presented in the sections below.

7.2.1 Sampling Pattern

Soil sampling was completed at the site to provide general coverage, and target potential contamination sources observed (if present). Soil assessment locations completed are considered to provide adequate coverage to meet the objectives of the investigation. Areas within buildings and some backyards were inaccessible (see Table 3.1).

Groundwater samples were collected from wells installed for geotechnical purposes, which contain groundwater considered to be generally representative of regional conditions. It is noted that the wells were located on the northern boundary (upgradient to the site), and south-western boundary (cross-gradient to the site).

Sampling locations are shown on Figure 6, Appendix A.

7.2.2 Soil Sampling Methodology

Soil Sampling

Soil sampling was completed using a drilling rig fitted with solid flight auger drill rig and/or hand-auger. The following was completed:

- Ground conditions were logged with detail on stratigraphy, discolouration, staining, odours, moisture or other indicators of contamination.
- Soil samples were taken with clean disposable nitrile gloves directly from the auger with care taken to collect soil that had not come in contact with the auger. Samples were then placed in laboratory-supplied sample containers with Teflon sealed lid.
- Samples were placed in an iced Esky to cool samples.
- Containers were labelled with the sample number, project number and date with samples despatched under a chain of custody.
- Samples were transported to the primary laboratory, Envirolab Services in Sydney, after the completion of soil sampling activities to allow technical holding times for analysis to be achieved and to minimise any interference with the samples. Inter-laboratory testing of triplicate samples was conducted by Eurofins in Sydney.

PID Soil Screening

Soil samples were field-screened for volatile organic compounds (VOC) using a calibrated PID (calibration certificate provided in Appendix H). PID readings, visual and olfactory indicators were used to aid in sample selection and scheduling samples for chemical analysis.

The following is a summary of the PID screening procedure:

- Placement of a split of the soil sample into a zip-lock plastic bag, then sealed.
- Measurement of background VOC concentrations in ambient air prior to each reading to account for sensor drift.
- Using the point of the PID, punch a small hole in the bag. Place the tip of the PID in the bag and monitor the readout and note the maximum concentration during the recording period.

Analytical Schedule

Soil samples collected from each location were selectively analysed for heavy metals, TRH/BTEX, PAH, OCP, PCB and asbestos.

7.2.3 Groundwater Sampling Methodology

Well Installation

Two groundwater wells were installed at the site by Morrow Geotechnical, for geotechnical purposes.

Morrow Geotechnical boreholes drilled at the two locations (adjacent to BH1 and BH5, identified as MW1 and MW5) which were converted into 50mm groundwater monitoring wells, installed using 50mm PVC pipe and factory slotted screened sections. Geosyntec was not present during the installation of the wells and has been provided with well construction details for MW5, which indicates that the screened sections were targeted to intersect the groundwater in sandstone bedrock, surrounded by a gravel pack. Correspondence with Morrow Geotechnical indicates that well construction at MW1 was installed to meet the same objective.

The wells were developed by Geosyntec two days following installation using a decontaminated stainless-steel bailer. Hydrasleeves were installed in each well following development.

Groundwater Sampling

Sampling was conducted 2 days after well development. The following was completed:

- Standing groundwater levels were measured using an interface probe.
- Field groundwater parameters were recorded using a water quality meter.

- Groundwater samples were collected in laboratory-supplied sample containers, directly from the hydrasleeves, and placed in an iced Esky.
- Samples were transported to the primary laboratory under chain of custody conditions to allow technical holding times for analysis to be achieved and to minimise any interference with the samples.

Analytical Suite

Groundwater samples were analysed for heavy metals, TRH/BTEX, PAH, total phenols and VOC.

7.2.4 Field QA/QC Sampling

The methodology for obtaining QA/QC samples was conducted as follows:

Duplicate and Triplicate Samples

In accordance with NEPM (2013), at least 5% of soil samples were duplicates/triplicates collected in the field for analysis at the primary laboratory. They were collected from the same sampling point and divided into two separate and unrelated sample containers for analysis at the same laboratory (intra-laboratory precision).

Duplicate/triplicate samples were not analysed for groundwater samples, based on investigation objectives, which is not considered to have impacted the findings of the investigation.

8 Evaluation of QA/QC

Field QA/QC

Soil samples were taken with clean disposable nitrile gloves directly from the auger with care taken to collect soil that had not come in contact with the auger stem. Samples were then placed in laboratory-supplied sample containers with Teflon sealed lid.

The QA/QC results for soil duplicate (intra-laboratory) and triplicate (inter-laboratory) samples are summarised in Appendix I. Based on the information referenced above, it was concluded that the soil and surface water data is of an acceptable quality to achieve the objectives of this study, noting minor Relative Percentage Difference (RPD) exceedances discussed.

Laboratory QA/QC

Samples were received and analysed by the primary and secondary laboratories within sample holding times. Detailed QA/QC results are presented on the laboratory testing certificates presented in Appendix G and summarised in Appendix I, indicating data of acceptable quality for the purpose of this assessment.

9 Site Assessment Criteria

The adopted criteria were selected based on the sites zoning, R4 high-density residential landuse.

9.1 Assessment Criteria

Soil analytical results were assessed against criteria provided in the guidelines listed below, as summarised in Table 9.1-9.2.

- NEPM (2013). Health Investigation Levels (HIL) and Health Screening Levels (HSL) for High-Density Residential landuse.
- NEPM (2013). Ecological Investigation Levels (EIL) and Ecological Screening Levels (ESL) for Urban Residential and Public Open Space.
- ANZG (2018) Guidelines for Fresh and Marine Waters.

Coarse soil criteria have been adopted due to the presence of sandy topsoil and fill in areas. Ecological investigation levels are only applicable to areas proposed to contain landscaping under the development design, with retention of existing site soils.

Table 9.1: Adopted Soil Criteria - Human Health (mg/kg)

NEPM (2013) Criteria	Soil HIL B – High Density Residential (mg/kg)	Soil HSL A&B Low-High Density Residential (mg/kg)	EILs - Urban Residential and Public Open Space (mg/kg)	ESLs - Urban Residential and Public Open Space (mg/kg)
TRH				
F1	-	45	-	180
F2	-	110	-	120
F3 (>C16-C34)	-	-	-	300
F4 (>C34-C40)	-	-	-	2800
BTEX				
Benzene	-	0.5	-	50
Toluene	-	480	-	85
Ethylbenzene	-	55	-	70
Xylenes (Total)	-	40	-	105
Naphthalene	-	3	170	-
PAHs				
Benzo (a) Pyrene	4	-	-	0.7
Total PAHs	400	-	-	-
Metals				
Arsenic	500	-	100	-
Cadmium	150	-	-	-
Chromium (VI)	500	-	490	-
Copper	30,000	-	190	-
Lead	1200	-	1100	-
Mercury	120	-	-	-
Nickel	1200	-	130	-

NEPM (2013) Criteria	Soil HIL B – High Density Residential (mg/kg)	Soil HSL A&B Low-High Density Residential (mg/kg)	EILs - Urban Residential and Public Open Space (mg/kg)	ESLs - Urban Residential and Public Open Space (mg/kg)
Zinc	60,000	-	330	-
Pesticides				
DDT+DDE+DDD	600	-	-	-
DDT	-	-	180	-
Aldrin and dieldrin	10	-	-	-
Chlordane	90	-	-	-
Endosulfan	400	-	-	-
Endrin	20	-	-	-
Heptachlor	10	-	-	-
HCB	15	-	-	-
Methoxychlor	500	-	-	-
Mirex	20	-	-	-
Toxaphene	30	-	-	-
Asbestos				
Asbestos	Presence	Presence	-	-

Table 9.2: Adopted Groundwater Criteria

Groundwater samples with COPC reported above the laboratory limit of reporting (LOR) were compared with the ANZG (2018) 95% species protection criteria below. As the site is proximate to fresh and marine water receptors, the most conservative criteria have been adopted where these values differ. It is noted that all other COPC were reported to be below the laboratory LOR.

Adopted criteria for groundwater analysed at the site are listed below:

- Chloroform – 770 µg/L (Marine and Freshwater Criteria)
- Toluene – 180 µg/L (Marine and Freshwater Criteria)
- Arsenic – 13 µg/L (Freshwater Criteria)
- Copper – 1.3 µg/L (Marine Criteria)
- Nickel – 11 µg/L (Freshwater Criteria)
- Zinc – 8 µg/L (Freshwater Criteria)

9.2 Waste Classification Criteria

Given that excavation and disposal of fill material may be required at site, soil results were also compared against criteria to provide a preliminary in-situ waste classification. Criteria found in the NSW EPA (2014) Waste Classification Guidelines Part 1: Classifying Waste (2014) (NSW EPA 2014) for CT1, SCC1 and TCLP1 for General Solid Waste (GSW) were used and are displayed in Appendix B.

10 Field Investigation and Laboratory Results

10.1 Field Observations

The key observations made during the fieldworks conducted are summarised as follows. Refer to site features in Figures 3A, 3B, 3C, borehole logs in Appendix F and the photo log in Appendix C.

10.1.1 Site Observations – March 2021

A discussion of site features and sub-surface conditions observed at each property is provided below. It is noted that access to buildings and to the rear portions of 1-3 Canberra Ave, 4-6 Marshall Ave and 4 Holdsworth Ave was not possible during site works. Observed building materials are discussed in Table 3.1.

All Properties

The following is noted for all property areas observed during the investigation:

- All properties contained detached residential dwellings which were not accessible. Detail of the individual building construction is provided in Table 3.1 above.
- No stains or odours were observed within any of the property yards during the site works.
- Fibre cement fragments were not observed on the ground surface, or within soils.
- Recorded PID readings ranged from 0-15. It is noted that the PID was reading as high as 15 in ambient air during the site works.
- Bedrock was encountered at geotechnical investigation locations at depths ranging from 0.1m bgs in the western portion (BH3, BH5), to 2.8m bgs in the eastern portion (BH4).

5 Canberra Avenue

The property contained grassed yard areas to the front and back of the house. The back yard area was raised slightly above the remainder of the site, with a retaining wall approximately 1m in height present. Yard areas appeared maintained. An alleyway was present along the southern boundary, which contained fencing made from fibre cement sheeting (potentially containing asbestos). Glass and wood were stored on the ground surface in the driveway in the sites north-eastern portion. A locked steel shed was present in the back yard, with wood sheeting stored beneath.

Soil in the yard areas was observed to comprise topsoil and light to dark brown silty to sandy to silty clay (BH9, BH10) to 0.9m (handauger reach depth). No inclusions were observed in soils.

3 Canberra Avenue

The property contained a grassed yard area at the front, a concrete driveway along the northern portion, a concrete/paved area in the central portion, a brick garage/shed in the north-western corner and a pool in the south-western corner. Household items were observed on the ground surface of the driveway/sealed area including bins, a plastic crate and a barbeque. A car was stored in the garage.

Soil in the front yard was observed to comprise topsoil and dark brown sandy clay (BH8). No inclusions were observed. Refusal was encountered at 0.3m on a large tree root.

1 Canberra Avenue

The property contained a grassed area at the front and a storage shed/garage in the north-eastern portion. No items were observed on the ground surface. Although access was not possible, online

aerial imagery from 21 January 2021 (Nearmap) indicates a grassed backyard in the rear portion. Wood fencing separated the front and backyards.

Soil in the front yard area was observed to comprise topsoil and dark brown clayey sand, with minor inclusions of sandstone (BH4). Natural light brown silty clay was encountered from 0.6m bgs.

4 Marshall Avenue

The property contained a grassed yard, concrete porch area and concrete driveway in the portion fronting Marshall Avenue. No items were observed on the ground surface. Although not accessible, online imagery indicates a grassed yard area in the rear portion.

Soil in the front yard was observed to comprise gravelly silty sand fill (BH1). Morrow Geotechnical advised that they believe a stormwater detention basin (SDB) to be present beneath this yard area. The soils encountered in this area may therefore be associated with the construction of this basin.

6 Marshall Avenue

The property contained an unsealed area with leaf litter and gravels in the portion fronting Marshall Avenue. Various items were observed on the ground surface including an old van, a small generator, a barbeque, a cupboard and sandstone boulders. Although not accessible, online imagery indicates a grassed yard area in the rear portion.

Soil in the front area was observed to comprise topsoil and dark brown sandy clay, underlain by natural light brown clayey sand from 0.2m bgs (BH2). No inclusions were observed in soils.

8 Marshall Avenue

The property contained a grassed yard/garden area on the portion fronting Marshall Avenue, and in the south-west portion (separated from Holdsworth Avenue by wooden fencing). Yard areas appeared maintained. A pool was present in the south-eastern portion. Items observed on the ground surface of the property included pot plants and a steel fire bowl with stand placed on a concrete block. The yard areas (north/west) and pool area (south-east) were separated by a retaining wall approximately 1-2m in height.

Soil in the front yard was observed to comprise topsoil and dark brown sandy clay with inclusions of gravels and terracotta (BH7). Refusal was encountered at 0.5m on a large tree root.

2 Holdsworth Avenue

The front portion of the property comprised a tiled driveway area. The rear of the property contained tiled areas, a grassed yard area and a pool with pool house. Yard areas appeared maintained. Items were not observed on the ground surface.

Soil in within the garden bed in the western portion was observed to comprise topsoil and dark brown clayey sand (BH3). Refusal was encountered at 0.3m bgs on a plastic pipe. No inclusions were observed in soils. It is noted that the Morrow Geotechnical log from this location, which was completed slightly to the west beneath the driveway, indicates sandstone bedrock from 0.1m bgs.

4 Holdsworth Avenue

A maintained grassed yard area was present at the front of the property, with a brick-tiled pathway and driveway. Large skip bins were present on the driveway, which were locked. No access was possible to the rear of the property. From wooden fencing, paved areas were noted surrounded by bare soil garden beds.

From the ground surface, soil in the front yard area were observed to comprise topsoil and light to dark brown silty to sandy clay.

6 Holdsworth Avenue

The property contained a small, grassed yard area at the front, and a maintained grassed yard with above ground spa and garden beds at the back. Gardening materials, sandstone block seating and a fire-bowl with stand were observed on the ground surface.

Soil in the backyard was observed to comprise topsoil/dark brown sandy clay with inclusions of terracotta and sandstone, underlain by light brown sand from 0.3m bgs (BH11). Refusal was encountered at 0.7m bgs.

8 Holdsworth Avenue

A grassed yard/garden area was present at the front, with exposed soil present in areas. A concrete driveway was present along the northern portion, with timber stored along the fence-line. The rear portion was mostly grassed, with vegetation was present along the northern part. Household items were observed on the ground surface, including empty paint tins, plastic crates, wood, timber, a couch, wheelbarrows. A paved storage area was present beneath the house with the following items noted: washing machine, plastic detergent containers, plastic boxes, a latter, storage shelves and wood.

Soil in the front yard area was observed to comprise topsoil and dark brown clayey sand (BH5). No inclusions were observed in soils. Refusal was encountered at 0.3m bgs on large tree roots. It is noted that the Morrow Geotechnical log from this location, which was completed slightly to the north on the driveway, indicates sandstone bedrock from 0.1m bgs.

10.1.2 Site Observations – February 2022

During the site inspection completed on 4 February 2022, site conditions were observed to be generally consistent with that detailed in Section 10.1.1 above with no additional Areas of Environmental Concern (AEC) apparent. It is noted that some additional household materials were observed on driveways, associated with vacating tenants, although no surface stains, odours or fibre cement fragments were observed.

The following soil observations were made during sampling on this date:

- BH12 – Soil in the backyard was observed to comprise topsoil/dark brown sandy clay with minor inclusions of gravels and concrete fragments. Refusal was encountered at 0.4m bgs on suspected concrete.
- BH13 – Soil in the backyard was observed to comprise topsoil/dark brown sandy clay with minor inclusions of concrete and sandstone, underlain by light brown sandy clay from 0.4m bgs.
- BH14 – Soil in the backyard was observed to comprise topsoil/dark brown sandy clay, underlain by light brown sandy clay from 0.5m bgs.
- BH15 – Soil in the backyard was observed to comprise topsoil/dark brown sandy clay, underlain by light brown sandy clay from 0.6m bgs.

10.2 Soil Results

Soil analytical data reported all chemical COPC concentrations below the adopted human health criteria, with the exception of B(a)P TEQ at BH13 (0.1). The 95% UCL for B(a)P TEQ in topsoil / garden soils across the site was calculated to be 3.9 mg/kg which is below the adopted human health criteria of 4 mg/kg.

Soil analytical data reported all chemical COPC concentrations below the adopted ecological criteria, with the exception of benzo(a)pyrene which exceeded the adopted site criteria of 0.7 mg/kg

with concentrations of 0.79 mg/kg in BH2 (0.1m bgs), 1.6 mg/kg in BH5 (0.1m bgs), 1.9 mg/kg in BH7 (0.3m bgs), 1.0 mg/kg in BH8 (0.3m bgs) and 4.3 mg/kg in BH13 (0.1 m bgs).

PAH concentrations from selected soil samples were further screened using a PAH source analysis tool which matches PAH results against a database of known PAH sources. The results indicated that likely sources of PAHs include ash and coke. These results corroborate anecdotal information which suggests potential for historical placement of ash-based materials from cooking and heating on sites in gardens.

Soil summary tables are provided in Appendix B. Statistical analysis and detailed PAH source analysis results are provided in Appendix J.

10.3 Groundwater Results

Groundwater samples collected from the site were considered representative of regional conditions. Groundwater samples were observed to be clear to brown with low-moderate turbidity. No odours or sheens were observed during sampling. Field measurements are provided in Table 10.1 below.

Table 10.1: Groundwater Observations

	SWL	pH	DO	Temperature	Conductivity	Redox	TDS
MW01	13.57m bgs	4.99	2.9%	18.8C	248 µs/cm	138.6 mv	124 ppm
MW05	4.42m bgs	4.86	3.4%	19.7C	567 µs/cm	60.8 mv	284 ppm

Groundwater COPC reported above the site criteria were limited to various heavy metals including copper, nickel and zinc. Groundwater results reported above the laboratory LOR are provided in Table 10.2 below.

Table 10.2: Groundwater Results (µg/L)

	Chloroform	Toluene	Arsenic	Copper	Nickel	Zinc
Criteria	**770**	**180**	**13**	**1.3**	**11**	**8**
MW01	<1	<1	5	35	28	81
MW05	1	2	1	13	17	110

10.4 Preliminary In-situ Waste Classification

Topsoil / garden soil fill was encountered to depths ranging from 0.1-0.9m bgs, noting that vertical delineation was not achieved at some locations due to refusal during sampling (tree roots and suspected concrete slab). Comparison of soil analytical data with the NSW EPA 2014 indicates that the material meets classification as General Solid Waste (GSW).

Soil summary tables are provided in Appendix B.

11 Conclusions

Geosyntec was engaged to complete a Preliminary Site Investigation (PSI) with limited soil sampling at 4, 6 & 8 Marshall Avenue; 1, 3 and 5 Canberra Avenue; and 2, 4, 6 and 8 Holdsworth Avenue, St Leonards NSW. The site is zoned as zoned R4 – High Density Residential under the Lane Cove Local Environmental Plan 2009.

A field program was completed in March 2021 and February 2022 including site inspection and intrusive soil sampling at 14 locations across the site. The following is concluded based on the findings of the assessment:

- The site consists of 10 buildings (detached residential dwellings).
- The site has been used for residential purposes prior to 1930.
- Observed site buildings and yard areas appeared to be well maintained in general. Fibre cement sheeting was observed on site structures in areas, which may contain asbestos.
- Household items were observed on the ground surface in areas, although no surface stains, odours or fibre cement fragments were observed.
- No apparent dumping or raised fill areas were observed.
- Inaccessible site areas included access to residential buildings and some private yard areas, which are considered low risk from a contamination perspective.
- The soil profile comprised topsoil / garden soil and dark grey sandy clay, considered likely to comprise reworked natural site soils based on general occurrence across the site. Minor inclusions were noted in areas including gravels (BH1, BH7, BH11, BH12), terracotta (BH7, BH11), sandstone (BH4, BH11, BH13) and concrete fragments (BH12, BH13). Natural light brown silty clay was encountered at depths ranging from 0.2-0.4m bgs at BH2 (north-western portion), and BH4/BH9 (south-eastern portion).
- Suspected fill soils were observed at BH1, BH12, BH13 (gravelly silty sand) and at BH11 (sand).
- No stains, odours of fibre cement fragments were observed within site soils during sampling.
- Sandstone bedrock was encountered at depths ranging from 0.1m in the western portion to 2.8m in the eastern portion.
- Following 95%UCL statistical analysis for B(a)P, soil analytical data reported all chemical COPC concentrations below the adopted human health criteria for high-density residential landuse.
- Soil analytical data reported all chemical COPC concentrations below the adopted ecological criteria for urban residential landuse, with the exception of B(a)P at 5 locations (BH2, BH5, BH7, BH8 and BH13) at shallow depths (0.1-0.3m bgs). These locations are noted to be generally spread across the site.
- PAH source analysis indicates that PAH impact is likely from an ash or coke source.
- Groundwater COPC reported above the site criteria were limited to various heavy metals including copper, nickel and zinc. These results are considered representative of regional groundwater conditions and are not considered to pose an issue for potential use of the site for a high-density residential landuse.
- Soil analytical data from the preliminary in-situ waste classification indicates topsoil / garden soil at the site meets the classification as General Solid Waste (GSW). This classification should be confirmed during excavation works and prior to disposal. Underlying natural soils and sandstone are considered likely to be suitable for classification as Virgin Excavated Natural Material (VENM), which requires confirmation following removal of fill soils from the site.

The findings of the investigation do not indicate the presence of widespread chemical contamination at the site. Based on the above, it is considered that the site has historically been used for detached residential purposes, and meets the land use suitability for a high-density residential landuse subject to implementation of the following:

- Completion of a hazardous materials (hazmat) survey across the site, and preparation of associated management plans for removal of identified hazardous materials where required.
- Implementation of a Soil Management Plan with an Unexpected Finds Protocol to manage any proposed excavations during future redevelopment works at the site, and guide appropriate waste classification and offsite disposal of surplus materials.
- Noting the observed presence of fibre cement sheeting on site structures, following the removal of site buildings, an asbestos clearance across the ground surface by a Licenced Asbestos Assessor will be required.

It is noted that the identified ecological B(a)P exceedances found in shallow materials across the site appear to be limited to the topsoil / garden soil matrix. Anecdotal information indicates that this may be due to historical placement of ash-based materials in gardens. No B(a)P was noted in natural soils at depth.

Future bulk earthworks associated with site redevelopment, and implementation of the site Soil Management Plan, will enable the identified B(a)P in fill to be managed through offsite disposal. If existing surface soils are to be retained onsite, soil testing for B(a)P will be required to ensure ongoing suitability with consideration of site design plans.

12 References

AS 4482 (1999) Guide to the sampling and investigation of potentially contaminated soil. Standards Australia, Sydney.

NEPM (2013) National Environment Protection (Assessment of site Contamination) Measure, Schedule A and Schedules B(1)-B(9). National Environment Protection Council, Adelaide.

NSW EPA (2017) Contaminated Land Management: Guidelines for the NSW site Auditor Scheme (3rd edition). NSW EPA, Sydney.

NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines. NSW EPA, Sydney.

NSW EPA (2014) NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste

NSW EPA (2015) Contaminated sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. NSW DECC, Sydney.

NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land. NSW EPA, Sydney.

Zoic Environmental Pty Ltd (2021). Preliminary Site Investigation: Various Properties, St Leonards NSW. March 2021.

13 Limitations

This report has been prepared by Geosyntec Consultants Pty Ltd (“Geosyntec”) for use by the Client who commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the Client and other parties. The findings of this report are based on the scope of work outlined in Section 1.3. The report has been prepared specifically for the Client for the purposes of the commission, and use by any explicitly nominated third party in the agreement between Geosyntec and the Client. No warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this report by any third party (other than where specifically nominated in an agreement with the Client).

This report relates to only this project and all results, conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be reproduced without prior approval by the Client, or amended in any way without prior written approval by Geosyntec.

Geosyntec’s assessment was limited strictly to identifying environmental conditions associated with the subject property area as identified in the scope of work and does not include evaluation of any other issues.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigation.

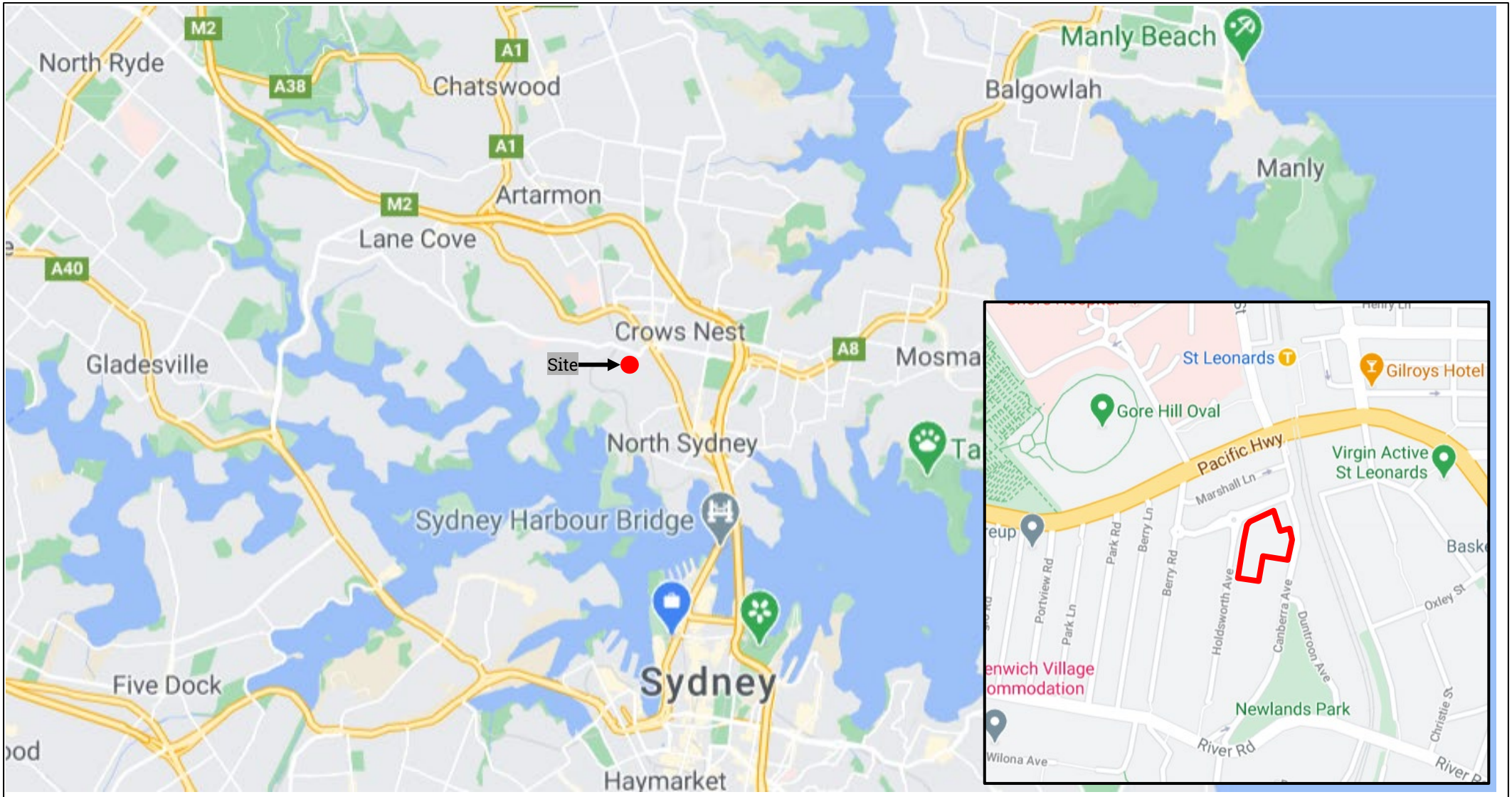
This report does not comment on any regulatory obligations based on the findings. This report relates only to the objectives stated and does not relate to any other work conducted for the Client.

The absence of any identified hazardous or toxic materials on the site should not be interpreted as a guarantee that such materials do not exist on the site.

All conclusions regarding the site are the professional opinions of the Geosyntec personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Geosyntec has not independently verified and assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Geosyntec, or developments resulting from situations outside the scope of this project.

Geosyntec is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The Client acknowledges that this report is for its exclusive use.

Appendix A Figures



LEGEND

Approximate site area

This product has been created to support the main report and is not suitable for other purposes. Image sourced from Nearmap.

* Proximate geotechnical and environmental locations may be collected from the same borehole.

N

0m 20m

Scale indicative only

Figure 1: Site Location

Site Address: St Leonards NSW

Client: Evergreen

Job Number: 21020

Date: February 2022

Geosyntec consultants

LEGEND

Approximate site area

This product has been created to support the main report and is not suitable for other purposes. Image sourced from Nearmap.

* Proximate geotechnical and environmental locations may be collected from the same borehole.

N

0m 20m

Scale indicative only

Figure 2: Site Layout and Surrounds

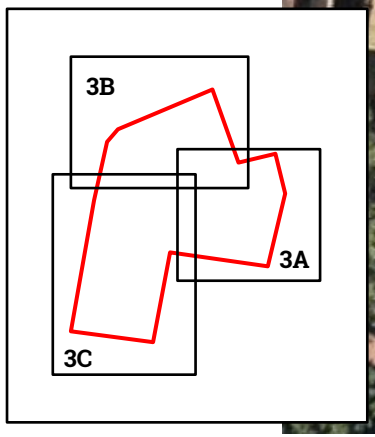
Site Address: St Leonards NSW

Client: Evergreen

Job Number: 21020

Date: February 2022

Geosyntec consultants



LEGEND

Approximate site area

This product has been created to support the main report and is not suitable for other purposes. Image sourced from Nearmap.

* Proximate geotechnical and environmental locations may be collected from the same borehole.

0m 10m

Scale indicative only

Figure 3a: Layout – Canberra Avenue

Site Address: St Leonards NSW

Client: Evergreen

Job Number: 21020

Date: February 2022

Geosyntec consultants

LEGEND

Approximate site area

N

0m 10m

Scale indicative only

Figure 3b: Layout – Marshall Avenue

Site Address: St Leonards NSW

Client: Evergreen

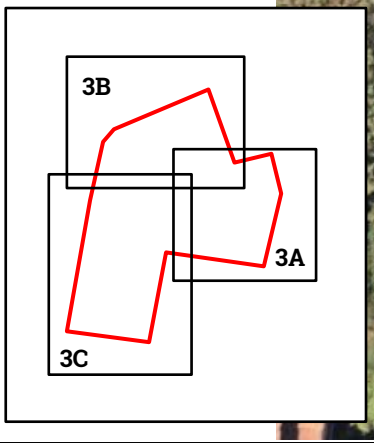
Job Number: 21020

Date: February 2022

This product has been created to support the main report and is not suitable for other purposes. Image sourced from Nearmap.

* Proximate geotechnical and environmental locations may be collected from the same borehole.

Geosyntec consultants



LEGEND

Approximate site area

This product has been created to support the main report and is not suitable for other purposes. Image sourced from Nearmap.

* Proximate geotechnical and environmental locations may be collected from the same borehole.

0m 10m

Scale indicative only

Figure 3c: Layout – Holdsworth Avenue

Site Address: St Leonards NSW

Client: Evergreen

Job Number: 21020

Date: February 2022

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LEGEND

- Approximate site area
- Soil sampling locations
- Groundwater sampling location

This product has been created to support the main report and is not suitable for other purposes. Image sourced from Nearmap.

* Proximate geotechnical and environmental locations may be collected from the same borehole.

N

0m 20m

Scale indicative only

Figure 4: Sampling Locations

Site Address: St Leonards NSW

Client: Evergreen

Job Number: 21020

Date: February 2022

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Appendix B Result Summary Tables

21020 - Soil Laboratory Results

		Metals							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		4	0.4	1	1	1	0.1	1	1
NEPM 2013 Table 1A(3) Res HIL B, HSL A/B Soil, Sand 0 m to <1 m		500	150	500	30,000	1200	120	1200	60,000
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil									
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space		100		190	190	1100		130	330
Field ID	**Date**								
BH1(0.5)	25/02/2021	<4	<0.4	8	14	29	<0.1	2	38
BH2(0.1)	25/02/2021	<4	<0.4	5	15	44	<0.1	2	48
BH3(0.3)	25/02/2021	<4	<0.4	12	33	24	<0.1	8	70
BH4(0.6)	25/02/2021	5	<0.4	12	13	52	<0.1	2	24
BH5(0.1)	25/02/2021	4	<0.4	8	25	270	<0.1	4	150
BH7(0.3)	25/02/2021	37	<0.4	14	40	110	0.1	4	110
BH8(0.3)	25/02/2021	5	<0.4	8	20	78	<0.1	4	77
BH9(0.4)	25/02/2021	<4	<0.4	6	6	17	<0.1	2	19
BH10(0.3)	25/02/2021	5	<0.4	6	35	83	<0.1	2	100
BH11(0.5)	25/02/2021	<4	<0.4	9	180	170	0.1	6	160
BH12 (0.3)	4/02/2022	<4	<0.4	6	8	18	<0.1	3	21
BH13 (0.1)	4/02/2022	<4	<0.4	11	27	18	<0.1	3	57
BH14 (0.1)	4/02/2022	29	<0.4	7	23	190	<0.1	2	81
BH15 (0.4)	4/02/2022	<4	<0.4	5	17	110	<0.1	2	75
Dup-1	25/02/2021	35	<0.4	10	32	77	0.1	3	89
Trip-1	25/02/2021	42	<0.4	12	35	85	0.1	<5	88
Dup-2	4/02/2022	<4	<0.4	15	130	23	<0.1	3	57
Trip-2	4/02/2022	3.2	<0.4	16	55	41	<0.1	5.4	88

21020 - Soil Laboratory Results

		Polycyclic Aromatic Hydrocarbons																		
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total +vePAH's	Benzo(a)pyrene TEQ calc (zero)	Benzo(a)pyrene TEQ calc(half)	Benzo(a)pyrene TEQ calc(PQL)
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.05	0.1	0.1	0.1	0.05	0.5	0.5	0.5
NEPM 2013 Table 1A(3) Res HIL B, HSL A/B Soil, Sand 0 m to <1 m		3															400	4	4	4
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil													0.7							
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space		170																		
Field ID	**Date**																			
BH1(0.5)	25/02/2021	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.6	0.5	0.3	0.3	0.6	0.4	0.2	<0.1	0.2	3.2	<0.5	0.5	0.5
BH2(0.1)	25/02/2021	<0.1	<0.1	<0.1	<0.1	0.7	0.2	1.6	1.5	0.7	0.7	1	0.79	0.6	<0.1	0.5	8.5	1.1	1.1	1.2
BH3(0.3)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.05	<0.5	<0.5	<0.5
BH4(0.6)	25/02/2021	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	0.4	0.1	0.2	0.3	0.2	0.1	<0.1	0.1	1.9	<0.5	<0.5	<0.5
BH5(0.1)	25/02/2021	<0.1	0.2	<0.1	0.1	1.5	0.3	3.3	3	1.5	1.4	2.4	1.6	1.1	<0.1	1	18	2.1	2.2	2.2
BH7(0.3)	25/02/2021	<0.1	0.2	0.1	0.1	1.8	0.3	4	3.6	1.7	1.7	3.1	1.9	1.4	0.2	1.2	21	2.8	2.8	2.8
BH8(0.3)	25/02/2021	<0.1	<0.1	<0.1	<0.1	1	0.2	2.2	2	0.9	0.9	2	1	0.8	<0.1	0.7	12	1.4	1.4	1.5
BH9(0.4)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	0.3	<0.5	<0.5	<0.5
BH10(0.3)	25/02/2021	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.6	0.6	0.3	0.3	0.5	0.3	0.2	<0.1	0.2	3.1	<0.5	<0.5	<0.5
BH11(0.5)	25/02/2021	<0.1	0.2	<0.1	<0.1	0.2	<0.1	0.4	0.4	0.2	0.2	0.4	0.3	0.2	<0.1	0.2	2.5	<0.5	<0.5	<0.5
BH12 (0.3)	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<0.05	<0.5	<0.5	<0.5
BH13 (0.1)	4/02/2022	0.2	0.9	<0.1	0.3	4.7	1.1	10	11	5.5	6.5	6.9	4.3	2	0.8	2.5	56	6.6	6.6	6.6
BH14 (0.1)	4/02/2022	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.5	0.4	0.3	0.2	0.4	0.2	0.1	<0.1	0.2	2.6	<0.5	<0.5	<0.5
BH15 (0.4)	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	0.8	0.5	0.4	0.8	0.4	0.3	<0.1	0.4	4.6	0.6	0.7	0.7
Dup-1	25/02/2021	<0.1	<0.1	<0.1	<0.1	1.8	0.4	3.7	3.4	1.6	1.6	2.7	1.7	1.2	0.2	1.1	20	2.5	2.5	2.5
Trip-1	25/02/2021	<0.5	-	-	-	-	-	-	-	-	-	-	1.6	<0.5	<0.5	<0.5	17	<0.5	<0.5	<0.5
Dup-2	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.3	0.2	0.2	0.3	0.2	0.1	<0.1	0.1	1.6	<0.5	<0.5	<0.5
Trip-2	4/02/2022	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

21020 - Soil Laboratory Results

		Organochlorine Pesticides																					
		alpha-BHC	HCB	beta-BHC	gamma-BHC	Heptachlor	delta-BHC	Aldrin & Dieldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-chlordane	Endosulfan I	pp-DDE	Dieldrin	Endrin	Endosulfan II	pp-DDD	Endrin Aldehyde	pp-DDT	Endosulfan Sulphate	Methoxychlor	Total +ve DDT+DDD+DDE
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.1	0.1	0.1	`	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1A(3) Res HIL B, HSL A/B Soil, Sand 0 m to <1 m			15			10		10							20						500	600
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																						
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space																			180			
Field ID	**Date**																					
BH1(0.5)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH2(0.1)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH3(0.3)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH4(0.6)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH5(0.1)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH7(0.3)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH8(0.3)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH9(0.4)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH10(0.3)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH11(0.5)	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH12 (0.3)	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH13 (0.1)	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH14 (0.1)	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH15 (0.4)	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dup-1	25/02/2021	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Trip-1	25/02/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dup-2	4/02/2022	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Trip-2	4/02/2022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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						BTEX					
		TRH C6 - C9	TRH C6 - C10	vTPH C6 - C10 lessBTEX (F1)	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Total +ve Xylenes
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		25	25	25	0.2	0.5	1	2	1	1	3
NEPM 2013 Table 1A(3) Res HIL B, HSL A/B Soil, Sand 0 m to <1 m				45	0.5	480	55				40
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil				180	50	85	70				105
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space											
Field ID	**Date**										
BH1(0.5)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH2(0.1)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH3(0.3)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH4(0.6)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH5(0.1)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH7(0.3)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH8(0.3)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH9(0.4)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH10(0.3)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH11(0.5)	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH12 (0.3)	4/02/2022	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH13 (0.1)	4/02/2022	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH14 (0.1)	4/02/2022	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
BH15 (0.4)	4/02/2022	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
Dup-1	25/02/2021	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
Trip-1	25/02/2021	<20	<20	<20	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3
Dup-2	4/02/2022	<25	<25	<25	<0.2	<0.5	<1	<2	<1	<1	<3
Trip-2	4/02/2022	<20	<20	<20	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.3

21020 - Soil Laboratory Results

		Total Recoverable Hydrocarbons							
		TRH C10 - C14	TRH C15 - C28	TRH C29 - C36	TRH >C10-C16	TRH >C10 - C16less Naphthalene (F2)	TRH >C16-C34	TRH >C34-C40	Total +ve TRH (>C10-C40)
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		50	100	100	50	50	100	100	50
NEPM 2013 Table 1A(3) Res HIL B, HSL A/B Soil, Sand 0 m to <1 m						110			
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil						120	1300		2800
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space									
Field ID	**Date**								
BH1(0.5)	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
BH2(0.1)	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
BH3(0.3)	25/02/2021	<50	220	270	66	66	370	160	600
BH4(0.6)	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
BH5(0.1)	25/02/2021	<50	<100	<100	<50	<50	110	<100	110
BH7(0.3)	25/02/2021	<50	<100	140	<50	<50	<100	<100	<50
BH8(0.3)	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
BH9(0.4)	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
BH10(0.3)	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
BH11(0.5)	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
BH12 (0.3)	4/02/2022	<50	<100	<100	<50	<50	<100	<100	<50
BH13 (0.1)	4/02/2022	200	150	350	<50	<50	310	<100	310
BH14 (0.1)	4/02/2022	<50	<100	<100	<50	<50	<100	<100	<50
BH15 (0.4)	4/02/2022	<50	<100	<100	<50	<50	<100	<100	<50
Dup-1	25/02/2021	<50	<100	<100	<50	<50	<100	<100	<50
Trip-1	25/02/2021	<20	<50	<50	<50	<50	<100	<100	<100
Dup-2	4/02/2022	<50	<100	<100	<50	<50	<100	<100	<50
Trip-2	4/02/2022	<20	<50	<50	<50	<50	150	<100	<100

		Asbestos
		Asbestos ID in soil
		-
EQL		-
HIL/HSL -Residential A		Asbestos Detected
Field ID	**Date**	
BH1(0.5)	25/02/2021	No Asbestos Detected
BH2(0.1)	25/02/2021	No Asbestos Detected
BH3(0.3)	25/02/2021	No Asbestos Detected
BH4(0.6)	25/02/2021	No Asbestos Detected
BH5(0.1)	25/02/2021	No Asbestos Detected
BH7(0.3)	25/02/2021	No Asbestos Detected
BH8 (0.3)	25/02/2021	No Asbestos Detected
BH9 (0.4)	25/02/2021	No Asbestos Detected
BH10 (0.3)	25/02/2021	No Asbestos Detected
BH11 (0.5)	25/02/2021	No Asbestos Detected
BH12 (0.3)	4/02/2022	No Asbestos Detected
BH13 (0.1)	4/02/2022	No Asbestos Detected
BH14 (0.1)	4/02/2022	No Asbestos Detected
BH15 (0.4)	4/02/2022	No Asbestos Detected

21020 - Waste Classification Data

		Metals							PAH			Pesticides	TRH/BTEX					
		Arsenic	Cadmium	Chromium	Lead	Lead - TCLP	Mercury	Nickel	Benzo(a)pyrene	Benzo(a)pyrene - TCLP	Total +vePAH's	Total +ve DDT+DDD+DDE	TRH C6 - C9	Benzene	Toluene	Ethylbenzene	Total +ve Xylenes	Total +ve TRH (>C10-C40)
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		4	0.4	1	1	1	0.1	1	0.05	0.05	0.05	0.1	25	0.2	0.5	1	3	50
NSW EPA 2014 CT1		100	20	100	100		4	40	0.8		200	250	650	10	288	600	1000	10,000
NSW EPA 2014 SCC1		500	100	1900	1500		50	1050	10		200	250	650	18		1080	1800	10,000
NSW EPA 2014 TCLP1						5				0.04								
Field ID	**Date**																	
BH1(0.5)	25/02/2021	<4	<0.4	8	29	-	<0.1	2	0.4	-	3.2	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH2(0.1)	25/02/2021	<4	<0.4	5	44	-	<0.1	2	0.79	-	8.5	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH3(0.3)	25/02/2021	<4	<0.4	12	24	-	<0.1	8	<0.05	-	<0.05	<0.1	<25	<0.2	<0.5	<1	<3	600
BH4(0.6)	25/02/2021	5	<0.4	12	52	-	<0.1	2	0.2	-	1.9	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH5(0.1)	25/02/2021	4	<0.4	8	270	0.1	<0.1	4	1.6	<0.001	18	<0.1	<25	<0.2	<0.5	<1	<3	110
BH7(0.3)	25/02/2021	37	<0.4	14	110	0.07	0.1	4	1.9	-	21	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH8(0.3)	25/02/2021	5	<0.4	8	78	-	<0.1	4	1	-	12	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH9(0.4)	25/02/2021	<4	<0.4	6	17	-	<0.1	2	<0.05	-	0.3	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH10(0.3)	25/02/2021	5	<0.4	6	83	-	<0.1	2	0.3	-	3.1	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH11(0.5)	25/02/2021	<4	<0.4	9	170	-	0.1	6	0.3	-	2.5	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH12 (0.3)	4/02/2022	<4	<0.4	6	18	-	<0.1	3	<0.05	-	<0.05	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH13 (0.1)	4/02/2022	<4	<0.4	11	18	-	<0.1	3	4.3	<0.001	56	<0.1	<25	<0.2	<0.5	<1	<3	310
BH14 (0.1)	4/02/2022	29	<0.4	7	190	-	<0.1	2	0.2	-	2.6	<0.1	<25	<0.2	<0.5	<1	<3	<50
BH15 (0.4)	4/02/2022	<4	<0.4	5	110	-	<0.1	2	0.4	-	4.6	<0.1	<25	<0.2	<0.5	<1	<3	<50
Dup-1	25/02/2021	35	<0.4	10	77	-	0.1	3	1.7	-	20	<0.1	<25	<0.2	<0.5	<1	<3	<50
Trip-1	25/02/2021	42	<0.4	12	85	-	0.1	<5	1.6	-	17	-	<20	<0.1	<0.1	<0.1	<0.3	<100
Dup-2	4/02/2022	<4	<0.4	15	23	-	<0.1	3	0.2	-	1.6	<0.1	<25	<0.2	<0.5	<1	<3	<50
Trip-2	4/02/2022	3.2	<0.4	16	41	-	<0.1	5.4	<0.5	-	<0.5	<0.05	<20	<0.1	<0.1	<0.1	<0.3	<100

Appendix C Photolog

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 1: Residential property at 5 Canberra Ave, St Leonards.

Image 2: Soil sample profile from BH6 at 5 Canberra Ave, St Leonards.

Image 3: Fibrous cement sheeting along the side pathway at 5 Canberra Ave, St Leonards.

Image 4: Backyard at 5 Canberra Ave, St Leonards.

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 5: Residential property at 3 Canberra Ave, St Leonards.

Image 6: Side profile of the residential property at 3 Canberra Ave, St Leonards.

Image 7: Soil profile at 3 Canberra Ave, St Leonards.

Image 8: Discarded wood palings at 3 Canberra Ave, St Leonards.

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 9: Residential property at 1 Canberra Ave, St Leonards.

Image 10: Front garden and shed of 1 Canberra Ave, St Leonards.

Image 11: Soil profile at BH4 1 Canberra Ave, St Leonards.

Image 12: Side profile of the residential property at 1 Canberra Ave, St Leonards.

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 13: Residential property and sampling area from BH1 at 4 Marshall Ave, St Leonards.

Image 14: Residential property at 6 Marshall Ave, St Leonards.

Image 15: Front garden at 6 Marshall Ave, St Leonards.

Image 16: Side profile at 6 Marshall Ave, St Leonards.

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 17: Residential property at 9 Marshall Ave, St Leonards.

Image 18: Side profile at 8 Marshall Ave, St Leonards.

Image 19: Back garden at 8 Marshall Ave, St Leonards.

Image 20: Back garden at 8 Marshall Ave, St Leonards.

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 21: Residential property at test pit location for BH3 at 2 Holdsworth Ave, St Leonards.

Image 22: Sampling location for BH3

Image 23: Residential property at 4 Holdsworth Ave, St Leonards.

Image 24: Side profile of the residential property 4 Holdsworth Ave, St Leonards.

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 25: Back profile of residential property at 6 Holdsworth Ave, St Leonards.

Image 26: Back garden and location of BH10 at 6 Holdsworth Ave, St Leonards.

Image 27: Water feature at 8 Holdsworth Ave, St Leonards.

Image 28: Back garden and waste at 8 Holdsworth Ave, St Leonards.

Photograph Log

Client Name:	Site Location:	Project Number:	Captured Date
Evergreen	St Leonards	21020	25/02/2021

Image 27: Discarded paint tins at 8 Holdsworth Ave, St Leonards.

Image 28: Soil profile from BH5 at 8 Holdsworth Ave, St Leonards.

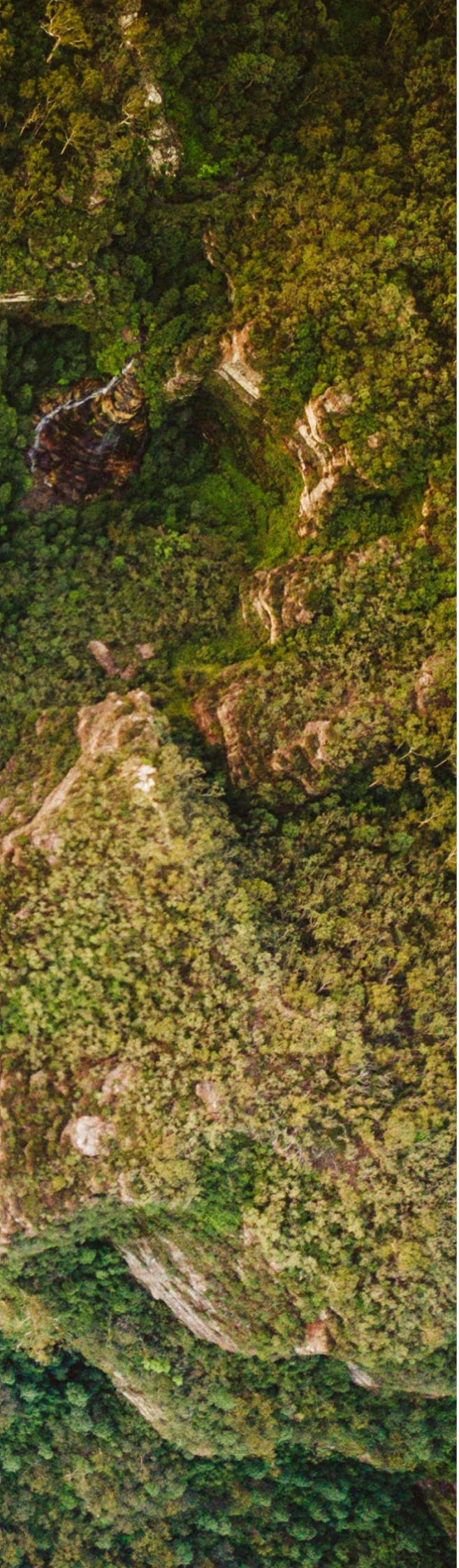
Appendix D Background Searches

Land Insight RESOURCES

Due Diligence Insight Report

4, 6 & 8 Marshall Avenue & 1, 3 and 5 Canberra Avenue & 2,4,6 and 8 Holdsworth Avenue, St Leonards NSW

19 February 2021



Understanding your report

Your Report has been produced by Land Insight and Resources (Land Insight).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a 200 to 2000m radius (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, Land Insight cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by Land Insight includes data listed on page 4 (table of contents). All sources of data and definitions are provided in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact info@liresources.com.au

The report does not include title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

Due to the ongoing nature of database development and frequency of updates provided by various state government regulators the data displayed within this report is only current from date of production.

This Report, and your use of it, is regulated by Land Insight's Terms and Conditions (See Land Insight's Product Guide).

Executive Summary

Dataset	Identified	Not identified
Sensitive Receptors	✓	
Planning Controls	✓	
Federal, State and Local Heritage	!	
Soil and Land Use Information	✓	
Salinity		✗
Radon	✓	
Acid Sulfate Soil	!	
Geology	✓	
Naturally Occurring Asbestos Potential		✗
Topography	✓	
Hydrogeology	✓	
Groundwater Bores	✓	
Groundwater Dependent Ecosystems		✗
Other Bores	!	
Environmental Registers, Licences and Incidents		
Contaminated Land Record of Notices		✗
Sites Notified as Contaminated to the NSW EPA	!	
Potentially Contaminated Areas		
Defence Sites (current, former and RCIP)		✗
Former Gasworks Sites		✗
PFAS Sites		✗
Licensing under the POEO Act		
Licences	!	
Surrendered Licences still Regulated by EPA	!	
Clean Up and Penalty Notices		✗
NPI Industrial Facilities	!	
Public Register of Properties Affected by Loose-Fill Asbestos Insulation		✗
Other Potentially Contaminating Activities		
Cattle Dip Sites		✗
Dry Cleaners	!	
Fire and Rescue Sites		✗
Gas Terminals		✗
Liquid Fuel Depots/Terminals		✗
Mines and Quarries		✗
Petrol Stations		✗
Power Stations		✗
Substation/Switching Station	!	
Telephone Exchanges	!	
Waste Management Facilities		✗
Wastewater Treatment Facilities		✗
Current Commercial & Trade Directory Data	!	
Tanks (AST/UST)		✗
Contamination Legacy Areas		✗
Derelict Mines and Quarries		✗
Historical Landfills		✗
Unexploded Ordnance (UXO) Sites - Department of Defence (DoD)		✗
Historic Commercial & Trade Directory Data	!	
Other Environmental Constraints		
Natural Hazards	!	
State Environmental Planning Policy (Coastal Management)	!	

INDEX

Section 1 - Property Setting

1.1 SITE LOCATION MAP AND SENSITIVE RECEPTORS

Map 1 (200m Buffer)

Sensitive receptor	Category	Distance (m)*	Direction
Child Care Services	Little Eagles Child Care Centre	58.5	south-east
Health Care Services	St Leonards Medical Centre	59.2	north-west
Health Care Services	Forum Medical Centre St Leonards	98	north
Child Care Services	Reddam Early Learning School	111.6	north-east
Places of Worship & Religious Organisations	Jehovah's Witnesses - Congregations	117.9	north-west
Community Centres & Services	BreastScreen NSW Northern Sydney Central Coast	117.9	north-west
Sports and Recreation Activities	Love 'N Deuce Tennis Centres	117.9	north-west
Sports and Recreation Activities	Norths Rugby Club	132.5	north-east
Community Centres & Services	Richard Barnett Pty Ltd	138.7	north-west
Child Care Services	Cass Care	166.3	north
Parks	Newlands Park	168.6	south-east
Child Care Services	CASS Gumnut Early Learning Centre	168.9	north
School Education	Alternative Medicine College of Australia	197.5	north-east

*Distance from the sensitive receptor point feature to the site boundary centroid.

1.2 PLANNING CONTROLS

Map 2 (onsite)

Zoning

Code	Classification
R4	High Density Residential

Environmental Planning Instruments

Type	Local Environmental Plan	Classification
Local provisions	Lane Cove Local Environmental Plan 2009	Incentive Floor Space Ratio Map Incentive Height of Buildings Map

1.3 SOIL AND LAND USE INFORMATION

Map 3a/3b (onsite)

Soil Landscape

Soil Landscape	REbt	BLACKTOWN	Soil Group	RESIDUAL
Description	Landscape—gently undulating rises on Wianamatta Group shales. Local relief to 30 m, slopes usually >5%. Broad rounded crests and ridges with gently inclined slopes. Cleared Eucalypt woodland and tall open-forest (dry schlerophyll forest). Soils—shallow to moderately deep (>100 cm) hardsetting mottled texture contrast soils, red and brown podzolic soils (Dr3.21, Dr3.31, Db2.11, Db2.21) on crests grading to yellow podzolic soils (Dy2.11, Dy3.11) on lower slopes and in drainage lines.			

	Limitations—localised seasonal waterlogging, localised water erosion hazard, moderately reactive highly plastic subsoil, localised surface movement potential.			
Soil Landscape	ERgn	GLENORIE	**Soil Group**	EROSIONAL
Description	Landscape–undulating to rolling low hills on Wianamatta Group shales. Local relief 50-80 m, slopes 5–20%. Narrow ridges, hillcrests and valleys. Extensively cleared tall open-forest (wet sclerophyll forests). Soils–shallow to moderately deep (<100 cm) Red Podzolic Soils (Dr2.11) on crests; moderately deep (70–150 cm) Red and Brown Podzolic Soils (Dr2.11, Dr2.21, Db1.11, Db1.21) on upper slopes; deep (>200 cm) Yellow Podzolic Soils (Dy5.11) and Gleyed Podzolic Soils (Dg4.11) along drainage lines. Limitations–water erosion hazard, localised steep slopes, localised mass movement hazard, localised surface movement potential, localised impermeable highly plastic soil, moderately reactive.			

Salinity

Salinity Hazard	-	Not identified

Radon

Radon Level	Bq/m3	8

Typical radon levels in Australia are low and the values shown are the average values for each census district. For specific location, factors such as the local geology and house type could lead to different values. (ARPANSA).

Acid Sulfate Soil

ASS Risk Maps *(Table 1.3.1)*	**On the Property?**		**Within Buffer?**	
Class	Not identified		5	
Atlas of Australian Acid Sulfate Soil *(Table 1.3.2)*	Cq(p4)	ASS in inland lakes, waterways, wetlands and riparian zones	**Probability of Occurrence**	Extremely low probability of occurrence

Table 1.3.1. Classification scheme in the ASS Planning Maps

Class of Land as shown on ASS Planning Maps	
1	Any works.
2a	Works below the natural ground surface. Works by which the watertable is likely to be lowered.
2b	Works other than ploughing below the natural ground surface. Works by which the watertable is likely to be lowered.
3	Works more than 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered more than 1 metre below the natural ground surface.
4	Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.
5	Works within 500 metres of adjacent Class 1, 2a, 2b, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2a, 2b, 3 or 4 land.

For each class of land, the maps identify the type of works likely to present an environmental risk if undertaken in the particular class of land. If these types of works are proposed, further investigation is required to determine if ASS are actually present and whether they are present in such concentrations as to pose a risk to the environment.

Table 1.3.2. Atlas of Australian Acid Sulfate Soils[1] (ASRIS) (CSIRO/NatCASS)

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
	Probability of Occurrence of ASS[1]
A	**High Probability of occurrence -** (>70% chance of occurrence in mapping unit)
B	**Low Probability of occurrence** - (6-70% chance of occurrence in mapping unit)
C	**Extremely low probability of occurrence** - (1-5% chance of occurrence in mapping unit)
D	**No probability of occurrence** - (<1% chance of occurrence in mapping unit)
x	**Disturbed ASS[1] terrain -** (ASS[1] material present below urban development).
u	**Unclassified** - (Insufficient information to classify map unit)
	Zones
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS[1] generally within upper 1 m.
f	ASS[1] generally below 1 m from the surface
g	ASS[1], generally below 3 m from the surface.
h	ASS[1] generally within 1 m of the surface.
i, j	ASS[1] generally below 1 m of the surface.
k	ASS[1] material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS[1] generally within upper 1 m in wet / riparian areas.
	Subscripts to codes
(a)	Actual acid sulfate soil (AASS) = sulfuric material.
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
	Confidence levels
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

[1]Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

1.4 GEOLOGY AND TOPOGRAPHY

Map 4 (onsite)

Geology

Map Sheet	Code	Formation	Group	Dominant Lithology	Description
Sydney 1:100,000 Geological Sheet	Twia	Ashfield Shale	Wianamatta Group	Shale	Black to light grey shale and laminite.

Naturally Occurring Asbestos Potential (NOA)

Category	On the Property?	Within Buffer?
Not identified	-	-

Topography

Topography	60-72mAHD

Section 2 - Hydrogeology

2.1 HYDROGEOLOGY AND GROUNDWATER BORES

Map 5a (500m - 2000m Buffer)

	On the Property?	Within Buffer?[1]
Aquifer Type	Porous, extensive aquifers of low to moderate productivity	Porous, extensive aquifers of low to moderate productivity
Drinking Water Catchments	Not identified	Not identified
Protected Riparian Corridor	Not identified	Not identified
UPSS Environmentally sensitive zone	Not identified	Yes
Wetlands	Not identified	Lane Cove River Port Jackson Wetlands Protection Area Map
Groundwater Bores	Not identified	Yes, see 2.1.1 and 2.1.2

[1] - Groundwater bore buffer size will change depending on the number of GW bores found within buffer; if there are less than 7 bores within buffer, buffer will increase to max 2km until bores are found.

Table 2.1.1. Groundwater Bore Details

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
GW108224	Household	05-09-06	132.4	132.4	35	1750.00 mg/L	0.3	644	north-east
GW072478	Household	10-01-95	180.5	180.5	48	270.00 mg/L	0.7	738.7	north-west
GW108991	Household	08-07-08	168.0		13		0.12	1057.9	south
GW103591	Monitoring	11-01-01	5.8	5.8	4			1098	north-west
GW103841	Monitoring	11-01-01	5.8	5.8	4			1098	north-west
GW114321	MONITORING BORE	11-09-96	11.9					1147.9	south
GW114320	MONITORING BORE	12-09-96	5.0	5.0			0	1152.2	south
GW114322	MONITORING BORE	03-09-96	10.0	10.0				1165	south
GW114319	MONITORING BORE	12-09-96	5.0	5.0				1169.6	south
GW114318	MONITORING BORE	12-09-96	10.0	10.0				1174.9	south
GW109591	Monitoring	05-09-03	2.0	2.0				1473.8	south-west
GW109589	Monitoring	30-04-03	2.9	2.9				1480.4	south-west

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
GW109593	Monitoring	02-05-03	4.0	4.0				1490.7	south-west
GW109592	Monitoring	05-09-03	4.5	4.5				1502.4	south-west
GW109590	Monitoring	30-04-03	4.4	4.4				1508.8	south-west
GW103997	Monitoring	26-08-98	4.5	4.5				1529.2	south-west
GW107764	Unknown	22-01-07	0.0	0.0				1866.6	south-east
GW072959	Monitoring	03-02-95	24.5	24.5		0-500 ppm	2	1929.8	north-west
GW109244	Monitoring	20-08-08	4.5	4.5				2078.5	north-west
GW109242	Monitoring	20-08-08	4.5	4.5				2092.6	north-west
GW109241	Monitoring	20-08-08	4.5	4.5				2097	north-west
GW109243	Monitoring	20-08-08	4.5	4.5				2097.5	north-west

Table 2.1.2. Groundwater Bore Driller Lithology Details

Groundwater Bore ID	From Depth – To Depth (m) Lithology	Distance (m)	Direction
GW108224	0m-0.6m Clay, sandy 0.6m-2.8m Sandstone, weathered 2.8m-3.1m Clay 3.1m-25.5m Sandstone, weathered 25.5m-27m Sandstone, grey quartz 27m-29m Shale 29m-35m Sandstone, quartz grey 35m-41m Shale 41m-52m Sandstone, grey 52m-54m Sandstone, quartz grey 54m-61m Sandstone, grey 61m-65m Shale 65m-81m Sandstone, grey 81m-84m Sandstone, grey quartz siltstone 84m-98m Sandstone, grey 98m-100m Sandstone, grey quartz 100m-106.5m Sandstone, grey 106.5m-109m Sandstone, dark brown 109m-110.5m Sandstone, grey quartz 110.5m-112m Siltstone 112m-132.4m Sandstone, grey	644.00	north-east
GW072478	0m-2.5m Concrete overburden 2.5m-5.1m Moist clay 5.1m-28.7m L/g med. grain sandstone 28.7m-30.1m Light grey med. grain s/stone quartz matrix 30.1m-35.9m L/grey grain sandstone 35.9m-37.2m L/grey med grain s/stone quartz matrix 37.2m-45.3m L/grey med grain s/stone 45.3m-54.3m Dark grey shale	738.70	north-west

	54.3m-72.4m L/grey cemented s/stone 72.4m-75.4m Dark grey shale 75.4m-109.7m L/grey med grain s/stone 109.7m-110.6m Quartz layer 110.6m-121.8m L/grey med grain s/stone 121.8m-123.3m Dark grey shale 123.3m-135.4m L/grey med grain s/stone 135.4m-138m L/grey med grain s/stone quartz matrix 138m-139.8m Water bearing quartz 139.8m-143.8m L/grey med grain s/stone quartz matrix 143.8m-144.4m Water bearing quartz 144.4m-154.1m L/grey cemented sandstone 154.1m-163.7m L/grey med grain s/stone quartz matrix 163.7m-166.9m Quartz layer 166.9m-168.7m Grey med grain s/stone 168.7m-180.5m L/grey med grain sandstone		
GW108991	#N/A	1057.90	south
GW103591	0m-2m Road base 2m-4m Clay 4m-5.8m Sandy clay	1098.00	north-west
GW103841	0m-0.2m Road base 0.2m-4m Stiff clay 4m-5.8m Sandy clay	1098.00	north-west
GW114321	#N/A	1147.90	south
GW114320	#N/A	1152.20	south
GW114322	#N/A	1165.00	south
GW114319	#N/A	1169.60	south
GW114318	#N/A	1174.90	south
GW109591	0m-0.3m Concrete 0.3m-0.6m Black and dark grey loamy sand with gravel 0.6m-2m Mixture of grey and light brown sandy loam	1473.80	south-west
GW109589	0m-0.3m Concrete 0.3m-0.5m Dark grey and black sandy loam/gravel 0.5m-1.2m Dark grey and black sandy loam 1.2m-2.9m Dark grey sandy clay	1480.40	south-west
GW109593	0m-0.2m Concrete 0.2m-0.6m Dark grey and black sandy loam with gravel 0.6m-1.8m Dark grey and black sandy loam 1.8m-4m Dark grey and black sandy clay/gravel	1490.70	south-west
GW109592	0m-0.2m Concrete 0.2m-0.5m Black and dark grey loamy sand/gravel 0.5m-1.1m Black and dark grey sandy loam 1.1m-4.5m Black sandy and silty loam	1502.40	south-west
GW109590	0m-0.2m Concrete 0.2m-0.7m Dark grey and black sandy loam with some gravel 0.7m-1.2m Dark grey and black sandy loam 1.2m-4.4m Dark grey to black sandy clay	1508.80	south-west
GW103997	0m-0.2m Concrete 0.2m-1m Fill: sandy,dark 1m-2m Sandy clay 2m-2.9m Sandy silt/dark grey 2.9m-4.5m Sandy silt:dark grey	1529.20	south-west
GW107764	#N/A	1866.60	south-east
GW072959	0m-0.8m Sandy loam 9.2m-16.6m L/grey med grain sandstone 16.6m-18.1m Light grey med grain sandstone fractured watr bearing zones 18.1m-21.1m L/grey med grain sandstone	1929.80	north-west

	21.1m-22.3m L/grey med grain sandstone fractured water bearing zones 22.3m-24.5m Light grey marine clay		
GW109244	0m-1m Concrete,fill,clay,sandy,brown yellow 1m-2m Weathered sandstone red orange 2m-4.5m Weathered sandstone ,red white,damp,odour	2078.50	north-west
GW109242	0m-1m Concrete,clay,brown yellow 1m-2m Weathered sandstone,white,brown 2m-3m As above,red brown, damp 3m-4.5m As above,white grey	2092.60	north-west
GW109241	0m-1m Concrete,clay,weathered sandstone 1m-2m As above,red brown,(increased density to 1.5m) 2m-3m As above,white orange,damp 3m-4.5m As above,grey white,damp,black layer 3.5, 3.8m	2097.00	north-west
GW109243	0m-0.5m Concrete,clay,brown grey 0.5m-2m Weathered sandstone,red brown,dry 2m-3m As above,white,yellow, damp 3m-4.5m Weathered sandstone,brown,wet,dense	2097.50	north-west

2.2 HYDROGEOLOGY AND OTHER BOREHOLES

Map 5b (500m Buffer)

	On the Property?	Within Buffer?
Groundwater Vulnerability	Not identified	Not identified
Groundwater Exclusion Zones[1,2]	Not identified	Not identified
Hydrogeologic Unit	Late Permian/Triassic sediments (porous media - consolidated)	Late Permian/Triassic sediments (porous media - consolidated)
Other known borehole investigations	Not identified	Yes, see 2.2.2

[1] - Botany Groundwater Management Zones (BGMZ): Zone 1 – the use of groundwater remains banned; Zones 2 to 4 – domestic groundwater use is banned, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools.

[2] - Williamtown Groundwater Management Zones (WGMZ): Primary Management Zone – this area has significantly higher levels of PFAS detected and therefore, the strongest advice applies. Secondary Management Zone – this area has some detected levels of PFAS; Broader Management Zone – the topography and hydrology of the area means PFAS detections could occur now and into the future.

Groundwater Dependent Ecosystems

Site	On the Property?	Within Buffer?
Ecosystems that rely on the Surface expression of Groundwater	Not identified	Not identified
Ecosystems that rely on Subsurface presence of Groundwater	Not identified	Not identified

Table 2.2.1. Other known borehole investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes) (500m buffer)

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R313_BH4	Borehole	NWRL_R313 MarshallAve_St_Leonards	Loftus Pty Ltd	18-04-11	7.5	47.4	north
unk04	Borehole		Loftus Pty Ltd	12-05-11	0	50.6	north-west
R313_BH5	Borehole		Loftus Pty Ltd	18-04-11	7.5	56.6	north
R313_BH3	Borehole		Loftus Pty Ltd	18-04-11	9	57.3	north-west

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R313_BH2	Borehole		Loftus Pty Ltd	18-04-11	6	74.2	north-west
BH01	Borehole	NWRL_R312 88 ChristieSt St_Leonard	Winten Property Group	12-03-12	20.4	85	north-east
R277_BH4(87)	Borehole	NWRL_R277 86 ChristieSt St Leonards		11-06-87	9	91.8	north-east
R277_BH1(87)	Borehole			11-06-87	11.5	95.3	north-east
R313_BH1	Borehole	NWRL_R313 MarshallAve_St_Leonards	Loftus Pty Ltd	18-04-11	7.5	99.1	north-west
NWRL_R312	Borehole	NWRL_R312_88 ChristieSt St_Leonard	Winten Property Group	<Null>	0	124.3	north-east
R279_BH5	Borehole	NWRL_R279_St Leondards Central Development Site	Property Services Group	12-04-91	18.8	125.9	north
BH02	Borehole	NWRL_R312_88_ChristieSt St_Leonard	Winten Property Group	13-03-12	18.05	134	north-east
R279_BH1	Borehole	NWRL_R279 St Leondards Central Development Site	Property Services Group	01-04-91	15	139.5	north-west
R279_BH3	Borehole		Property Services Group	11-04-91	12	143.6	north-west
NWRL_R279	Borehole		Property Services Group	01-04-91	0	144.4	north-west
BH03	Borehole	NWRL_R312_88 ChristieSt St_Leonard	Winten Property Group	13-03-12	18.17	157.1	north-east
R279_BH2	Borehole	NWRL_R279 St Leondards Central Development Site	Property Services Group	11-04-91	14	164.9	north-west
R279_BH4	Borehole		Property Services Group	11-04-91	12.95	166.6	north-west
R277_BH1	Borehole	NWRL_R277_86 ChristieSt St Leonards		10-06-00	14.85	340	north-east
BH2	Borehole	NWRL_R427_1 ChristieSt_Wollstonecraft	Areti Pty Ltd	08-10-14	5.75	356.6	south-east
NWRL_R427	Borehole		Areti Pty Ltd	07-11-14	0	367.8	south-east
BH1	Borehole		Areti Pty Ltd	08-10-14	7.9	379.1	south-east
BH1	Borehole	NWRL_R448 AlbanySt_StLeonards	Novati Constructions	02-08-13	12.76	408.6	north-east
CSL-BH02	Borehole	NWRL_R421 Chatswood_toStLeonards	TfNSW	22-07-14	30.1	409.6	north
unk03	Borehole	NWRL_R236 Royal North Shore Hospital Redevelopment	North Sydney Health	03-08-04	0	415.6	north-west
unk01	Borehole	RNS - Hospital Upgrade	Northern Sydney Health	14-08-06	0	418.2	north-west
R280_BH1	Borehole	NWRL_R280 Herbert St Railway Bridge St Leonards	Rasly Pty Ltd	26-06-93	12.95	418.9	north
BH101	Borehole	NWRL_R439 Proposed_Residential&Retail Development	Reil Dealership Bonds Pty Ltd	01-05-12	16.39	420.5	east
R277_BH2	Borehole	NWRL_R277 86ChristieSt St Leonards		29-07-02	18	422	north-east
NWRL_R280	Borehole	NWRL_R280 Herbert St Railway Bridge St Leonards	Rasly Pty Ltd	01-07-93	0	423.1	north
DP4	Borehole	NWRL_R439 ContamAssessment_521PacificHwy	Piper Alderman Lawyers	25-01-11	1	423.4	east
R280_BH2	Borehole	NWRL_R280 Herbert St Railway Bridge St Leonards	Rasly Pty Ltd	27-06-93	7.85	424.7	north
R280_BH3	Borehole		Rasly Pty Ltd	26-06-93	6	426.3	north
ENSR_BH04 / MW04	Borehole	Mitstubishi Crows Nest	Mitstubishi	30-11-09	8	430.6	east

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
DP1	Borehole	NWRL_R439 ContamAssessment_521PacificHwy	Piper Alderman Lawyers	25-01-11	3.6	433.4	east
DP2	Borehole		Piper Alderman Lawyers	25-01-11	3	440.1	east
CSL-BH01	Borehole	NWRL_R421 Chatswood_toStLeonards	TfNSW	06-07-14	30.45	440.4	north
ENSR_BH03 / MW03	Borehole	Mitstubishi Crows Nest	Mitstubishi	01-12-09	8	441.2	east
R281_BH7	Borehole	NWRL_R281 St Leonards Station Development	Wellings Smith Byrnes	06-03-87	3.5	441.3	north-east
BH102	Borehole	NWRL_R439 Proposed_Residential&Retail Development	Reil Dealership Bonds Pty Ltd	10-05-12	16.83	442.4	east
ENSR_BH01 / MW01	Borehole	Mitstubishi Crows Nest	Mitstubishi	01-12-09	8	443.3	east
DP3	Borehole	NWRL_R439 ContamAssessment_521PacificHwy	Piper Alderman Lawyers	25-01-11	3	443.7	east
ENSR_BH02 / MW02	Borehole	Mitstubishi Crows Nest	Mitstubishi	01-12-09	8	444.5	east
unk06	Borehole	NWRL_R439 Proposed_Residential&Retail Development	Reil Dealership Bonds Pty Ltd	01-05-12	0	444.8	east
R277_BH3	Borehole	NWRL_R277 86ChristieSt St Leonards		12-06-00	24.2	446.8	north-east
unk05	Borehole	NWRL_R448 AlbanySt_StLeonards	Austino St Leonards Pty Ltd	15-08-13	0	446.9	north-east
DP5	Borehole	NWRL_R439 ContamAssessment_521PacificHwy	Piper Alderman Lawyers	25-01-11	1	449.1	east
R281_BH8	Borehole	NWRL_R281 St Leonards Station Development	Wellings Smith Byrnes	06-03-87	6	450.4	north-east
BH103	Borehole	NWRL_R439 Proposed_Residential&Retail Development	Reil Dealership Bonds Pty Ltd	26-04-12	16.34	451.2	east
DP6	Borehole	NWRL_R439 ContamAssessment_521PacificHwy	Piper Alderman Lawyers	25-01-11	1	456.2	east
BH2	Borehole	NWRL_R448 AlbanySt_StLeonards	Novati Constructions	03-08-13	10.05	464.1	north-east
DP7	Borehole	NWRL_R439 ContamAssessment_521PacificHwy	Piper Alderman Lawyers	10-05-12	2.3	464.8	east
BH3	Borehole	NWRL_R448_AlbanySt_StLeonards	Novati Constructions	03-08-13	10.09	468.2	north-east
BH104	Borehole	NWRL_R439 Proposed_Residential&Retail Development	Reil Dealership Bonds Pty Ltd	24-04-12	16.6	470.2	east
R313_BH4	Borehole	NWRL_R313 MarshallAve_St_Leonards	Loftus Pty Ltd	18-04-11	7.5	47.4	north
unk04	Borehole		Loftus Pty Ltd	12-05-11	0	50.6	north-west
R313_BH5	Borehole		Loftus Pty Ltd	18-04-11	7.5	56.6	north

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
R313_BH3	Borehole		Loftus Pty Ltd	18-04-11	9	57.3	north-west
R313_BH2	Borehole		Loftus Pty Ltd	18-04-11	6	74.2	north-west
BH01	Borehole	NWRL_R312_88 ChristieSt St_Leonard	Winten Property Group	12-03-12	20.4	85	north-east

Section 3 – Environmental Registers, Licences and Incidents

3.1 CONTAMINATED LAND PUBLIC REGISTER

Map 6 (1000m Buffer)

Contaminated Land Record of Notices

Site Name[2]	Area nº	Address[1]	Notices	Distance (m)	Direction
Not identified	-	-	-	-	-

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.
2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.

Sites Notified as Contaminated to the EPA

Site Name[2]	Address[1]	Activity that caused Contamination	EPA Site Management Class[3]	Distance (m)	Direction
Telstra Data Centre	4A Herbert Street, ST LEONARDS	Other Petroleum	Regulation under CLM Act not required	638	North-west
Gore Creek Reserve - Drainage Line	St Vincents Road, GREENWICH	Other Industry	Regulation under CLM Act not required	921	South-west

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.
2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.
3. The EPA maintains a record of sites that have been notified to the EPA by owners or occupiers as contaminated land. The sites notified to the EPA and recorded on the register are at various stages of the assessment and/or remediation process. Table 5 outlines the possible management status that can be attributed to a registered contaminated site.

Table 3.3.1. EPA Site Management Class Explanation

EPA Site Management Class	
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.
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.
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.
Contamination currently regulated under the 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.
Contamination currently regulated under the 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 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 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.

EPA Site Management Class	
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 by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A 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.

3.2 POTENTIALLY CONTAMINATED AREAS

Map 6 (1000m Buffer)

Defence Sites

Site name	RCIP*	Description	Source	Distance (m)	Direction
Not identified	-		-	-	-

*RCIP (Regional Contamination Investigation Program)

Former Gasworks Sites

Site name	Description	Source	Distance (m) *	Direction
Not identified	-	-	-	-

PFAS Sites

Site name	Description	Distance (m) *	Direction
Lane Cove Fire Station	Fire station built in 1987. Potential historical use of PFAS. Fire and Rescue NSW	1336	North-west

*2km search. If the site is not within 1km buffer, it will not be shown on the map.

3.3 LICENSING UNDER THE POEO ACT

Map 7 (500m Buffer)

Licences

EPL Number	Licence holder	Location Name	Premise Address[1]	Fee Based Activity	Distance (m)	Direction
12208	SYDNEY TRAINS	SYDNEY TRAINS	SYDNEY TRAINS, HAYMARKET	Railway systems activities	not mapped	east
13421	JOHN HOLLAND RAIL PTY LTD	John Holland Rail Pty Ltd	JOHN HOLLAND RAIL NETWORK, PARRAMATTA	Railway infrastructure operations	not mapped	east
20971	JOHN HOLLAND PTY LTD	Sydney Metro City & Southwest Tunnels and Excavation Works	locations between Chatswood railway station and Sydenham railway station, SYDNEY	Concrete works, Crushing, grinding or separating, Railway systems activities, Shipping in bulk	not mapped	east

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

Surrendered Licences still Regulated by EPA

Licence Nº	Licence holder	Location Name	Premise Address[1]	Fee Based Activity	Status	Distance (m)	Direction
6737	Hazardous, Industrial or Group A Waste Generation or Storage	NORTHERN SYDNEY AND CENTRAL COAST AREA HEALTH SERVICE	ROYAL NORTH SHORE HOSPITAL	PACIFIC HIGHWAY, ST LEONARDS	No longer in force	171	north-west
11170	Hazardous, Industrial or Group A Waste Generation or Storage	RAMSAY HEALTH CARE AUSTRALIA PTY LIMITED	NORTH SHORE PRIVATE HOSPITAL	3 Westbourne Street, ST LEONARDS	Surrendered	171	north-west
13358	Generation of electrical power from gas	VENTIA UTILITY SERVICES PTY LIMITED	Cogeneration Plantroom, Level 1 Acute Services Building	Royal North Shore Hospital, Reserve Road, ST LEONARDS, NSW, 2065	Surrendered	171	north-west
12413	Railway systems activities	TRANSPORT FOR NEW SOUTH WALES	RAIL CONSTRUCTION PREMISES	Locked Bag 6501, ST LEONARDS, NSW 2065	No longer in force	not mapped	east

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

Clean Up and Penalty Notices

Location ID	Notice Nº	Notice Type	Licence holder	Location Name	Premise Address[1]	Distance (m)	Direction
-	Not identified	-	-	-	-	-	-

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

3.4 NATIONAL POLLUTANT INVENTORY (NPI)

Map 7 (500m Buffer)

Facility name	Address	Primary ANZSIC Class	Latest report	Distance (m)	Direction
North Shore Private Hospital	Westbourne Street, St Leonards	Hospitals (Except Psychiatric Hospitals)	2018/2019	171	north-west

3.5 PUBLIC REGISTER OF PROPERTIES AFFECTED BY LOOSE-FILL ASBESTOS INSULATION

Map 7 (onsite)

Address	Match Found
Not identified	-

Section 4 – Other Potentially Contaminating Activities

4.1 POTENTIALLY CONTAMINATING ACTIVITIES

Map 8a (500m Buffer)

Cattle Dip Sites

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Dry Cleaners

Site name	Location	Status*	Distance (m)	Direction
Michel's Dry Cleaners	The Forum, 201 Pacific Hwy, St Leonards NSW 2065	Current	203	North-east

Fire Rescue Sites

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Gas Terminals

Site name	Operator	Location	Status*	Distance (m)	Direction
Not identified	-		-	-	-

Liquid Fuel Depots/Terminals

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Mines and Quarries

Deposit Name	Method	Description	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Petrol Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Power Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Substation / Switching Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Mcs Electricity Of Department Substation	Unknown	61A River Rd, Greenwich NSW 2065	Unknown	361	South-west
Ausgrid Crows Nest Zone Substation	Ausgrid	23 Albany St, Crows Nest NSW 2065	Current	478	North-east

Telephone Exchanges

Site name	Location	Status*	Distance (m)	Direction
St Leonards (STLE)	524 Pacific Highway, St Leonards	Current	209	North-east

Waste Management Facilities

Site name	Type	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Wastewater Treatment Facilities

Site name	Operator	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

***Status:**
Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 2 years will be reported in the 'Historical commercial and trade data' section in this report.

4.2 CURRENT COMMERCIAL AND TRADE DATA

Map 8b (200m Buffer)

Current Commercial and Trade Data

Site name [1]	Category	Location	Status [2]	Distance (m)	Direction
Takasago International	Manufacturer	82-86 Pacific Hwy, St Leonards NSW 2065	Current	164	west

[1] Data includes categories associated with potentially contaminating activities. All negligible risk data is not reported.

[2] Status: Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 2 years will be reported in the historical business section in this report.

Tanks (AST/UST)

ID	Tank type	Description	Status	Distance (m)	Direction
Not identified	-		-	-	-

Note: This is not an exhaustive list of all existing tanks.

4.3 FORMER POTENTIALLY CONTAMINATED LAND

Map 8c (500m Buffer)

Contaminated Legacy Areas

Site Name	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-

Note: This section includes known contaminated areas such as James Hardies Asbestos waste legacy areas, Pasminco Smelter and Uranium processing site.

Derelict Mines and Quarries

Site name	Method	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-	-

Historical Landfills

Site name	Description	Source	Distance (m)	Direction
Not identified	-		-	-

Unexploded Ordnance (UXO) Areas

Site name	Category	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-	-

4.4 HISTORICAL COMMERCIAL AND TRADE DATA (not mapped)

1930 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1940 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Merchants - General	Welten Co The	18 Holdsworth Street, St Leonards,NSW	address	61.6	south
Furniture Storage & Removals	Gosper Reg	34 Pacific Highway, St Leonards,NSW	address	70.9	north-west
Egg Farms & Distribution	Stark J	44 Pacific Highway, St Leonards,NSW	address	75.2	north-west
Grocers - W/Salers	Moss R	4 Pacific Highway, St Leonards,NSW	address	78.7	north
Demolition Contractors & House Wreckers	Associated Spare Parts	23b Pacific Highway, Crows Nest,NSW	address	97.8	north
Motor Garage Equipment & Supplies	Bright G A	54 Pacific Highway, St Leonards,NSW	address	106.7	north-west
Cars - Used	St Leonards Used Car Sales	62 Pacific Highway, St Leonards,NSW	address	110.4	north-west
Greengrocers & Fruiterers	Katoll A	558 Pacific Highway, St Leonards,NSW	address	143.3	north-east
Grocers - W/Salers	Wyatt M	558 Pacific Highway, St Leonards,NSW	address	143.3	north-east
Motor Sport Services	Williams J G	201 Pacific Highway, North Sydney,NSW	address	159.7	north-east
Carriers - Heavy Industrial Transportation	Robson J	33 Berry Road, St Leonards,NSW	address	169.2	south-west
Taxi - Truck Service	St Leonards Taxi Service	Pacific Highway, St Leonards,NSW	street		north-west
Transformers - Inductors & Power Supplies	HENDERSON P A & CO	Berry Road, St Leonards,NSW	street		south-west
Weighbridges & Weighstations	Standard Weighbridge Pty Ltd	Pacific Highway, St Leonards,NSW	street		north-west

1950 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Builder Handyman Contractor Equipment Sale/ Hire	Berecry Francis J	7 Holdsworth Ave, Wollstonecraft,NSW	address	47.8	south-west
Chemist & Pharmaceutical Supplies	Clouston A	16 Pacific Higway, St. Leonards,NSW	address	72.9	north
Egg Farms & Distribution	Stark J	44 Pacific Highway, St. Leonards,NSW	address	75.2	north-west
Escalators Supply & Maintenance Services	McDonald Constructions Pty Ltd	53 Lithgow Street, St. Leonards,NSW	address	81.2	east
Opal Mines	Davis Plant & Tool Hire Pty Ltd	53 Lithgow Street, St. Leonards,NSW	address	81.2	east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Road Construction Contractors	Castlereagh Metal & Gravel Pty Ltd	53 Lithgow Street, St. Leonards,NSW	address	81.2	east
Builder Handyman Contractor Equipment Sale/ Hire	Boot AS	58 Pacific Highway, St Leonards,NSW	address	88.9	north-west
Carriers - Heavy Industrial Transportation	Redman E W	25 Marshall Avenue, St Leonards,NSW	address	91.2	west
Chemist & Pharmaceutical Supplies	St Leonards Pharmacy	2a Pacific Highway, St. Leonards,NSW	address	91.5	north
Engineers - Motor & Repairers	St Leonards Garage	54 Pacific HIghway, St Leonards,NSW	address	106.7	north-west
Motor Garage Equipment & Supplies	St Leonards Garage	54 Pacific Highway, St Leonards,NSW	address	106.7	north-west
Instruments & Accessories - Scientific & Clinical	Clements H I & Son	62-64 Pacific Highway, St. Leonards,NSW	address	110.4	north-west
Food Stores - General	Dobbin W F	558 Pacific Highway, St. Leonards,NSW	address	143.3	north-east
Cars - New	Lloyd Peter Ltd	201 Pacific Highway, North Sydney,NSW	address	159.7	north-east
Cars - New	Peter Lloyd Ltd	201 Pacific Highway, North Sydney,NSW	address	159.7	north-east
Baggage Forwarding Agents	North Shore Taxi Trucks	512 Pacific Highway, St. Leonards,NSW	address	167.7	north-east
Carriers - Light Transportation	North Shore Taxi Trucks	512 Pacific Highway, St Leonards,NSW	address	167.7	north-east
Carriers - Heavy Industrial Transportation	Robson A J	33 Berry Road, St Leonards,NSW	address	169.2	south-west
Carriers - Light Transportation	Blanford F A	24 Park Road, St Leonards,NSW	address	197.1	south-west
Carriers - Light Transportation	St Leonards Taxi Truck Service	Pacific Highway, St Leonards,NSW	street		north-west
Cars - Used	Godfrey's Motor Sales & Service Pty Ltd	Pacific Highway, St Leonards,NSW	street		north-west
Electric Hand Dryers	Catts & Co	Christie Lane, St Leonards,NSW	street		north-east
Electrical Accessories - M/Factrs &/Or W/Salers	Godfrey's Motor Sales & Service Pty Ltd	Pacific Highway, St Leonards,NSW	street		north-west
Motor Cycle - New Parts & Accessories Retail	Godfrey's Motor Sales & Service Pty Ltd	Pacific Highway, St. Leonards,NSW	street		north-west
Motor Cycle - Tours & Hire	St Leonards Taxi Service	Pacific Highway, St Leonards,NSW	street		north-west
Motor Sport Services	St Leonard's Drive Yourself Service	Pacific Highway, St Leonards,NSW	street		north-west
Taxi - Truck Service	Godfrey K B	Pacific Highway, St Leonards,NSW	street		north-west
Taxi - Truck Service	Lane Cove - St Leonards Private Hire Service	Pacific Highway, St Leonards,NSW	street		north-west
Taxi - Truck Service	St Leonards Taxi Service	Pacific Highway, St Leonards,NSW	street		north-west
Taxi - Truck Service	St Leonards Transport Services	Pacific Highway, St Leonards,NSW	street		north-west
Taxi - Truck Service	Wollstonecraft Taxi Service	Pacific Highway, St Leonards,NSW	street		north-west
Transformers - Inductors & Power Supplies	Henderson P A & Co	Berry Road, St Leonards,NSW	street		south-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Webbing & Netting	Textile Tapes Pty Ltd	Christie Street,Sydney,NSW	street		north-east
Weighbridges & Weighstations	Standard Weighbridge Pty Ltd	Pacific Highway, St. Leonards,NSW	street		north-west

1965 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Handle Hardware M/Factrs &/Or W/Salers	Edgar G	2,CanberraAv,NSW	address	31.6	south-east
Plumbers & Gasfitters	Smith A J	1,MarshAv,NSW	address	42.8	north
Rubber & Metal Stamps	Amor Pty Ltd	1,Marshall,NSW	address	42.8	north
Tilers & Slaters - Roofing	St Julian V H	2,DuntroonAv,NSW	address	58.1	south-east
Carriers - Heavy Industrial Transportation	Redman E W	25,MarshallAv,NSW	address	91.2	west
Butchers	Elvys Pty Ltd	560,PacificHghwy,NSW	address	135.5	north-east
Cars - Used	Renault Aust Pty Ltd	203,PacificHghwy,NSW	address	161.6	north-east
Concrete - Cement Distributors - Retail &/Or W/Sale	SYDNEY & NORTH SYDNEY LIME BURNERS PTY LTD	548,PacificHghwy,NSW	address	165.8	north-east
Lime Supplies	NSyd&Sydney Lime Burners Ltd	548,PacificHghwy,NSW	address	165.8	north-east
Lime Supplies	SYDNEY & NORTH SYDNEY LIME BURNERS PTY LTD	548,PacificHghwy,NSW	address	165.8	north-east
Upholsterers & Re-Upholstery	HIRST H P & CO	548,PacificHghwy,NSW	address	165.8	north-east
Carriers - Heavy Industrial Transportation	Robson A J	33,BerrysRd,NSW	address	169.2	south-west
Book Manufacturers	Sands Products Pty Ltd	92,Christie,NSW	address	179.5	north-east
Soaps & Detergent M/Factrs	Savons Pty Ltd	92,Christie,NSW	address	179.5	north-east
Dental & Dentistry - Laboratories	MILFORD & WITT	94,Christie,NSW	address	192.5	north-east
Dental & Dentistry - Laboratories	Witt&Milford	94,Christie,NSW	address	192.5	north-east
Lithographic Printers	RALFS & HERMSDORF	94,Christie,NSW	address	192.5	north-east

1970 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Handle Hardware M/Factrs &/Or W/Salers	Edgar G	2 Canberra Avenue,Wollstonecraft,NSW	address	31.6	south-east
Agricultural Machinery Tractors & Parts	Farm & Factory Hardware Co.,	34 Pacific Highway,St. Leonards	address	70.9	north-west
Engineers - Electronic	C. & S. Industrial Electronic Pty Ltd	42 Pacific Highway,St Leonards,NSW	address	70.9	north-west
Horticultural Services	Farm & Factory Hardware Co.,	34 Pacific Highway,St. Leonards	address	70.9	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Window - Cleaners & Cleaning	Burton Cleaning Service,	81 Lithgow St.,St. Leonards	address	71.8	north-east
Power Tool - M/Factrs & W/Salers	Patience,	14 Pacific Highway,St. Leonards	address	72.2	north
Chemist & Pharmaceutical Supplies	Eagles Pharmacy,	16 Pacific Highway,St. Leonards	address	72.9	north
Printers - General	Rudge Instant Print	38 Pacific Highway,St Leonards,NSW	address	74.4	north-west
Shoe Repairs	Alleston, E.,	38 Pacific Highway,St. Leonards	address	74.4	north-west
Adhesive Products	Sternson (Australia) Pty Ltd	6 Pacific Highway,St Leonards,NSW	address	75.5	north
Building Equipment Installation	Nox-Crete Distributors,	6 Pacific Highway,St. Leonards	address	75.5	north
Building Equipment Installation	Roymark Trading Pty. Ltd.,	6 Pacific Highway,St. Leonards	address	75.5	north
Colour & Pigment Specialists	Sternson Pty Ltd	6 Pacific Highway,St Leonards,NSW	address	75.5	north
Concrete - Additive Suppliers	Strenson (Australia) Pty Ltd	6 Pacific Highway,St Leonards,NSW	address	75.5	north
Electrical Switches & Control Equipment & Machinery	Painton (Aust) Pty Ltd	6 Pacific Highway,St. Leonards	address	75.5	north
Electrical Switches & Control Equipment & Machinery	Painton (Aust) Pty. Ltd.	6 Pacific Highway,St. Leonards,NSW	address	75.5	north
Electronic Parts - M/Factrs &/Or W/Salers	Painton (Aust) Pty Ltd	6 Pacific Highway,St. Leonards	address	75.5	north
Electronic Parts - M/Factrs &/Or W/Salers	Painton (Aust) Pty. Ltd.	6 Pacific Highway,St. Leonards,NSW	address	75.5	north
Engineers - Electronic	Painton Aust. Pty. Ltd.,	6 Pacific Highway,St. Leonards	address	75.5	north
Photocopying Services	Permindex Services Pty. Ltd.,	6 Pacfic Highway,St. Leonards	address	75.5	north
Printers - General	Permindex Services Pty. Ltd.,	6 Pacific Highway,St. Leonards	address	75.5	north
Television & Radio Schools	Painton (Aust.) Pty. Ltd.,	6 Pacific Highway,St. Leonards	address	75.5	north
Earth Moving &/Or Excavating Equipment & Machinery	White Industries Ltd	2 Pacific Highway,St Leonards,NSW	address	78.7	north
Engineers - Civil	White Industries Ltd	2 Pacific Highway,St Leonards,NSW	address	78.7	north
Road Construction Contractors	White Industries Ltd	2 Pacific Highway,St Leonards,NSW	address	78.7	north
Advertising - General	Warren List & Associates	Rear 30 Pacific Highway,St Leonards,NSW	address	79.6	north
Shoe Repairs	Coghlll, R.,	30 Pacific Highway,St. Leonards	address	79.6	north
Chemist & Pharmaceutical Supplies	St. Leonards Pharmacy,	2a Pacific Highway,St. Leonards	address	91.5	north
Lampshades & Lamp Finials	Temmah Products (Aust.) Pty. Ltd.,	39 Pacific Highway,Artarmon	address	96	north-west
Advertising Distribution	Clements, H. I. Pty. Ltd.,	62 Pacific Highway,St. Leonards	address	110.4	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Engineers' - Supplies & Equipment	Clements, H. I. Pty. Ltd.,	62 Pacific Highway,St. Leonards	address	110.4	north-west
Medical Equipment - Supplies	Clements, H. I. Pty. Ltd.,	62 Pacific Highway, St. Leonards	address	110.4	north-west
Pump Manufacturers, Sales & Service	Clements, H. I. Pty. Ltd.,	62 Pacific Highway, St. Leonards	address	110.4	north-west
Surgical Equipment & Supplies	Clements, H. I. Pty. Ltd.,	62-64 Pacific Highway, St. Leonards	address	110.4	north-west
Stainless Steel Products	Thomas Richard & Baldwins (Australia) Pty Ltd	564 Pacific Highway, St Leonards,NSW	address	128	north-east
Steel Merchant	Thomas Richard & Baldwins (Australia) Pty Ltd	564 Pacific Highway, St Leonards,NSW	address	128	north-east
Electronic Parts - M/Factrs &/Or W/Salers	Varian Pty Ltd	82 Christie Street, St Leonards,NSW	address	130.2	north-east
Fire Brick M/Factrs & Repairers	Newbold General Refractories Ltd	82 Christie Street, St Leonards,NSW	address	130.2	north-east
Instruments - General	Varian Pty Ltd	82 Christie Street, St Leonards,NSW	address	130.2	north-east
Instruments & Accessories - Scientific & Clinical	Varian Pty Ltd	82 Christie Street, St Leonards,NSW	address	130.2	north-east
Chemist & Pharmaceutical Supplies	Howard, S.,	66 Pacific Highway, St. Leonards	address	136.7	north-west
Chemist & Pharmaceutical Supplies	Medical Centre Pharmacy,	66 Pacific Highway, St. Leonards	address	136.7	north-west
Advertising - General	Adhesive Plastic Letters	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Building & Industrial Cladding - Commercial	Component Construction Group Pty Ltd	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Disposable Paper Products	Cousins L G & Co	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Engineers - Civil	Broughton David T & Associates	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Engineers - Civil	Hughes-Trueman-Ludlow Pty Ltd	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Fire Brick M/Factrs & Repairers	NEWBOLD GENERAL REFRACTORIES LTD	(Sydney Office) 84 Christie St.,St. Leonards	address	138.5	north-east
Fire Brick M/Factrs & Repairers	Newbold General Refractories Ltd	84 Christie Street, St. Leonards	address	138.5	north-east
Horse Riding Schools & Trail Rides	Hughes-Trueman-Ludlow Pty Ltd	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Lettering & Fonts	Adhesive Plastic Letters	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Name Plates - Brass	Gallagher Lough & Associates	84 Christie Street, St Leonards,NSW	address	138.5	north-east
Refractory Products	NEWBOLD GENERAL REFRACTORIES LTD	(Sydney Office) 84 Christie St,St. Leonards	address	138.5	north-east
Engineers - Consultants	Association of Consulting Structural Engineers of NSW The (Hughes, C.G. & Partners)	84 Christie Street, St. Leonards,NSW	address	142.2	north-east
Fire Brick M/Factrs & Repairers	Newbold General Refractories Ltd. (Sydney Sales Office)	84 Christie Street, St. Leonards,NSW	address	142.2	north-east
Refractories & Refractory Materials	Newbold General Refractories Ltd	84 Christie Street, St. Leonards	address	142.2	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Nappy Services & Nappy Laundering	Jaw, P. & Co.,	554 Pacific Highway, St. Leonards	address	144	north-east
Chemical & Chemical Product Suppliers	Cyanamid Aust Pty Ltd	88 Christie Street, St Leonards,NSW	address	148.7	north-east
Engineers - Chemical	Cyanamid Aust Pty Ltd	88 Christie Street, St Leonards,NSW	address	148.7	north-east
Engineers - Chemical	Lederle Laboratories	88 Christie Street, St Leonards,NSW	address	148.7	north-east
Horticultural Services	Cyanamid, D. H. A. Pty. Ltd.,	88 Christie St.,St. Leonards	address	148.7	north-east
Horticultural Services	Cyanamid Aust Pty Ltd	88 Christie Street, St Leonards,NSW	address	148.7	north-east
Insecticide Herbicide & Fungicide M/Factrs	Cyanamid D. H. A. Pty. Ltd.,	88 Christie St.,St. Leonards	address	148.7	north-east
Veterinary Instruments &/Or Supplies	Cyanamid Aust Pty Ltd	88 Christie Street, St Leonards,NSW	address	148.7	north-east
Water Treatments - Supplies & Equipment	Cyanamid Aust Pty Ltd	88 Christie Street, St Leonards,NSW	address	148.7	north-east
Motor Sport Services	BP Artarmon Service Station	327 Pacific Highway, St Leonards,NSW	address	154.4	north-east
Lubricating Equipment M/Factrs &/Or W/Salers	Amoco Aust Pty Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Motor Oils & Spirits Distribution Centres	Amoco Aust Pty Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Motor Sport Services	Amoco Aust Pty Ltd (Head Office)	201 Pacific Hwy, North Sydney,NSW	address	159.7	north-east
Oil Merchants Oil Refineries & Distributors	AMOCO	201 Pacific Highway, North Sydney,NSW	address	159.7	north-east
Textile Mills	McDonell Gavan & Co Pty Ltd	201 Pacific Highway, North Sydney,NSW	address	159.7	north-east
Concrete - Cement Distributors - Retail &/Or W/Sale	Sydney & North Sydney Lime Burners Pty Ltd	548 Pacific Highway, St Leonards,NSW	address	165.8	north-east
Air Conditioning - Domestic	Amelco Engineers Pty. Ltd.,	508 Pacific Hghwy. St.Leonards,NSW	address	167.7	north-east
Boat Motors & Outboards	Lewis Marine,	466 Pacific Highway, St. Leonards	address	167.7	north-east
Paper Mill Agents & Brokers	Coleman R S Pty Ltd	508 Pacific Highway, St Leonards,NSW	address	167.7	north-east
Plastic - Equipment & Machinery	Delohery, J. Sales,	508 Pacific Highway, St. Leonards	address	167.7	north-east
Plastic Product Retailers	Delohery, J. Sales,	508 Pacific Highway, St. Leonards	address	167.7	north-east
Rubber Retailers	Leggett Rubber Products Pty Ltd	510 Pacific Highway, St Leonards,NSW	address	167.7	north-east
Valuers - General	Marco Productions Ltd.,	577-597 Pacific Highway,St. Leonards	address	174.9	north-east
Engineers - Consultants	L.B.L. Products Pty. Ltd.,	86 Pacific Highway, St. Leonards	address	179	west
Engineers - Design	L.B.L. Products Pty. Ltd.,	86 Pacific Highway, St. Leonards	address	179	west
Engineers - Machine Tools	L.B.L. Products Pty. Ltd.,	86 Pacific Highway, St. Leonards	address	179	west
Engineers - Mechanical	L.B.M. Products Pty. Ltd.,	86 Pacific Highway, St. Leonards	address	179	west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Engineers - Precision	L.B.L. Products Pty. Ltd.,	86 Pacific Highway, St. Leonards	address	179	west
Engines - Petroleum	L.B.L. Products Pty. Ltd.,	86 Pacific Highway, St. Leonards	address	179	west
Foundry - Non-Ferrous Metals	L.B.L. Products Pty. Ltd.,	86 Pacific Highway, St. Leonards	address	179	west
Furniture - M/Factrs &/Or W/Salers	Berry Lane Productions	Rear of 82 Pacific Highway,St Leonards,NSW	address	179	west
Lawn & Motor Mowers - Sales & Service	Cleaner Centre (The),	82 Pacific Highway,St. Leonards	address	179	west
Vacuum Cleaners - Domestic Retail	Cleaner Centre (The),	82 Pacific Highway, St. Leonards	address	179	west
Soaps & Detergent M/Factrs	Savons Pty Ltd	92 Christie Street, St Leonards,NSW	address	179.5	north-east
Carpet - Layers' Supplies	haughton WM & Co Ltd	53 Christie street,St Leonards,NSW	address	181.2	east
Chemical & Chemical Product Suppliers	Redic Aust Pty Ltd	48 Christie Street,St Leonards,NSW	address	181.2	east
Cleaning - Products	Redic Aust Pty Ltd	48 Christie Street,St Leonards,NSW	address	181.2	east
Coatings - Protective Covering	Redic Aust Pty Ltd	48 Christie Street,St Leonards,NSW	address	181.2	east
Rustproofing & Protection Services	Redic Aust Pty Ltd	48 Christie Street,St Leonards,NSW	address	181.2	east
Advertising - General	MBS Media Buying Services (Aust) Pty Ltd	67 Christie Street,St Leonards,NSW	address	181.6	north-east
Advertising - General	Thompson White & Partners (NSW) Pty Ltd	67 Christie Street,St Leonards,NSW	address	181.6	north-east
Chemist - Industrial	Roussel Pharmaceuticals (Pty.) Ltd.,	67 Christie St.,St. Leonards	address	181.6	north-east
Engineers - Chemical	Roussel Pharmaceuticals (Pty.) Ltd.,	67 Christie St.,St. Leonards	address	181.6	north-east
Photographer - Industrial & Commercial	Rodgers David Studio	67 Christie Street,St Leonards,NSW	address	181.6	north-east
Advertising Distribution	A.G.A. Products Australia Pty. Ltd.,	63 Christie St.,St. Leonards	address	185.4	north-east
Engineers - Electronic	Aga Products Australia Pty. Ltd.,	63 Christie St.,St. Leonards	address	185.4	north-east
Geophysicist	A.G.A. Products Australia Pty. Ltd.,	63 Christie St.,St. Leonards	address	185.4	north-east
Medical Equipment - Supplies	A.G.A. Products Australia Pty. Ltd.,	63 Christie St.,St. Leonards	address	185.4	north-east
Welding	A.G.A. Products Australia Pty. Ltd.,	63 Christie St.,St. Leonards	address	185.4	north-east
X-Ray & Ultra-Sound Supplies & Equipment	A.G.A. Products Australia Pty. Ltd,	63 Christie St.,St. Leonards	address	185.4	north-east
Dental & Dentistry Technician	Milford, F. & Witt, E. K.,	94 Christie St.,St. Leonards	address	192.5	north-east
Lithographic Printers	Ralfs & Hermsdorf,	94 Christie St.,St. Leonards	address	192.5	north-east
Air Conditioning - Industrial & Commercial	Air Conditioning Federation Of NSW Pty Ltd	50 Nicholson Street, St Leonards,NSW	address	197.1	north-east
Engineers - General	Brown Harvey H & Associates	50 Nicholson Street, St Leonards,NSW	address	197.1	north-east
Plastic - Molders	Stevens Manufacturing Works,	94 Pacific Highway, St. Leonards	address	198.3	west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Plastic Product Retailers	Stevens Manufacturing Works,	94 Pacific Highway, St. Leonards	address	198.3	west
Chemical & Chemical Product Suppliers	Ciba-Geigy Aust Ltd	46 Nicholson Street, St Leonards,NSW	address	213.8	north-east
Engineers - Chemical	Geigy Pharmaceuticals	46 Nicholson Street, St Leonards,NSW	address	213.8	north-east
Engineers - Chemical	Zyma Pharmaceuticals	46 Nicholson Street, St Leonards,NSW	address	213.8	north-east
Electric Motor & Generator Repairs & Service	Asea Electric (Aust.) Pty. Ltd.,	Pacific Highway, St. Leonards	street		north-west
Electric Motor M/Factrs	ASEA ELECTRIC (AUST.) PTY. LTD.	Pacific Highway, St. Leonards	street		north-west
Engineers - Mechanical	Henderson, P. A. & Co.,	Berry Road,St. Leonards	street		south-west
Farmers & Agriculturalists	Nixon B J & A R	Berry Road,Wtmla	street		south-west
Grocers - W/Salers	Cottee's General Foods Ltd	Pacific Highway,St Leonards,NSW	street		north-west
Scrap Metal Merchants	H. & D. Metals Pty Ltd	Christie Street,Sydney,NSW	street		north-east
Transformers - Inductors & Power Supplies	Henderson PA & Co	Berry Road,St Leonards,NSW	street		south-west

1980 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Engineers - General	D & G Equipment & Engineering	16 Duntroon Avenue,St. Leonards,NSW	address	58.1	south-east
Engineers - Maintenance & Installation	Cord Welding & Installations	16 Duntroon Avenue,St. Leonards,NSW	address	58.1	south-east
Welding	Cord Welding & Installations	16 Duntroon Avenue,St. Leonards,NSW	address	58.1	south-east
Shop & Office Fitting Design & Fit-Outs	Pacific Partitioning Pty Ltd	34 Pacific Highway,St. Leonards,NSW	address	70.9	north-west
Stationery - M/Factrs & W/Sale	St. Leonards Office Furniture & Supplies	42 Pacific Highway,St. Leonards,NSW	address	70.9	north-west
Nurseries - Retail	Australia Florist The	16 Pacific Highway,St. Leonards,NSW	address	72.9	north
Printers - General	Rudge Instant Print	38 Pacific Highway,St. Leonards,NSW	address	74.4	north-west
Concrete - Additive Suppliers	Sternson (Australia) Pty Ltd	6 Pacific Highway,St. Leonards,NSW	address	75.5	north
Nursery Supplies	Jeffery Electronic Control	6 Pacific Highway,St. Leonards,NSW	address	75.5	north
Water Irrigation & Reticulation Services	Jeffery Electronic Control	6 Pacific Highway,St. Leonards,NSW	address	75.5	north
Chemist & Pharmaceutical Supplies	St. Leonards Pharmacy	8 Pacific Highway,St. Leonards,NSW	address	77.6	north
Floor & Flooring - General Coverings	Camberg Carpets	54 Pacific Highway,St. Leonards,NSW	address	106.7	north-west
Builder Handyman Contractor Equipment Sale/ Hire	Pearson Bridge Pty Ltd	75 Lithgow St.,St. Leonards,NSW	address	109.6	north-east
Engineers - Civil	Pearson Bridge Pty Ltd	75 Lithgow St.,St. Leonards,NSW	address	109.6	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Home Health Care Equipment & Aids	Markell Shoe Centre	62 Pacific Highway,St. Leonards,NSW	address	110.4	north-west
Printers - General	Small-Offset Association	77 Lithgow St.,St. Leonards,NSW	address	110.6	north-east
Chemist & Pharmaceutical Supplies	Pharmaceutical Pricing Bureau	79 Lithgow St.,St. Leonards,NSW	address	133	north-east
Chemist & Pharmaceutical Supplies	Pharmacy Guild of Aust	79 Lithgow St.,St. Leonards,NSW	address	133	north-east
Chemist & Pharmaceutical Supplies	Medical Centre Pharmacy	66 Pacific Highway,St. Leonards,NSW	address	136.7	north-west
Air Conditioning - Domestic	Flakt Australia Ltd	84 Christie St.,St. Leonards,NSW	address	138.5	north-east
Air Conditioning - Industrial & Commercial	Flakt Australia Ltd	84 Christie St. (Sales),St. Leonards,NSW	address	138.5	north-east
Dust Collection & Fume Control Equipment	Flakt Australia Ltd	84 Christie St.,St. Leonards,NSW	address	138.5	north-east
Dyeing Services - Commercial/Industrial	Flakt Australia Ltd	84 Christie St.,St. Leonards,NSW	address	138.5	north-east
Fans & Blowers - Commercial/Industrial	Flakt Australia Ltd	84 Christie St.,St. Leonards,NSW	address	138.5	north-east
Metal - Spraying Equipment	Flakt Australia Ltd	84 Christie St.,St. Leonards,NSW	address	138.5	north-east
Tubes & Tubing - Steel M/Factrs & Supply	Flakt Australia Ltd	84 Christie St.,St. Leonards,NSW	address	138.5	north-east
Chemical & Chemical Product Suppliers	Cyanamid Australia Pty Ltd	88 Christie St.,St. Leonards,NSW	address	148.7	north-east
Horticultural Services	Cyanmid Australia Pty Ltd	88 Christie St.,St. Leonards,NSW	address	148.7	north-east
Pharmaceuticals - M/Factrs & W/Salers	Cyanamid Australia Pty Ltd	88 Christie St. (Head Office),St. Leonards,NSW	address	148.7	north-east
Pharmaceuticals - M/Factrs & W/Salers	Lederle Laboratories Division (Cyanamid Australia Pty Ltd)	88 Christie St. (Head Office),St. Leonards,NSW	address	148.7	north-east
Veterinary Instruments &/Or Supplies	Cyanamid Australia Pty Ltd	88 Christie St.,St. Leonards,NSW	address	148.7	north-east
Veterinary Instruments &/Or Supplies	Cycare Products	88 Christie St.,St. Leonards,NSW	address	148.7	north-east
Water Treatments - Supplies & Equipment	Cyanamid Australia Pty Ltd	88 Christie St. (Head Office),St. Leonards,NSW	address	148.7	north-east
Builder Handyman Contractor Equipment Sale/ Hire	Project Development Corporation Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Engineers - Civil	Project Development Corporation Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Engineers - Civil	White Industries Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Motor Garage Equipment & Supplies	Amoco Australia Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Motor Oils & Spirits Distribution Centres	Amoco Aust Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Oil & Fuel Heating Products	Amoco Aust Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Oil Merchants Oil Refineries & Distributors	Amoco Minerals Australia Co	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east
Road Construction Contractors	White Industries Ltd	201 Pacific Highway,North Sydney,NSW	address	159.7	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Travel Goods - M/Factrs &/Or W/Salers	Wildia Enterprises Pty Ltd	355 Pacific Highway,St. Leonards,NSW	address	160.9	north-east
Transmissions - Car	Automatic Gearbox Service	Rear 548 Pacific Highway,St. Leonards,NSW	address	165.8	north-east
Floor & Flooring - General Coverings	Allanson Carpets Pty Ltd	508 Pacific Highway,St. Leonards,NSW	address	167.7	north-east
Nurseries - Retail	M D's Garden Shop	82 Pacific Highway,St. Leonards,NSW	address	179	west
Plastic - Raw Materials	Goodrich B F Chemical Ltd	67 Christie St.,St. Leonards,NSW	address	181.6	north-east
Dental & Dentistry - Laboratories	Milford Fred Dental Laboratory	94 Christie St.,St. Leonards,NSW	address	192.5	north-east
Dental & Dentistry - Laboratories	Witt Kevin e	94 Christie St.,St. Leonards,NSW	address	192.5	north-east
Building - Supplies & Hardware	Mad Barry's Home Renovation Centres Pty Ltd	96 Pacific Highway,St. Leonards,NSW	address	198.3	west
Halal Food Products	McCormick Foods Aust Pty Ltd	46 Nicholson St.,St. Leonards,NSW	address	213.8	north-east
Engineers - Motor & Repairers	Mulholland Automotives	Cnr. Christie & Chandos Sts.,St. Leonards,NSW	street		north-east
Hospitals - Public	Royal North Shore Hospital of Sydney	Pacific Highway,St. Leonards,NSW	street		north-west
Motor Garage Equipment & Supplies	Mulholland Automotives	Cnr. Christie & Chandos Sts.,St. Leonards,NSW	street		north-east

1990 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Electrical Switches & Control Equipment & Machinery	Siemens Ltd.	38 Pacific Highway,Artarmon,NSW	address	74.4	north-west
Mobile Telephones - Service & Repairs	Hutchison Telecoms	60 Pacific Highway,St. Leonards NSW,NSW	address	85.5	north-west
Paging Systems	Hutchison Telecommunications (Australia) Limited	60 Pacific Highway,St Leonards,NSW	address	85.5	north-west
Paging Systems	Hutchison telecoms	60 Pacific Highway,St. Leonards,NSW	address	85.5	north-west
Bakeries	All North Battery Service	71a Pacific Highway/35 Artarmon Road,Waitara/Willoughby,NSW	address	150	north-west
Adhesive Products	A V Adhesives	67 Christie Street,St Leonards,NSW	address	181.6	north-east
Cosmetic M/Factrs &/Or W/Salers	Velsen Holdings Pty Ltd	67 Christie Street,St Leonards,NSW	address	181.6	north-east
Telephone Systems - Equipment & Machinery	NEC Australia Pty Ltd	99 Nicholson St.,St. Leonards,NSW	address	210.9	north-east

2005 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Building - Construction Management Consultants	County Contractors Pty Ltd	2 Marshall Ave,ST LEONARDS,NSW,2065	address	11	north
Medical Clinics	Australian Medical Association (NSW) Limited	Level 6/69 Christie St,ST LEONARDS,NSW,2065	address	42.8	north

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Building Contractors - General	ISIS Interiors Pty Ltd	Level 2/ 40 Pacific Hwy,ST LEONARDS,NSW,2065	address	70.9	north-west
Carpet - Tiles & Carpet Retail	St Leonards Carpet Court	40 Pacific Hwy,ST LEONARDS,NSW,2065	address	70.9	north-west
Carpet - Tiles & Carpet Retail	Carpet Court St Leonards, St leonards	40 Pacific Hwy,ST LEONARDS,NSW,2065	address	70.9	north-west
Forgings	Carpet Court St Leonards, St leonards	40 Pacific Hwy,ST LEONARDS,NSW,2065	address	70.9	north-west
Medical Clinics	Stiel John	40 Pacific Hwy,ST LEONARDS,NSW,2065	address	70.9	north-west
Doctors & Medical Practioners	Jakubowicz Dr Diana L	14 Marshall Ave,ST LEONARDS,NSW,2065	address	72.6	west
Medical Clinics	Jakubowicz Diana L	14 Marshall Ave,ST LEONARDS,NSW,2065	address	72.6	west
Medical Clinics	Ho Amy, St leonards	38 Pacific Hwy,ST LEONARDS,NSW,2065	address	74.4	north-west
Medical Clinics	St Leonards Medical Centre	38 Pacific Hwy,ST LEONARDS,NSW,2065	address	74.4	north-west
Medical Clinics	Chong-Eu Khoo	38 Pacific Hwy,ST LEONARDS,NSW,2065	address	74.4	north-west
Medical Clinics	Anderson Ben	38 Pacific Hwy,ST LEONARDS,NSW,2065	address	74.4	north-west
Medical Clinics	Barnes Timothy	38 Pacific Hwy,ST LEONARDS,NSW,2065	address	74.4	north-west
Medical Clinics	Bonta Esther	38 Pacific Hwy,ST LEONARDS,NSW,2065	address	74.4	north-west
Computer Software	Leadmaster Australia Pty Ltd	Ste 8/ 6 Pacific Hwy,ST LEONARDS,NSW,2065	address	75.5	north
Dentists - Special Needs	Sinn Kam W. Dr	Suite 7, 6-8 Pacific Hwy,ST LEONARDS,NSW,2065	address	75.5	north
Diving - Recreational	North Shore Maths College	Office 1 6 Pacific Hwy,ST LEONARDS,NSW,2065	address	75.5	north
Chiropractor	Blanchfield Bernard	Ste 102, 2-4 Pacific Hwy,ST LEONARDS,NSW,2065	address	78.7	north
Computer Equipment - Software Data & Packages	Team Computer T/As Team Software	Suite 202 2 Pacific Hwy,ST LEONARDS,NSW,2065	address	78.7	north
Computer Software	Trade Systems Technology	2 Pacific Hwy,ST LEONARDS,NSW,2065	address	78.7	north
Dentists - Special Needs	David Howard Dr	Suite 102, 2-4 Pacific Hwy,ST LEONARDS,NSW,2065	address	78.7	north
Dentists - Special Needs	Dr David Howard	Suite 102/ 2 Pacific Hwy,ST LEONARDS,NSW,2065	address	78.7	north
Quilts & Bedspreads & Cleaning Services	Oxygen Personal Fitness	67 Lithgow St,ST LEONARDS,NSW,2065	address	79	north-east
Computer Equipment - Hardware Home Office	Auscom Technology Pty Ltd	32 Pacific Hwy,ST LEONARDS,NSW,2065	address	79.6	north
Podiatrist	Joel Edelman	St Leonards Podiatry Center, Suite 101, 1st Floor, 2-4 Atchison St,ST LEONARDS,NSW,2065	address	87.7	north-west
Medical Clinics	Cosgrove John	25 Marshall Ave,ST LEONARDS,NSW,2065	address	91.2	west
Medical Clinics	Sanbrook Mark Dr	25 Marshall Ave,ST LEONARDS,NSW,2065	address	91.2	west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Medical Clinics	Balint E	25 Marshall Ave,ST LEONARDS,NSW,2065	address	91.2	west
Psychiatrist	St Leonards Mood Disorders Clinic	25 Marshall Ave,ST LEONARDS,NSW,2065	address	91.2	west
Medical Clinics	Porter Richard N	16 Marshall Ave,ST LEONARDS,NSW,1590	address	92.6	west
Medical Clinics	Saunders Douglas Prof, St leonards	16 Marshall Ave,ST LEONARDS,NSW,1590	address	92.6	west
Medical Clinics	Howard Neville J, St leonards	16 Marshall Ave,ST LEONARDS,NSW,2065	address	92.6	west
Medical Clinics	Professor Douglas M Saunders	16 Marshall Ave,ST LEONARDS,NSW,2065	address	92.6	west
Medical Clinics	MacGibbon Anne Dr	16 Marshall Ave,ST LEONARDS,NSW,2065	address	92.6	west
Medical Clinics	Williams Cholm W, St leonards	16 Marshall Ave,ST LEONARDS,NSW,2065	address	92.6	west
Drainers & Drainage Services	Engravingking	Shop 5p/1, 201-205 Pacific Hwy,ST LEONARDS,NSW,2065	address	100.5	north
Internet Services & Service Providers	The Construction Site	Suite 4/ Pacific Hwy,NORTH SYDNEY,NSW,2060	address	100.5	north
Medical Clinics	Subau D	5-154 Pacific Hwy,ST LEONARDS,NSW,2065	address	100.5	north
Business & Professional Organisations	Global Business Network Pty Ltd	71-73 Lithgow St (Level 1),ST LEONARDS,NSW,2065	address	101.3	north-east
Optometrist	Evian David	Shp 3p7 203 Pacific Hwy,ST LEONARDS,NSW,2065	address	101.5	north
Medical Clinics	Potter S R	North Shore Medical Centre,ST LEONARDS,NSW,2065	address	110.5	north-west
Medical Clinics	Briggs Greg M Dr	North Shore Medical Centre,ST LEONARDS,NSW,2065	address	110.5	north-west
Ophthalmologist	Micheli Tasha Dr	North Shore Medical Centre, St Leonards,SYDNEY,NSW,2000	address	110.5	north-west
Printers - General	Printing Industries Association of Australia, St leonards	77 Lithgow St,ST LEONARDS,NSW,2065	address	110.6	north-east
Digital Printers	Dacres-Mannings Sarah APD, Sydney	North Sydney Sports Medicine Centre 286 Pacific Hwy,NORTH SYDNEY,NSW,2060	address	111.1	north-west
Digital Printers	Sarah Dacres-Mannings, North sydney	North Sydney Sports Medicine Centre, 272a Pacific Hwy,NORTH SYDNEY,NSW,2060	address	111.1	north-west
Video & Dvd Production & Duplication Service	Medialink Productions	Level 1-454 -456 Pacific Hwy,ST LEONARDS,NSW,2065	address	117.5	north-west
Physiotherapist	Balance Physiotherapy and Pilates Clinic Pty Limited	80 Christie St,ST LEONARDS,NSW,2065	address	121.4	north-east
Physiotherapist	Balance Physiotherapy & Pilates	Level 1, 80 Christie St,ST LEONARDS,NSW,2065	address	121.4	north-east
Rehabilitation Services & Supplies	Pilates-Balance Physiotherapy & Pilates	Level 1, 80 Christie St,ST LEONARDS,NSW,2065	address	121.4	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Speech Drama & Public Speaking Coaching & Tuition	Toastmasters-Mossman Club	80 Christie St (Norths Rugby Club),ST LEONARDS,NSW,2065	address	122.4	north-east
Dentists - Special Needs	Fabre Leonard G Dr	Suite G2, 564 Pacific Hwy,ST LEONARDS,NSW,2065	address	128	north-east
Dentists - Special Needs	Associated Dental Professionals	Suite G2, 564 Pacific Hwy,ST LEONARDS,NSW,2065	address	128	north-east
Dentists - Special Needs	Kefaladelis Homer Dr	Suite G2, 564 Pacific Hwy,ST LEONARDS,NSW,2065	address	128	north-east
Hypnotherapists	John L Bullock	Suite 5, 564 Pacific Hwy,ST LEONARDS,NSW,1590	address	128	north-east
Hypnotherapists	Bullock John L.	Suite 5/ 564 Pacific Hwy,ST LEONARDS,NSW,2065	address	128	north-east
Optometrist	Evian David, St leonards	564 Pacific Hwy,ST LEONARDS,NSW,2065	address	128	north-east
Business & Professional Organisations	The Pharmaceutical Society Of Aust (NSW)	82 Christie St,ST LEONARDS,NSW,2065	address	130.2	north-east
Alternative Health Service Providers	Cancer Information & Support Society	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Business & Professional Organisations	Boating Industry Association Of NSW Ltd	1A Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Computer Equipment - Hardware Home Office	Laptopshop Sydney	Grnd Flr/ 1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Gastroenterologist	Stiel Daniel Dr	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Joffe David	10/ 1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Ellard Katherine	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Goulston Dr Kerry	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Gunning John F	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Heap Timothy R	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Horsky Oscar Dr	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Touma Kamal Dr	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Joffe Ronald Dr	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Katelaris Phillip M Dr	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	Lagios Katerina Dr	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	McNamara Matthew J, St leonards	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Medical Clinics	McMahon Chris G Dr, St leonards	1a Berry Rd,ST LEONARDS,NSW,2065	address	131.4	west
Alternative Health Service Providers	Nature Care College of Naturopathic & Traditional Medicine	79 Lithgow St,ST LEONARDS,NSW,2065	address	133	north-east
Cleaning - Products	The Roo Brothers Event Catering	560 Pacific Hwy,ST LEONARDS,NSW,2065	address	135.5	north-east
Medical Clinics	Flecknoe-Brown Steve	1 Herbert St,ST LEONARDS,NSW,2065	address	135.5	north

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Medical Clinics	Ibels Lloyd, St leonards	Ste 10 5th Flr North Shore Medical Ctr 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	135.5	north-west
Medical Clinics	Forum Medical Centre St Leonards	The Forum, Cnr Pacific Hwy & Herbert Street,ST LEONARDS,NSW,2065	address	135.5	north
Medical Clinics	Sim, Kian Yan Dr	The Forum, Cnr Pacific Hwy & Herbert Street,ST LEONARDS,NSW,2065	address	135.5	north
Allergy & Immunology Specialist	Baumgart Karl	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Allergy & Immunology Specialist	Broadfoot Andrew	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Car Wholesaling	Lawrence Fong And Val Sutton	Ste 8, Lvl 6, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Car Wholesaling	Synergise Psychology	Suite 8, Level 6, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Car Wholesaling	North Shore Psychology	Suite 8, Lvl 6, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Dentists - Special Needs	Loh R.N.F.	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Digital Printers	Hodge Linda APD	Suite 27/ 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Digital Printers	Linda Hodge	Suite 27/ 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Doctors & Medical Practioners	Johnston Robert W	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Doctors & Medical Practioners	Coombes Graham	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Doctors & Medical Practioners	Alexander J Harvey	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Hearing Aid & Audio Specialists & Services	Northern Sydney Audiology	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Hospitals - Private	Mater Hospital Refractive Surgery Centre	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Incinerating Equipment Sales & Service	Ines Colubriale	2nd Floor, North Shore Medical Centre, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Cook Raymond Dr	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Field Ronald W	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Hassall Megan	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Herkes Geoffrey	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Podgorski M R, St leonards	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Rushworth R G	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Medical Clinics	Ryan Michael D Dr	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	ScougallJ S	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Semmonds Diana B	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	St Leonards Radiology	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Stuckey Michael E V	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Biggs Michael Dr	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Johnson David C.	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	O'Donnell T H	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	O'Keeffe P J	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Douglass Hanly Moir Pathology, St leonards	Ground Floor, Nth Shore Medical Cntr, 66 Pacific Highway,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Saalfeld J A A	North Shore Medical Centre 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Bambach C P	North Shore Medical Centre 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Micheli Tasha	North Shore Medical Centre 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Lucchese Dr Gino	North Shore Medical Centre 66-80 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Veivers Dr David	North Shore Medical Centre 66-80 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Whitfield Margot J	North Shore Medical Centre Suite 4, Lvl 4, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Nash Peter A Urologist Dr, St leonards	North Shore Medical Centre, Suite 4, Level 4, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Grant J M F	North Shore Medical Cntr, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Carr G A	North Shore Medical Cntr, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	O'Donnell Brett A	Northshore Medical Centre Level 2, Suite 3, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Medical Clinics	SDS Pathology, St leonards	Suite 8, Level 4, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Optometrist	OPSM Pty Ltd, St leonards	North Shore Medical Cntr 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Physiotherapist	North Shore Physiotherapy	Ste 1, 4th Flr, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Physiotherapist	Teira Freeman	Suite 1, 1st Floor, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Physiotherapist	John Panagopoulos	Suite 1, 1st Floor, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Physiotherapist	Leroy Lobo	Suite 1, 1st Floor, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Physiotherapist	North Shore Physiotherapy, St leonards	Suite 1, 1st Floor, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Physiotherapist	Northshore Physiotherapy	Suite 1, 66-80 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Physiotherapist	Flood Jeffrey	Suite 1,1st Floor, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Plastic & Reconstructive Surgeon	O'Keeffe Paul	66 Pacific Hwy,ST LEONARDS,NSW,2065	address	136.7	north-west
Medical Clinics	Diamond Michael Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Eizenberg David H, St leonards	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Friend Mary-Anne Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Friend Paul Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Ilchef Ralf Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Sams Anthony Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Samuels Anthony Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Short Julian Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Berry Road Consulting Rooms	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Burns Harding Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	O'Brien Elizabeth Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Orsmond Anthony Dr, St leonards	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Medical Clinics	Wright Murray Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Medical Clinics	Young Peter Dr	1 Berry Rd,ST LEONARDS,NSW,2065	address	138.2	west
Mobile Telephones - Service & Repairs	Orange, St leonards	207 Pacific Hwy,ST LEONARDS,NSW,2065	address	138.8	north
Endocrinologist	Hayes,Jon G, St leonards	Ste 11, Lvl 2, North Shore Medical Cntr, 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	145.7	north-west
Medical Clinics	Vandervord John Dr	Suite 5 2nd Floor 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	145.7	north-west
Advertising - Direct Marketing	Contacts Database	88 Christie St,ST LEONARDS,NSW,2065	address	148.7	north-east
Cleaning - Chemical Steam Pressure Contractors	IDG Communications	88 Christie St,ST LEONARDS,NSW,2065	address	148.7	north-east
Medical Clinics	Yeo John D	North Shore Medical Cntr,ST LEONARDS,NSW,2065	address	149	north-west
Artists - General	Above And Beyond	69 Pacific Hwy,CROWS NEST,NSW,2065	address	150	north-west
Advertising - Posters & Billboards	Adshel	Level 11, 205 Pacific Hwy,ST LEONARDS,NSW,2065	address	155.8	north-east
Construction & Engineering Computer Software	Pyramid Pacific Pty Ltd	Lvl 1/ 205 Pacific Hwy,ST LEONARDS,NSW,2065	address	155.8	north-east
Employment & Recruitment Agencies	Talon Group The	Ste 309/ 205 Pacific Hwy,ST LEONARDS,NSW,2065	address	155.8	north-east
Furniture - Exterior/Outdoor	Adshel Street Furniture Pty Ltd, St leonards	Level 11, 205 Pacific Hwy,ST LEONARDS,NSW,2065	address	155.8	north-east
Supermarket & Grocer	Coles Express, St leonards	The Forum 201 Pacific Hwy,ST LEONARDS,NSW,2065	address	160.6	north-east
Coffee Products Retail	Gloria Jean's Coffees, St leonards	Shop 5/P5 The Forum,ST LEONARDS,NSW,2065	address	161.6	north-east
Health Insurance Providers	A.M.A. Health Fund Ltd	Level 5/69 Christie St,ST LEONARDS,NSW,2065	address	163.6	north-east
Quality Assurance Consultants & Services	Quality Assurance Service	118 Christine St,ST LEONARDS,NSW,2065	address	163.6	north-east
Electrical Appliances & Products - Retail	Saints Betta Electrical	550 Pacific Hwy,ST LEONARDS,NSW,2065	address	165.8	north-east
Electrical Appliances & Products - Retail	Betta Electrical, St leonards	550 Pacific Hwy,ST LEONARDS,NSW,2065	address	165.8	north-east
Optometrist	White House Opticians & Optometrists Pty Ltd	4/ 66 Pacific Hwy,ST LEONARDS,NSW,2065	address	167.7	north-east
Superannuation & Annuity Consultants	Flick Confreres & Associates Pty Ltd	Level 1/ 511 Pacific Hwy,ST LEONARDS,NSW,2065	address	168.5	north-east
Engineers - Consultants	John Nixon Engineering Pty Ltd	28 Berry Rd,ST LEONARDS,NSW,2065	address	178.9	south-west
Engineers - Consultants	David Shreeve & Associates	82 Pacific Hrd,CROWS NEST,NSW,2065	address	179	west
Factoring Services	Pacific Probex, St leonards	Suite 9 82 Pacific Hwy,ST LEONARDS,NSW,2065	address	179	west
Mechanical Cables	GWA Consultants Australia Pty Ltd.	Suite 3/82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	179	west
Medical Clinics	North Shore Lung Function Testing Pty Ltd	Suite 2/82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	179	west
Engineers - Consultants	Kinsley & Associates Pty Ltd	67 Christie St,ST LEONARDS,NSW,2065	address	181.6	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Engineers - General	Kaytec Pty Ltd	67 Christie St,ST LEONARDS,NSW,2065	address	181.6	north-east
Engineers - Consultants	Ho & Lee Engineering Consultants Pty Ltd	63 Christie St,ST LEONARDS,NSW,2065	address	185.4	north-east
Engineers - Consultants	Lee Engineering Consultants Pty Ltd	63 Christie St,ST LEONARDS,NSW,2065	address	185.4	north-east
Doctors & Medical Practioners	Casper Gabrielle Dr, St leonards	Suite 104 Ama House 69 Christie St,ST LEONARDS,NSW,2065	address	185.6	north-east
Earth Moving &/Or Excavating Contractors	Bidwell's Bobcat Backhoe & Tipper Hire	14 Park Rd,ST LEONARDS,NSW,2065	address	185.7	south-west
Internet Services & Service Providers	secureaims. com	655 Pacific Hwy,ST LEONARDS,NSW,2065	address	189	north-east
Television - Rentals	NTL, St leonards	Level 2 655 Pacific Hwy,ST LEONARDS,NSW,2065	address	189	north-east
Medical Clinics	Epstein Julie, St leonards	Suite 2, Garden Mews 82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	190.3	west
Medical Clinics	Field Penny	Suite 2, Garden Mews 82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	190.3	west
Medical Clinics	Tattersall Susan	Suite 2, Garden Mews 82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	190.3	west
Medical Clinics	Vandenberg Russell	Suite 2, Garden Mews 82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	190.3	west
Medical Clinics	Allen David H	Suite 2, Garden Mews 82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	190.3	west
Prosthodontist	McAloon Janis A	Suite 5/ 82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	190.3	west
Prosthodontist	Vidovic Yvonne A	Suite 5/ 82-86 Pacific Hwy,ST LEONARDS,NSW,2065	address	190.3	west
Naturopath	The Sydney Colon Health Clinic	50 Nicholson St,ST LEONARDS,NSW,2065	address	197.1	north-east
Video & Dvd Production & Duplication Service	R & B Productions	50 Nicholson St,ST LEONARDS,NSW,2065	address	197.1	north-east
Plastic & Reconstructive Surgeon	Australian Society of Plastic Surgeons	Suite 503,Lvl 5/69 Christie St,ST LEONARDS,NSW,2065	address	201.1	north-east
Doctors & Medical Practioners	Batey Michele	Suite 410/69 Christie St,ST LEONARDS,NSW,2065	address	201.9	north-east
Chemist - Industrial	On Q Recruitment Scientific and Medical	Lvl 4, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Dentists - Special Needs	de Courcey-Bayley Charlotte	Suite 9 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Dentists - Special Needs	Holistic Dental Care	Suite 9 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Doctors & Medical Practioners	Vass Justin Dr	Suite 1 Level 4 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Environmental & Pollution Services & Consultants	Peter Glass & Associates	69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
General Practioners & Medicine	Hugh Dr Thomas J	Suite 1 Level 4 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Landscape Architect & Design	Peter Glass & Associates - Landscape Architects & Pool Designers, St leonards	Level 2, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Medical Clinics	Schnitzler Margaret	69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Medical Clinics	Lam Alan A/Prof	Lvl 4 Suite 408, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Medical Clinics	The Australian Society Of Plastic Surgeons Inc	Ste 503, Lvl 5, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Medical Clinics	Gates Robert J	Suite 101/Lvl 1, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Medical Clinics	Sywak Mark Dr	Suite 202/ 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Medical Clinics	Northern Endocrine & Breast Surgery Centre	Suite 202/ 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Medical Clinics	Evans Justin Dr	Suite 402/ 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Migration Services & Consultants	Vandeness Australia	Suite 201/ 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Plastic & Reconstructive Surgeon	The Australian Society Of Plastic Surgeons	Ste 503, Lvl 5, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Plastic & Reconstructive Surgeon	Australian Society Of Plastic Surgeons Inc The	Ste 503, Lvl 5, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Plastic & Reconstructive Surgeon	Australian Society of Plastic Surgeons, St leonards	Suite 503, Lvl 5, 69 Christie Street,ST LEONARDS,NSW,2065	address	203.6	north-east
Quality Assurance Consultants & Services	Quality Society of Australasia Ltd	69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Swimming Pool - Construction & Installation	Peter Glass & Associates - Landscape Architects & Pool Designers	Level 2, 69 Christie St,ST LEONARDS,NSW,2065	address	203.6	north-east
Telecommunication Consultants	eutility Pty Lyd	Level 1, 69 Christy St,ST LEONARDS,NSW,2065	address	203.6	north-east
Alternative Health Service Providers	Nature Care College, St leonards	52 Nicholson St,ST LEONARDS,NSW,2065	address	208.5	north-east
Building Contractors - General	Akalan Projects Pty Ltd	Unit 1/65 Nicholson St,ST LEONARDS,NSW,2065	address	210.9	north-east
Mediation Services	Pilgrim Communications Group	46 Nicholson St,ST LEONARDS,NSW,2065	address	213.8	north-east
Concrete - Form Ties Formwork & Accessories	Wideform Constructions Pty Ltd, St leonards	Pacific Hwy,ST LEONARDS,NSW,2065	street		north-west
Employment & Recruitment Agencies	Classic Personnel Pty Ltd	Po Box 38,ST LEONARDS,NSW,2065	street		north-west
Endocrinologist	Delbridge Leigh W	Pacific Hwy,ST LEONARDS,NSW,2065	street		north-west
Hospitals - Public	Royal North Shore Hospital & Community Health Services	Pacific Hwy,ST LEONARDS,NSW,2065	street		north-west
Medical Research Organisations	Bill Walsh Cancer Research Laboratories	Cnr Pacific Hwy & Reserve Rd,ST LEONARDS,NSW,2065	street		north-west
Merchants - General	Hanbury Capital Limited	Po Box 325, St,ST LEONARDS,NSW,1590	street		north-east
Motor Cycle - New Parts - M/Factrs & W/Salers	Hunter Holden, St leonards	Cnr Herbert & Frederick Sts,ST LEONARDS,NSW,2065	street		north

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Waterproofing Contractors & Consultants	M Protectives	Pacific Hwy,ST LEONARDS,NSW,2065	street		north-west

2010 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Carpet Furniture & Upholstery Cleaning	St Leonards Carpet Court	40 Pacific Hwy ST LEONARDS 2065 NSW	address	70.9	north-west
Plastic Bags M/Factrs	Gispac Pty Ltd	40 Pacific Hwy ST LEONARDS 2065 NSW	address	70.9	north-west
Engineers - Consultants	Hughes Trueman	Level 2 60 Pacific Hwy ST LEONARDS 2065 NSW	address	85.5	north-west
Furniture Designers - Made To Order	Living Design Furniture Pty Ltd	Suite 16 1A Berry Rd ST LEONARDS 2065 NSW	address	131.4	west
Building - Construction Management Consultants	Agility Management Pty Ltd	Level 1 72 Christie St ST LEONARDS 2065 NSW	address	132.7	east
Building - Construction Management Consultants	Agl Employee Community Fund	Level 1 72 Christie St ST LEONARDS 2065 NSW	address	132.7	east
Motor Vehicle - Leasing & Fleet Management	Toyota Fleet Management	207 Pacific Hwy ST LEONARDS 2065 NSW	address	136	north
Printers - General	Creative Visuals Pty Ltd	Suite 302 The Forum 205 Pacific Hwy ST LEONARDS 2065 NSW	address	155.2	north
Building - Construction Management Consultants	Pyramid Pacific Pty Ltd	Lvl 1/ 205 Pacific Hwy ST LEONARDS 2065 NSW	address	155.8	north-east
Building Contractors - General	Greenpoint Construction Group	Ste4/ 82 Pacific Hwy ST LEONARDS 2065 NSW	address	179	west
Engineers - Consultants	David Shreeve & Associates	82 Pacific Hrd CROWS NEST 2065 NSW	address	179	west
Pathology Testing Laboratories	North Shore Pulmonary Function Laboratory	Suite 1/ 82- Pacific Hwy ST LEONARDS 2065 NSW	address	179	west
Engineers - Consultants	Kinsley & Associates Pty Ltd	67 Christie St ST LEONARDS 2065 NSW	address	181.6	north-east
Engineers - General	Kaytec Pty Ltd	67 Christie St ST LEONARDS 2065 NSW	address	181.6	north-east
Engineers - Consultants	Ho & Lee Engineering Consultants Pty Ltd	63 Christie St ST LEONARDS 2065 NSW	address	185.4	north-east
Earth Moving &/Or Excavating Contractors	Bidwell's Bobcat Backhoe & Tipper Hire	14 Park Rd ST LEONARDS 2065 NSW	address	185.6	south-west
Engineers - Consultants	David Shreeve & Associates Pty Ltd	Suite 10 82-86 Pacific Hwy CROWS NEST 2065 NSW	address	190.3	west
Engineers - Consultants	Gca Consultants	Suite 8 82-86 Pacific Hwy ST LEONARDS 2065 NSW	address	190.3	west
Engineers - Mechanical	Gwa Consultants Australia Pty Ltd	Suite 3 82-86 Pacific Hwy ST LEONARDS 2065 NSW	address	190.3	west
Building Contractors - General	Isis Projects	Level 4/ 29 Christy St ST LEONARDS 2065 NSW	address	201.5	east

2015 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Carpet Furniture & Upholstery Cleaning	St Leonards Carpet Court	40 Pacific Hwy ST LEONARDS 2065 NSW	address	70.9	north-west
Plastic Bags M/Factrs	Gispac Pty Ltd	40 Pacific Hwy ST LEONARDS 2065 NSW	address	70.9	north-west
Engineers - Consultants	Hughes Trueman	Level 2 60 Pacific Hwy ST LEONARDS 2065 NSW	address	85.5	north-west
Furniture Designers - Made To Order	Living Design Furniture Pty Ltd	Suite 16 1A Berry Rd ST LEONARDS 2065 NSW	address	131.4	west
Building - Construction Management Consultants	Agility Management Pty Ltd	Level 1 72 Christie St ST LEONARDS 2065 NSW	address	132.7	east
Building - Construction Management Consultants	Agl Employee Community Fund	Level 1 72 Christie St ST LEONARDS 2065 NSW	address	132.7	east
Motor Vehicle - Leasing & Fleet Management	Toyota Fleet Management	207 Pacific Hwy ST LEONARDS 2065 NSW	address	136	north
Printers - General	Creative Visuals Pty Ltd	Suite 302 The Forum 205 Pacific Hwy ST LEONARDS 2065 NSW	address	155.2	north
Building - Construction Management Consultants	Pyramid Pacific Pty Ltd	Lvl 1/ 205 Pacific Hwy ST LEONARDS 2065 NSW	address	155.8	north-east
Building Contractors - General	Greenpoint Construction Group	Ste4/ 82 Pacific Hwy ST LEONARDS 2065 NSW	address	179	west
Engineers - Consultants	David Shreeve & Associates	82 Pacific Hrd CROWS NEST 2065 NSW	address	179	west
Pathology Testing Laboratories	North Shore Pulmonary Function Laboratory	Suite 1/ 82- Pacific Hwy ST LEONARDS 2065 NSW	address	179	west
Engineers - Consultants	Kinsley & Associates Pty Ltd	67 Christie St ST LEONARDS 2065 NSW	address	181.6	north-east
Engineers - General	Kaytec Pty Ltd	67 Christie St ST LEONARDS 2065 NSW	address	181.6	north-east
Engineers - Consultants	Ho & Lee Engineering Consultants Pty Ltd	63 Christie St ST LEONARDS 2065 NSW	address	185.4	north-east
Earth Moving &/Or Excavating Contractors	Bidwell's Bobcat Backhoe & Tipper Hire	14 Park Rd ST LEONARDS 2065 NSW	address	185.6	south-west
Engineers - Consultants	David Shreeve & Associates Pty Ltd	Suite 10 82-86 Pacific Hwy CROWS NEST 2065 NSW	address	190.3	west
Engineers - Consultants	Gca Consultants	Suite 8 82-86 Pacific Hwy ST LEONARDS 2065 NSW	address	190.3	west
Engineers - Mechanical	Gwa Consultants Australia Pty Ltd	Suite 3 82-86 Pacific Hwy ST LEONARDS 2065 NSW	address	190.3	west
Building Contractors - General	Isis Projects	Level 4/ 29 Christy St ST LEONARDS 2065 NSW	address	201.5	east
Painting & Decorating Services	Stone Facade	6 Marshall Ave,St Leonards,NSW,2065	address	0	onsite
Computer Equipment - Hardware Home Office	Auscom Technology Pty Ltd	32 Pacific Hwy,St Leonards,NSW,2065	address	71.1	north
Florists & Flowers - Retail	All Australia Florist The	28 Pacific Hwy,St Leonards,NSW,2065	address	71.5	north
Florists & Flowers - Retail	Basket Presentations	28 Pacific Hwy,St Leonards,NSW,2065	address	71.5	north
Florists & Flowers - Retail	St Leonards Florist	28 Pacific Hwy,St Leonards,NSW,2065	address	71.5	north
Doctors & Medical Practioners	Atkins Linda Dr	14 Marshall Ave,St Leonards,NSW,2065	address	71.7	west
Doctors & Medical Practioners	Ludlow Joanne Dr	14 Marshall Ave,St Leonards,NSW,2065	address	71.7	west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Doctors & Medical Practioners	Ramsay Philippa Dr	14 Marshall Ave,St Leonards,NSW,2065	address	71.7	west
Photocopying Services	Print Plus	Unit 1 6-8 Pacific Hwy,St Leonards,NSW,2065	address	73.1	north
Chemists - Retail Pharmacies	St Leonards Pharmacy	8 Pacific Hwy,St Leonards,NSW,2065	address	73.6	north
Dentists & Dental Clinics	Sinn Kam W. Dr	Suite 7 6-8 Pacific Hwy,St Leonards,NSW,2065	address	73.6	north
Photographer - General	Sydney Photo Studio	Ste12/ 6-8 Pacific Hwy,St Leonards,NSW,2065	address	73.6	north
Computer & It - Training & Development	Cas Resources	Groung Floor 40 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Doctors & Medical Practioners	Anderson Ben	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Doctors & Medical Practioners	Barnes Timothy	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Doctors & Medical Practioners	Bonta Esther	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Doctors & Medical Practioners	Craig Roger	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Doctors & Medical Practioners	Ho Amy	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Doctors & Medical Practioners	Khoo Chong Eu	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Doctors & Medical Practioners	Lim Adrian	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Internet Services & Service Providers	Hutchison Internet Services	1/ 40 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Medical Clinics	St Leonards Medical Centre	38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Paper Bags M/Factrs & Suppliers	Gispac Pty Ltd	40 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Podiatrist	Podiatry North	St Leonards Medical Centre 38 Pacific Hwy,St Leonards,NSW,2065	address	74.6	north-west
Advertising - General	Quarter Media	Ste9/ 6 Pacific Hwy,St Leonards,NSW,2065	address	75.5	north
Computer & It - Technical Support	Occident	U8/ 6 Pacific Hwy,St Leonards,NSW,2065	address	75.5	north
Computer & It - Technical Support	EPD Asia Pacific Pty Ltd	Unit 8/ 6 Pacific Hwy,St Leonards,NSW,2065	address	75.5	north
Bakeries	Romeo Pie Cafe	The Forum Shop 3 P4 Pacific High Way,St Leonards,NSW,2065	address	79.7	north
Chemists - Retail Pharmacies	North Shore Hospital Pharmacy	Lvl3/ 2 Pacific Hwy,St Leonards,NSW,2065	address	79.7	north
Chiropractor	Bernard Blanchfield	Suite 102/ 2 Pacific Hwy,St Leonards,NSW,2065	address	79.7	north
Chiropractor	Blanchfield Chiropractic	Suite 102/ 2 Pacific Hwy,St Leonards,NSW,2065	address	79.7	north
Advertising - Posters & Billboards	Claude Outdoor Pty Ltd	Level 1 60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Advertising - Posters & Billboards	TorchMedia Pty Ltd	Level 1/ 60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Carpert - Restorers & Repairers	Barrett Wayne	60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Diagnostic Radiology Services	Castlereagh Imaging	60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Doctors & Medical Practioners	Heiman S Dr	60 Pacific Hwy,St Leonards,NSW,1590	address	88.4	north-west
Doctors & Medical Practioners	Ackerman John	60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Doctors & Medical Practioners	North Sydney Sports Medicine	60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Doctors & Medical Practioners	Douglass Radiology	Grnd Flr/ 60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Engineers - Civil	Mott MacDonald	Level 2 60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Landscape Design & Consultants	Farr Landscapes	60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Physiotherapist	Bruce Anderson	Suite 3 60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Signs & Signage - Illuminated & Neon	Claude Neon	Level 1 60 Pacific Hwy,St Leonards,NSW,2065	address	88.4	north-west
Doctors & Medical Practioners	Sonnabend Prof. David H	Level 4/Bldg 36 Royal North Shore Hospital Pacific Hwy,St Leonards,NSW,2065	address	90.5	north-west
Doctors & Medical Practioners	MacGibbon Anne Dr	16 Marshall Ave,St Leonards,NSW,2065	address	91.3	west
Doctors & Medical Practioners	Porter Ric Dr	16 Marshall Ave,St Leonards,NSW,2065	address	91.3	west
Pathology Testing Laboratories	Laverty Pathology	38 Pacific Hwy,St Leonards,NSW,2065	address	98.6	north
Computer Consulting Services	3CA Pty Ltd	Ste201/ 2-4 Pacific Hwy,St Leonards,NSW,2065	address	100.5	north
Business & Professional Organisations	Global Business Network Pty Ltd	Level 1 71- 73 Lithgow St,St Leonards,NSW,2065	address	100.8	north-east
Doctors & Medical Practioners	Crichton Ken	60 Pacific Hwy,St Leonards,NSW,2065	address	101.2	north-west
Doctors & Medical Practioners	Balint E	25 Marshall Ave,St Leonards,NSW,2065	address	106.2	west
Doctors & Medical Practioners	Sanbrook Mark Dr	25 Marshall Ave,St Leonards,NSW,2065	address	106.2	west
Psychotherapist	Burns Lee	25 Marshall Ave,St Leonards,NSW,2065	address	106.2	west
Function Centres Organisers & Venues	Cabana Bar & Lounge	80 Christie St,St Leonards,NSW,2065	address	112	north-east
Physiotherapist	Physio Body & Sole	67 Lithgow St,St Leonards,NSW,2065	address	112	north-east
Physiotherapist	Balance Physiotherapy & Pilates	Level 1 / 80 Christie St,St Leonards,NSW,2065	address	112	north-east
Rugby League Clubs	Northern Suburbs Rugby Football Club Ltd	80 Christie St,St Leonards,NSW,2065	address	112	north-east
Advertising - Direct Marketing	Singleton Ogilvy & Mather	Ogilvy House 72 Christie St,St Leonards,NSW,2065	address	113	east
Advertising - Promotional Goods	IM Promos	72 Christie St,St Leonards,NSW,2354	address	113	east
Building - Construction Management Consultants	Agility Management Pty Ltd	72 Christie St,St Leonards,NSW,2065	address	113	east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Business - Systems Consultants	Straterjee Pty Ltd	Level 1/ 72 Christie St,St Leonards,NSW,2065	address	113	east
Hypnotherapists	Bullock John L.	Suite 5/ 564 Pacific Hwy,St Leonards,NSW,2065	address	118.5	north-east
Audiologist	McLeod Beth	Suite 4 Level 3 North Shore Medical Centre,St Leonards,NSW,2065	address	119.7	north-west
Audiologist	Upfold Laurie	Suite 4 Level 3 North Shore Medical Centre,St Leonards,NSW,2065	address	119.7	north-west
Computer Software	Fusion Systems	Unit 6 39 Herbert,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Robinson G. Bruce Prof	Freeborn Professorial Bldg.Lvl 4Rm 408 RNSH,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Dr Douglas Samuel Gastroenterologist	North Shore Private Hospital Ste 11/ Lvl 3 Westbourne,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Leibman Steven Dr	North Shore Private Hospital Suite 7 Level 3 Westbourne St St Leonards,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Dr Jeff Nutt	Northern Specialist Centre,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Tonkin M A	Royal North Shore Hosp,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Fulton Andrew J	Royal North Shore Hosp,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	O'Driscoll D Dr	Royal North Shore Hosp,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Piper D W Dr	Royal North Shore Hosptl,St Leonards,NSW,2065	address	119.7	north-west
Doctors & Medical Practioners	Delbridge Prof. Leigh W	University Clinic Royal North Shore Hospital,St Leonards,NSW,2065	address	119.7	north-west
Florists & Flowers - Retail	Flower Factory	Foyer North Shore Private Hospital,St Leonards,NSW,2065	address	119.7	north-west
Graziers	Wauch Peter S	Cottage No 1,Glen Morrison,NSW,2354	address	119.7	north-west
Home Improvement & Renovation Services	Guest Group	6 Fredrick St,St Leonards,NSW,2065	address	119.7	north-west
Physiotherapist	North Shore Physiotherapy Centre	Lvl Suite 1 North Shore Medical Centre 66 Pacific St,St Leonards,NSW,2065	address	119.7	north-west
Steel Fabrication & M/Factrs	Morgado Engineering & Design	89-93 St Leonards Rd,St Leonards,NSW,2065	address	119.7	north-west
Valuers - General	Open Consultan	14/ 159 Kent St,St Leonards,NSW,2065	address	119.7	north-west
Public Relations Consultants & Agents	Ogilvy Public Relations Australia	Ogilvy House 2/72 Christie St,St Leonards,NSW,2065	address	122.9	east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Dry Cleaning Services	Rosemont Drycleaners	564 Pacific Hwy,St Leonards,NSW,2065	address	127.3	north-east
Advertising - Posters & Billboards	ASF - Adshel Street Furniture	Level 11 205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Advertising Agent	Channel Zero Pty Ltd	Forum Plz West 201-205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Bakeries	Bakers Delight Ltd	Shop 1P3 The Forum 201-205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Building - Construction Management Consultants	Pyramid Pacific Pty Ltd	Lvl 1/ 205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Chemists - Retail Pharmacies	Priceline Pharmacy St Leonards	201-205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Chemists - Retail Pharmacies	The Forum Pharmacy St Leonards	Shp 3/P3 201- 205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Chemists - Retail Pharmacies	Dunn's Pharmacy	U2/ 205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Conveyancers	Thorntons Lawyers	Lvl 4 205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Dental & Dentistry Prosthetics	Forum Dentistry	Suite 6 P7 201 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Dentists & Dental Clinics	Associated Dental Professionals	Suite 6 P7 201 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Dentists & Dental Clinics	Dr Henry Lau	Suite 6 P7 201 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Dentists & Dental Clinics	Dr Homer Kefaladelis	Suite 6 P7 201 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Engraving Services	EngravingKing	Shop 5p/1 201- 205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Florists & Flowers - Retail	Atlantis Flowers	Shop 5 P8 The Forum 201 Pacific Highway,St Leonards,NSW,2065	address	128.3	north-east
Meditation Centres	McKenzie John M	Lvl 4 205 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Optometrist	David Evian	Shop 3p7/ 203 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Supermarket & Grocer	Coles Express	The Forum 201 Pacific Hwy,St Leonards,NSW,2065	address	128.3	north-east
Business & Professional Organisations	Pharmaceutical Society of Australia	82 Christie St,St Leonards,NSW,2065	address	130.2	north-east
Supermarket & Grocer	Wit Oriental Mart	556 Pacific Hwy,St Leonards,NSW,2065	address	135.1	north-east
Allergy Treatment Centres & Products	Linda Hodge	Suite 1 level 1 66 Pacific Hwy,St Leonards,NSW,2065	address	135.5	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Doctors & Medical Practioners	Hassall Dr Megan	11/ 66 Pacific Hwy,St Leonards,NSW,2065	address	135.5	north-west
Doctors & Medical Practioners	North Shore Eye Surgery	North Shore Medical Centre Lvl 3 Suites 10-11 66 Pacific Hwy,St Leonards,NSW,2065	address	135.5	north-west
Doctors & Medical Practioners	Hayes Jon G	North Shore Medical Cntr 66 Pacific Hwy,St Leonards,NSW,2065	address	135.5	north-west
Career Guidance Consultants	Sutton Val	Ste 8 Lvl 6/ 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Career Guidance Consultants	Synergise Psychology	Suite 8 Level 6 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Career Guidance Consultants	North Shore Psychology	Suite 8 Lvl 6 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Chemists - Retail Pharmacies	Crossroads Pharmacy	Shp 4/ 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Dentists & Dental Clinics	Loh R.N.F.	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Richards Dr Andrew	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	O'Keeffe P J	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Macquarie Pathology Services Pty Ltd	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Semmonds Diana B	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Curran John E	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	St Leonards X-Ray	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Dowe Andrew C	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Taplin Michael A	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Field Ronald W	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Biggs Michael Dr	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Cook Raymond Dr	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Herkes Geoffrey	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	ScougallJ S	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Bambach C P	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Cant Barry R	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	North Shore Vertigo and Neurology Clinic	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	O'Donnell Brett A Dr	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Doctors & Medical Practioners	Baumgart Karl	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Broadfoot Andrew	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Podgorski M R	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Ryan Michael D Dr	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	O'Keeffe Paul	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	St Leonards Radiology	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Dr Tasha Micheli At North Shore Eye Surgery	Level 3 Suites 10-11 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Cozzi Paul A/Prof	Level 4 North Shore Medical Centre 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Nash Peter Dr	Level 4 North Shore Medical Centre 66 Pacific Hwy,St Leonards,NSW,2354	address	135.8	north-west
Doctors & Medical Practioners	Cozzi Paul Dr	Level 4 Nth Shore Medical Centre 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Howard, Gabrielle M	Level 5 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Nash Peter Dr	Levl 4 Nth Shore Medical Centre 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Coombes Graham	North Shore Medical Centre 66 Pacific Highway,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Voice Connection	North Shore Medical Centre 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Ball Jonathon Dr	North Shore Medical Centre 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Veivers David Dr	North Shore Medical Centre 66-80 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Jones Michael	North Shore Medical Centre Level 1 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Lewis Noni	North Shore Medical Centre Level 1 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	North Shore Eye Centre	North Shore Medical Centre Level 1 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Nash Peter A Urologist Dr	North Shore Medical Centre Suite 4 Level 4 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Doctors & Medical Practioners	Briggs Greg M Dr	North Shore Medical Centre,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Potter S R	North Shore Medical Centre,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Grant J M F	North Shore Medical Cntr 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Carr G A Dr	North Shore Medical Cntr 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Livesey Jonathan Dr	North Shore Medical Cntr 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Douglas Godfrey	Nth Shore Medcl Cntr 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Giblin Matthew M Dr	Suite 1 & 2 Northshore Medical Centre 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	Vandervord John Dr	Suite 5 2nd Floor 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Doctors & Medical Practioners	SDS Pathology	Suite 8 Level 4 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Glass Bricks & Product Accessories	Frameless Glass Direct	Lvl3/ 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Hearing Aid & Audio Specialists & Services	Ines Colubriale	66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Optometrist	Whitehouse Optometrists	4/ 66 Pacific Hwy,St Leonards,NSW,2065	address	135.8	north-west
Chemists - Retail Pharmacies	Chemist Emergency Prescription Referral Service (After Hours)	84 Christie St,St Leonards,NSW,2065	address	136.8	north-east
Chemists - Retail Pharmacies	Green Slips - Pharmacy Guild Of New South Wales	84 Christie St,St Leonards,NSW,2065	address	136.8	north-east
Chemists - Retail Pharmacies	Pharmacy Guild Of Australia - nsw Branch	84 Christie St,St Leonards,NSW,2065	address	136.8	north-east
Dentists & Dental Clinics	Wilkinson R T	17/ 1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Berry Road Consulting Rooms	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Burns Harding Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Diamond Michael Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Friend Mary-Anne Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Friend Paul Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Ilchef Ralf Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Doctors & Medical Practioners	McKay Diana Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	O'Brien Elizabeth Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Orsmond Anthony Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Sams Anthony Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Short Julian Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Wright Murray Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Young Peter Dr	1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Ellard Practice The	1 Berry St,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Llewellyn Robert Jones Dr	1 Berry St,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Ross Peter Dr	1 Berry St,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Joffe Ronald Dr	10- 1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Joffe David	10/ 1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Dr Warren Yan	14 1 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Ellard Katherine	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Heap Timothy R	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Horsky Oscar Dr	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Katelaris Phillip M Dr	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Lagios Katerina Dr	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	McMahon Chris G Dr	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Touma Kamal Dr	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Yee Lesley A Dr	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Stiel Daniel Dr	1a Berry Rd,St Leonards,NSW,2065	address	138.2	west
Doctors & Medical Practioners	Salter Christina Dr	Medical Centre Suite 15 Berry Rd,St Leonards,NSW,2065	address	138.2	west
Education Consultants & Tutors	Kumon Australia and New Zealand	Bldg B Level 6 207 Pacific Hwy,St Leonards,NSW,2065	address	139.1	north-west
Doctors & Medical Practioners	Bariol, Carolyn Dr	Berry Road Medical Cntr Ste 7-8/ 1a Berry Rd,St Leonards,NSW,2065	address	141	west
Doctors & Medical Practioners	Ellard Katherine Dr	Berry Road Medical Cntr Ste 7-8/ 1a Berry Rd,St Leonards,NSW,2065	address	141	west

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Doctors & Medical Practioners	Heap Timothy Dr	Berry Road Medical Cntr Ste 7-8/ 1a Berry Rd,St Leonards,NSW,2065	address	141	west
Advertising - Direct Marketing	Contacts Database	88 Christie St,St Leonards,NSW,2065	address	142.4	north-east
Computer Software	Sage Pastel	88 Christie St,St Leonards,NSW,2065	address	142.4	north-east
Computer Equipment - Repairs Upgrades & Service	Loop Technology	Building B Level 4 207 pacific Hwy,St Leonards,NSW,2065	address	142.5	north-west
Gynaecology & Obstetrics	Omni Gynaecological Care	Ground Floor 207 Pacific Highway,St Leonards,NSW,2065	address	142.5	north-west
Motor Vehicle - Insurance	Toyota Extra Care	207 Pacific Hwy,St Leonards,NSW,2065	address	142.5	north-west
Motor Vehicle - Leasing & Fleet Management	Toyota Fleet Management	207 Pacific Hwy,St Leonards,NSW,2065	address	142.5	north-west
Asbestos Removal & Disposal	Product & Services Testing USIMS	207 Pacific Hwy,St Leonards,NSW,2065	address	143.4	north-west
Exporters & Export Consultants	Export Traders Australia Pty Ltd	U92/ 47 Lithgow St,St Leonards,NSW,2065	address	144.9	south-east
Environmental & Pollution Services & Consultants	Cardno Ecology Lab	Level 9 The Forum 203 Pacific Hwy,St Leonards,NSW,2065	address	148.4	north
Optometrist	Eyecare Plus Optometrists	The Forum St Leonards Station 203 Pacific Hwy,St Leonards,NSW,2065	address	148.4	north
Printers - General	Beeprinting	8/ 203 Pacific Hwy,St Leonards,NSW,2065	address	148.4	north
Dentists & Dental Clinics	Taylor Andrew R	550 Pacific Hwy,St Leonards,NSW,2065	address	155.9	north-east
Telephone Recorded Information Services	Telegroup	2/ 550 Pacific Hwy,St Leonards,NSW,2065	address	155.9	north-east
Business & Professional Organisations	Australian Medical Association (NSW) Limited	AMA House Level 6 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Business & Professional Organisations	A M A Commercial Services	Level 6/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Colorectal Surgeons	McNamara Matthew J	Suite 402 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Colorectal Surgeons	Evans Justin Dr	Suite 402/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Colorectal Surgeons	Pillinger Stephen Dr	Suite 402/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Computer Software	CSC Healthcare Systems	69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Cosmetic Surgery	Australian Society of Plastic Surgeons	Suite 503Lvl 5/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Dentists & Dental Clinics	Holistic Dental Care	69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Dentists & Dental Clinics	Charlotte de# Courcey-Bayley Dr	Suite 208/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Allen Hugh Dr	410/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Doctors & Medical Practioners	Samra, Jas	AMA House Lvl 4 Suite 1 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Dr Gabriella Unsen Consultant Psychiatrist	AMA House Suite 103 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Ellis Andrew Dr	AMA House Suite 203 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Lam Alan M A/Prof	Lvl 4 Suite 408 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Australian Society Of Plastic Surgeons	Ste 503 Lvl 5 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Gallimore Felicity Dr	Ste104/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Hugh Dr Thomas J	Suite 1 Level 4 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Robert J Gates	Suite 101/Lvl 1 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Specialist Vascular Clinic	Suite 104 AMA House 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Casper Gabrielle Prof	Suite 104 AMA House 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Northern Endocrine & Breast Surgery Centre	Suite 202/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Vass Justin Dr	Suite 401 AMA House 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Rasiah Kris K	Suite 401 AMA House 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Doctor Margaret Schnitzler	Suite 402 / 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Northern Sydney Colorectal Clinic	Suite 402 / 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Doctors & Medical Practioners	Pincott Stuart Dr	Suite 402/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Energy Management Consultants	Eutility Pty Ltd	Lvl 1/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Environmental & Pollution Services & Consultants	Peter Glass & Associates - Landscape Architects & Environmental Planners	69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Landscape Architect & Design	Peter Glass & Associates - Landscape Architects & Pool Designers	Level 2 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Medical Clinics	Australian Medical	69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Migration Services & Consultants	Vandeness Australia	Suite 201/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Physiotherapist	Hayes Wendy	401/ 69 Christie St,St Leonards,NSW,2065	address	156.5	north-east
Pet Care & Grooming Services	Paws Up	552 Pacific Hwy,St Leonards,NSW,2065	address	158.9	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Display & Exhibition Equipment - New & Hire	Creative Visuals	Suite 305 205 Pacific Hwy St Leonards 2065,St Leonards,NSW,2065	address	166.5	north
Doctors & Medical Practioners	Genea	The Forum Ste 3.02 Level 3 205 Pacific Hwy,St Leonards,NSW,2065	address	166.5	north
Steel Merchant	Metaland	Level 6 205 Pacific Hwy,St Leonards,NSW,2065	address	166.5	north
Food Stores - General	7-Eleven Stores Pty Ltd	544 Pacific Hwy,St Leonards,NSW,2065	address	173.8	north-east
Dentists & Dental Clinics	Vidovic Yvonne A	Suite 5/ 82-86 Pacific Hwy South,St Leonards,NSW,2065	address	178.3	west
Drafting & Permit Services	Commercial Design	Unit 11/82-86 Pacific Hwy,St Leonards,NSW,2065	address	178.3	west
Computer Equipment - Hardware Home Office	Multimedia Technology Pty Ltd	67 Christie St,St Leonards,NSW,2065	address	181	north-east
Engineers - Consultants	Kinsley & Associates Pty Ltd	67 Christie St,St Leonards,NSW,2065	address	181	north-east
Engineers - General	Kaytec Pty Ltd	67 Christie St,St Leonards,NSW,2065	address	181	north-east
Internet Services & Service Providers	Giganet Plus Pty Ltd	Level 2 657 Pacific Hwy,St Leonards,NSW,2065	address	184.6	north-east
Multimedia Software & Publishing Services	Ondicom Group	61 Christie St,St Leonards,NSW,2065	address	184.6	north-east
Shoes - Orthopaedic & Custom Made	Barefoot Freedom	657 Pacific Hwy,St Leonards,NSW,2065	address	184.6	north-east
Shoes - Orthopaedic & Custom Made	Markell Shoe Centre	Shop 1 657 Pacific Hwy,St Leonards,NSW,2065	address	184.6	north-east
Earth Moving &/Or Excavating Contractors	Bidwell's Bobcat Backhoe & Tipper Hire	14 Park Rd,St Leonards,NSW,2065	address	185.5	south-west
Doctors & Medical Practioners	James Ohalloran	524 Pacific Hwy,St Leonards,NSW,2065	address	196.7	north-east
Scaffolding Sale Or Hire	Pc Scaffolding & Rigging Pty Ltd	524 Pacific Hwy,St Leonards,NSW,2065	address	196.7	north-east
Building Contractors - General	Greenpoint Construction Group	Ste4/ 82 Pacific Hwy,St Leonards,NSW,2065	address	202.6	north-west
Dentists & Dental Clinics	Marks Barbara I	Suite 5/ 82-86 Pacific Hwy,St Leonards,NSW,2065	address	202.6	north-west
Dentists & Dental Clinics	McAloon Janis A	Suite 5/ 82-86 Pacific Hwy,St Leonards,NSW,2065	address	202.6	north-west
Engineers - Mechanical	GWA Consultants Australia Pty Ltd.	U38/ 8 Herbert St,St Leonards,NSW,2065	address	202.6	north-west
Engineers - Structural	George Clark & Associates	Suite 8 82-86 Pacific Hwy,St Leonards,NSW,2065	address	202.6	north-west
Pathology Testing Laboratories	North Shore Pulmonary Function Laboratory	Ste2/ 38 Pacific Hwy,St Leonards,NSW,2065	address	202.6	north-west
Alternative Health Service Providers	Natural Therapies On Line	46 Nicholson St,St Leonards,NSW,2065	address	204.5	north-east
Alternative Health Service Providers	Nature Care College	46 Nicholson St,St Leonards,NSW,2065	address	204.5	north-east

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Reflexologist	Reflexology Training of Australia	46 Nicholson St,St Leonards,NSW,2065	address	204.5	north-east
Alternative Health Service Providers	Australian Association of Colon Therapists	50 Nicholson St,St Leonards,NSW,2065	address	206.4	north-east
Alternative Health Service Providers	Australian College of Colon Therapy	50 Nicholson St,St Leonards,NSW,2065	address	206.4	north-east
Alternative Health Service Providers	Sydney Colon Health Clinic	50 Nicholson St,St Leonards,NSW,2065	address	206.4	north-east
Naturopath	Natural Health Clinic The	50 Nicholson St,St Leonards,NSW,2065	address	206.4	north-east
Naturopath	Paton Con	50 Nicholson St,St Leonards,NSW,2065	address	206.4	north-east
Video & Dvd Production & Duplication Service	R & B Productions	50 Nicholson St,St Leonards,NSW,2065	address	206.4	north-east
Burglar Alarm Systems - Domestic Or Commercial	Gadget Central	96 Pacific Hwy,St Leonards,NSW,2065	address	211.9	north-west
Cleaning - Chemical Steam Pressure Contractors	Fusion Cleaning & Sealing	Po Box 15,St Leonards,NSW,2065	street		north-west
Computer & It - Training & Development	Brilliant Training & Consulting	PO Box 30,St Leonards,NSW,1590	street		north-west
Computer Software	Infield (NTS) Pty Ltd	PO Box 223,St Leonards,NSW,2065	street		north-west
Conservation & Environmental Organisations	Steplight Pty Ltd	PO Box 331,St Leonards,NSW,2065	street		north-west
Desktop Publishers	Loveapple Associates	PO Box 550,St Leonards,NSW,2065	street		north-west
Doctors & Medical Practioners	Forum Medical Centre St Leonards	Cnr Pacific Hwy & Herbert St,St Leonards,NSW,2065	street		north

Historical data positional accuracy and georeferencing results explanation

Positional accuracy	Georeferenced	Description
Address	Located to the address level	*When street address and names fully match.*
Street	Located to the street centroid	*When street names match but no exact address was found. Location is approximate.*
Place	Located to the structure, building or complex	*When building, residential complex or structure name match but no exact address was found. Location is approximate.*
Suburb	Located to the suburb area	*When suburb name match but no exact address was found. Location is approximate.*
Not georeferenced	Not found	*When it was not georeferenced, and address could not be found.*

Land Insight and Resources use a number of different address georeferencing methods and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When address do not contain specific street numbers or a match is not found, records identified as being in the surrounding areas are included for reference.

Section 5 - Other Environmental Constraints

5.1 FEDERAL, STATE AND LOCAL HERITAGE

Map 9 (200m Buffer)

Local Environment Plan (LEP) Heritage

Site ID	Site Name	Class	Significance	Distance (m)*	Direction
Not identified	-	-	-	-	-

National Heritage List (NHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Register of the National Estate (RNE)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (Local)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (SHR)*

Site ID	Site Name	Address	Distance (m)	Direction
5014134	Historic Photographs Collection, Department of Mineral Resources	29-57 Christie Street St. Leonards	192	South-east

*State Heritage Register

Commonwealth Heritage List (CHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

World Heritage Area (WHA)

Site ID	Site Name	Inscribed	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

5.2 NATURAL HAZARDS

Map 10 (500m Buffer)

Bush Fire Prone Land (BLP)

Category	On the Property?	Within Buffer?
Vegetation Buffer	Not identified	Yes
Vegetation Category 2	Not identified	Yes

Fire History

Category	On the Property?	Within Buffer?
Not identified	-	-

Flood Hazard

Category	On the Property?	Within Buffer?
Not identified	-	-

5.3 COASTAL MANAGEMENT (STATE ENVIRONMENTAL PLANNING POLICY)

Map 10 (500m Buffer)

Type	On the Property?	Within Buffer?
Coastal Wetlands Proximity Area	Not identified	Yes
Coastal Wetlands	Not identified	Yes
Coastal Environment Area Map	Not identified	Yes
Coastal Use Area Map	Not identified	Yes

Land Insight
RESOURCES

Tower Three, Level 24
300 Barangaroo Avenue
Sydney NSW 2000 Australia
02 8067 8870
info@liresources.com.au
www.liresrouces.com.au

Appendix A

REPORT MAPS

SUBJECT AREA AND SENSITIVE RECEPTORS

Due Diligence Insight

MAP 1

Subject area
Transmission Line
Stormwater channel
Sewer Main
Water Main
Pipeline

Sensitive Receptors

Child Care Services
Community Centres & Services
Health Care Services

Parks
Places of Worship & Religious Organisations
School Education
Sports and Recreation Activities

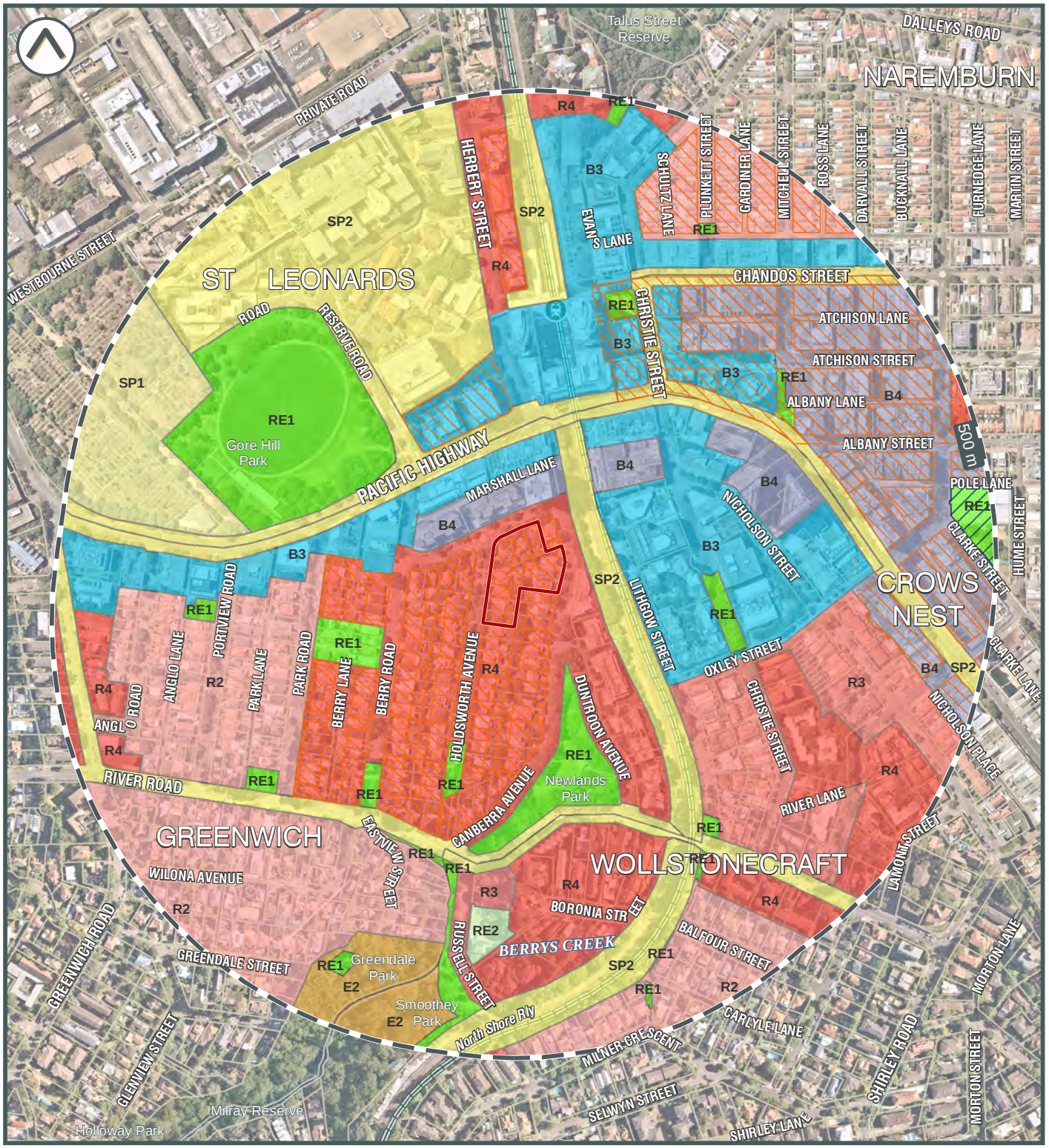
0 50 100 150 200 250m

Land Insight RESOURCES

PLANNING CONTROLS

MAP 2

Due Diligence Insight



Subject area

Additional Permitted Land Uses

Local Provisions

Land Zoning

B3 | Commercial Core

B4 | Mixed Use

E2 | Environmental Conservation

R2 | Low Density Residential

R3 | Medium Density Residential

R4 | High Density Residential

RE1 | Public Recreation

RE2

SP1

SP2 | Special Purposes Zone - Infrastructure

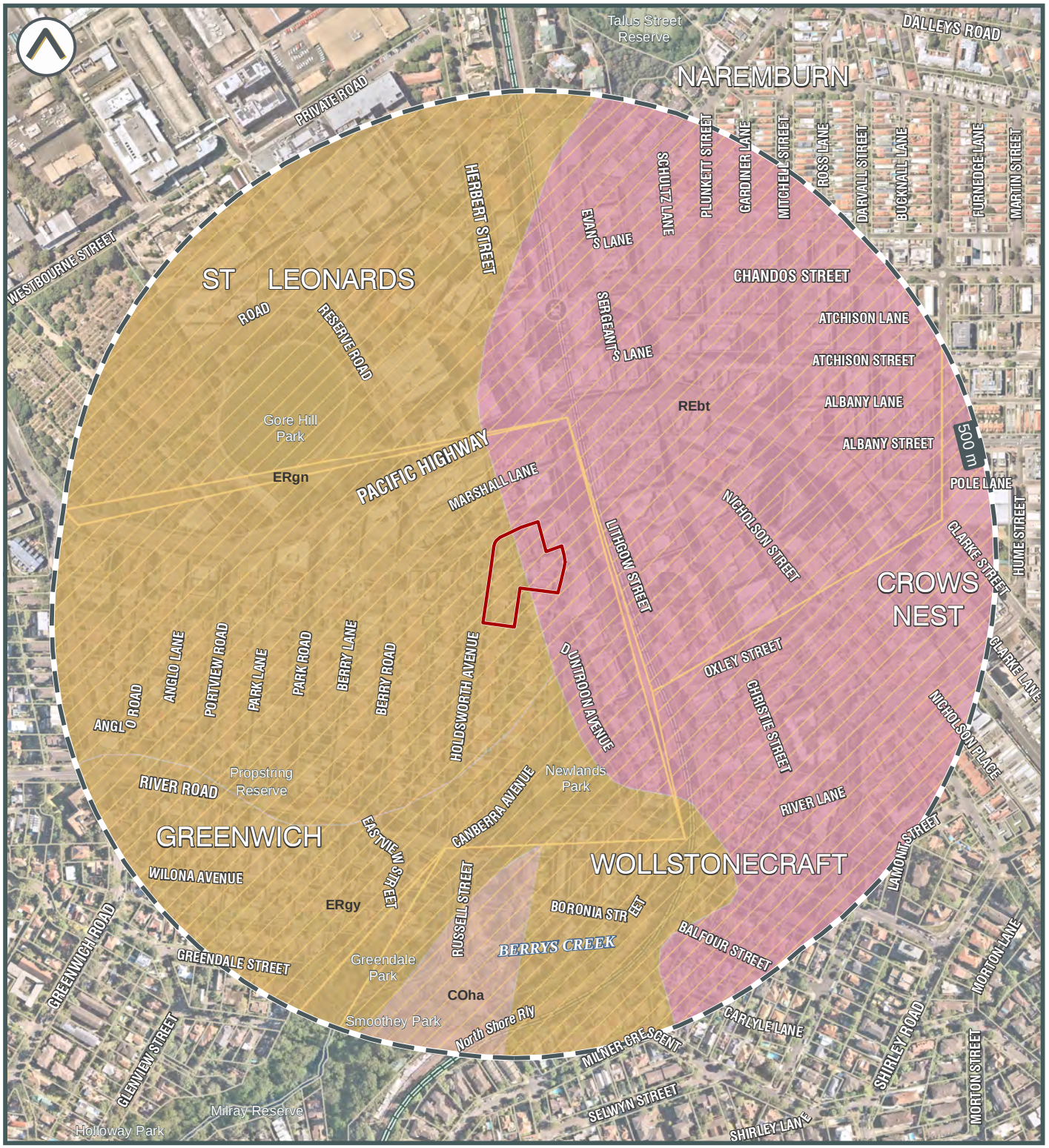
0 200 400 600 800m

Land Insight RESOURCES

SOIL LANDSCAPE AND SALINITY

MAP 3a

Due Diligence Insight



Subject area

Soils Landscape

- COha | COLLUVIAL
- ERgn | EROSIONAL
- ERgy | EROSIONAL
- ERgy/ERla | EROSIONAL
- REbt | RESIDUAL

Radon Level (Bq/m3)

- 5-19

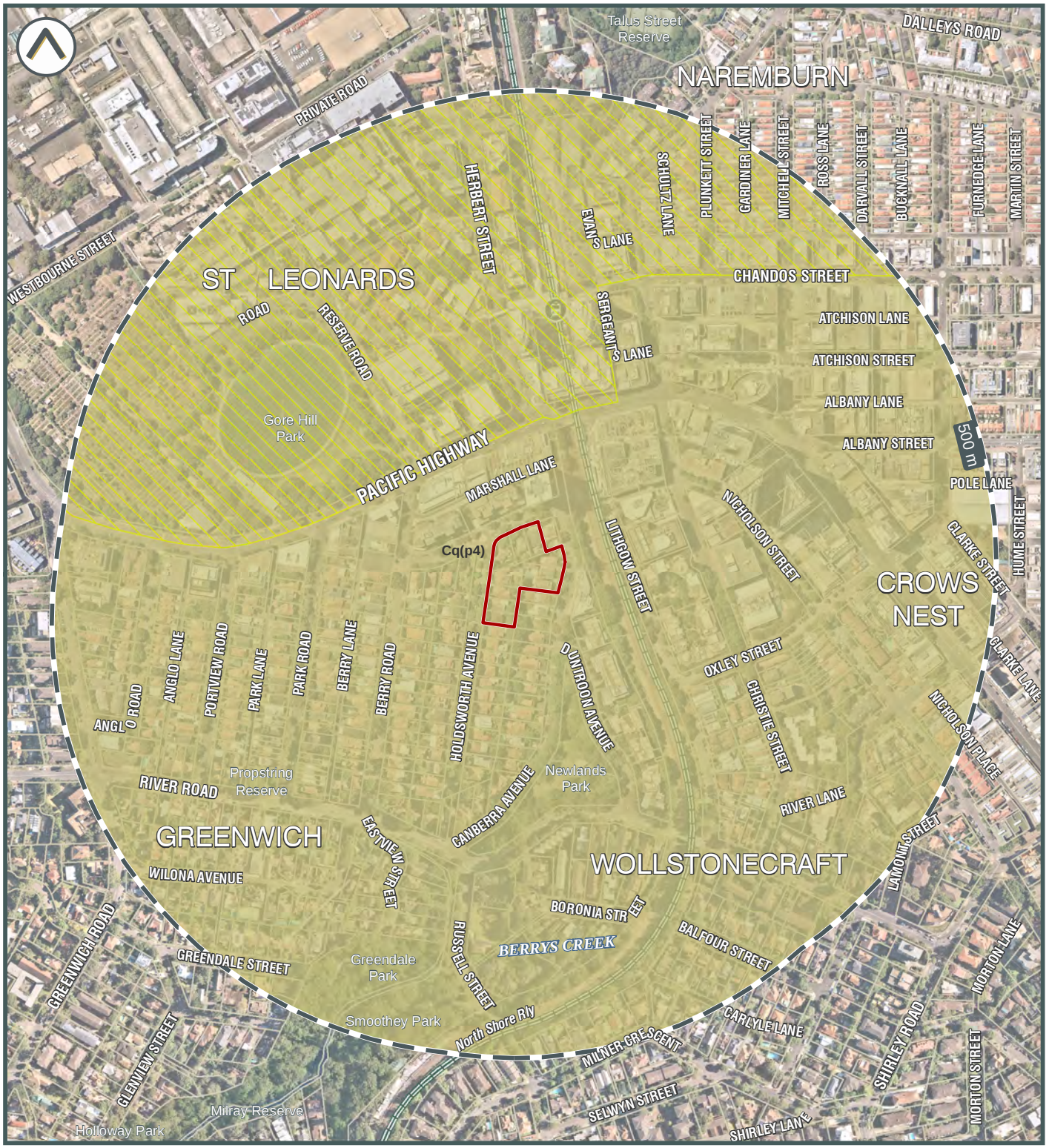
0 200 400 600 800m

Land Insight RESOURCES

ACID SULFATE SOILS

Due Diligence Insight

MAP 3b



Subject area

Acid Sulfate Soil Risk

Class 5

ASRIS Atlas of Australian Sulfate Soils

Cq(p4) | ASS in inland lakes, waterways, wetlands and riparian zones

0 200 400 600 800m

Land Insight RESOURCES

GEOLOGY AND TOPOGRAPHY

MAP 4

Due Diligence Insight

Subject area

20 Topographic contour (m)

Rock Units **PERMO-TRIASSIC BASINS**

Tuth

Twia

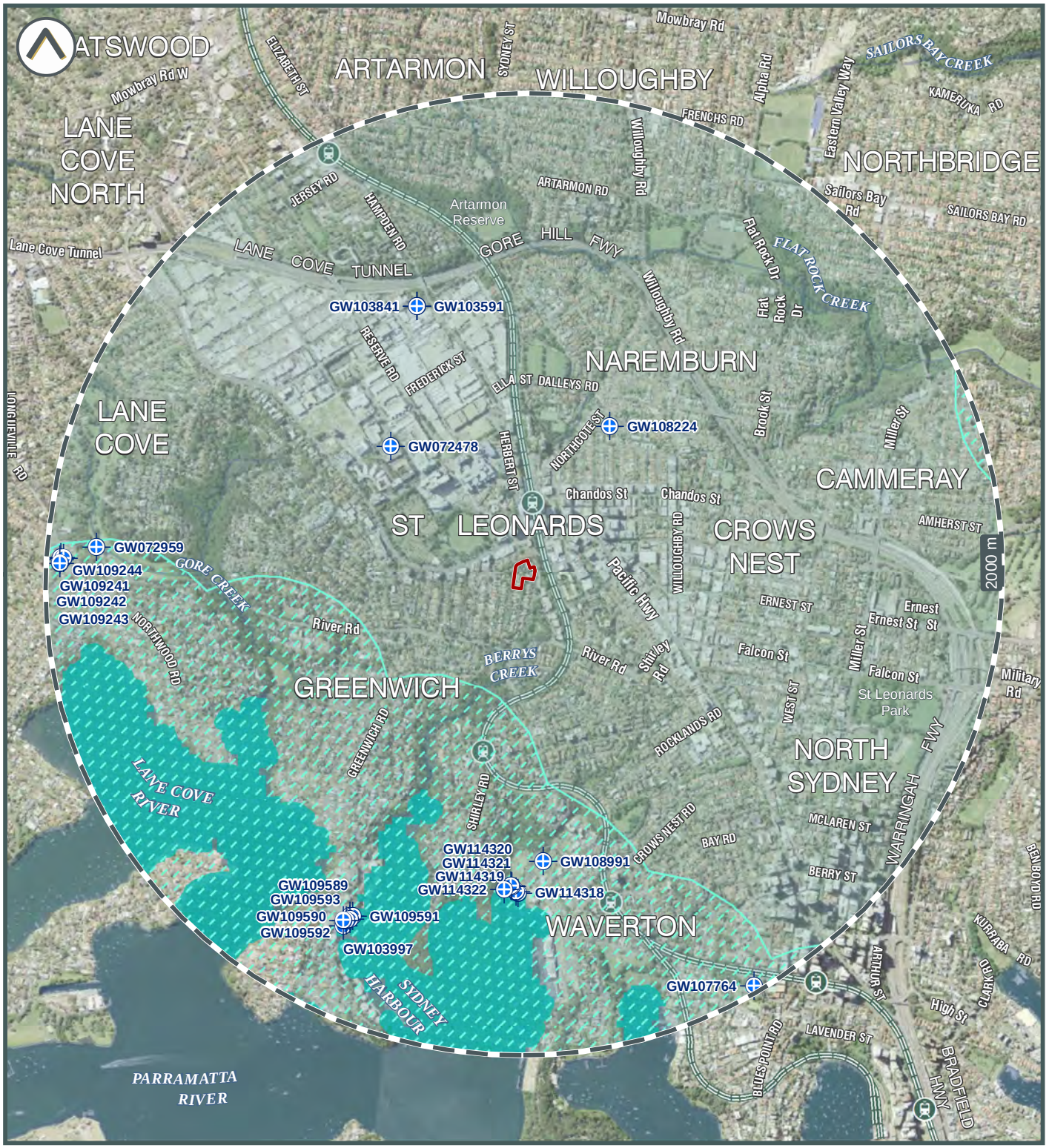
0 200 400 600 800m

Land Insight RESOURCES

HYDROGEOLOGY AND GROUNDWATER BORES

Due Diligence Insight

MAP 5a



Subject area

UPSS Environmentally Sensitive Zone

Wetlands

Groundwater bores

Aquifer Type

Porous, extensive aquifers of low to moderate productivity

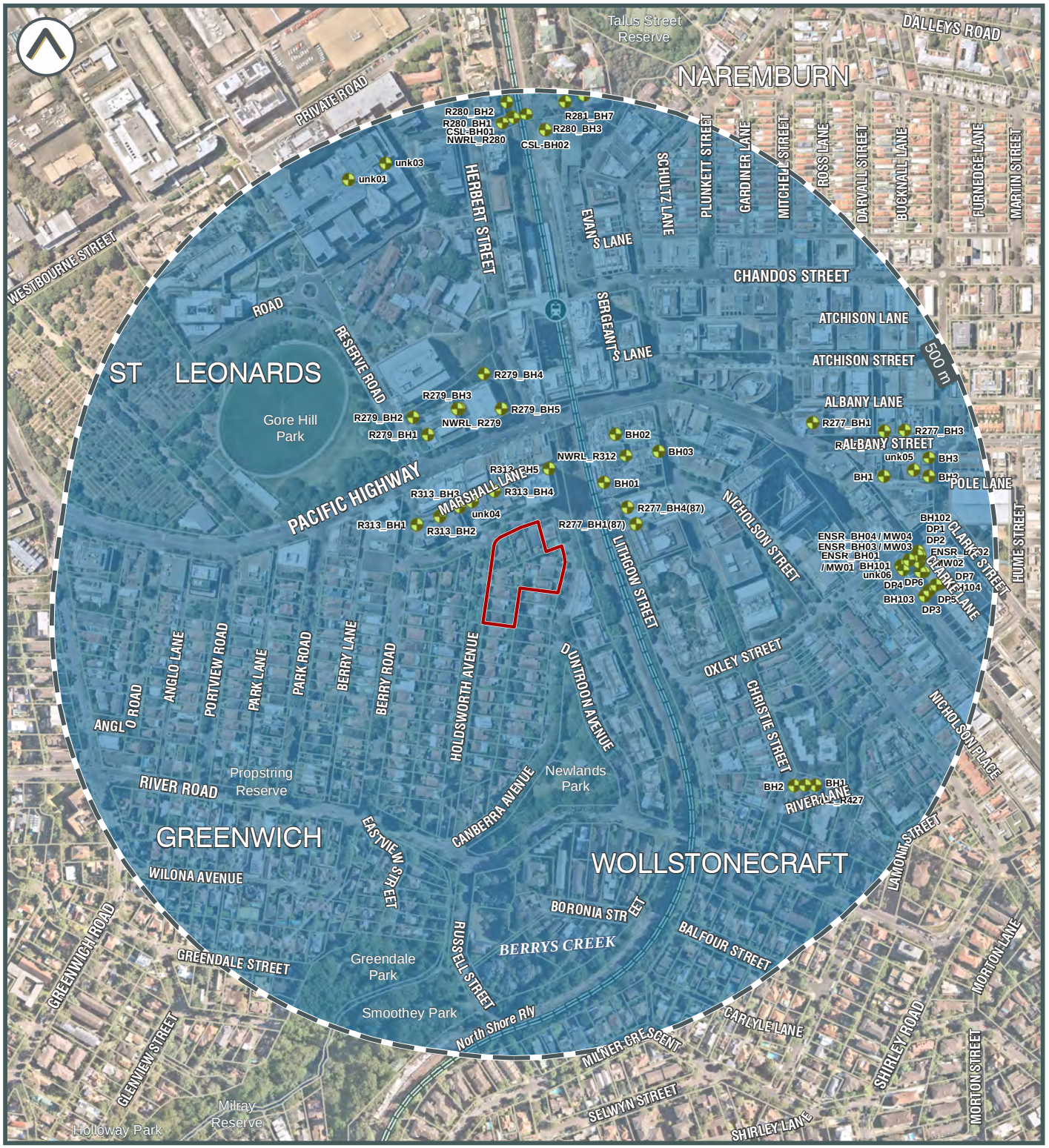
0 200 400 600 800m

Land Insight RESOURCES

HYDROGEOLOGY AND OTHER BOREHOLES

Due Diligence Insight

MAP 5b



Subject area

Other borehole/monitoring well location

Hydrogeologic Unit

Late Permian/Triassic sediments (porous media - consolidated)

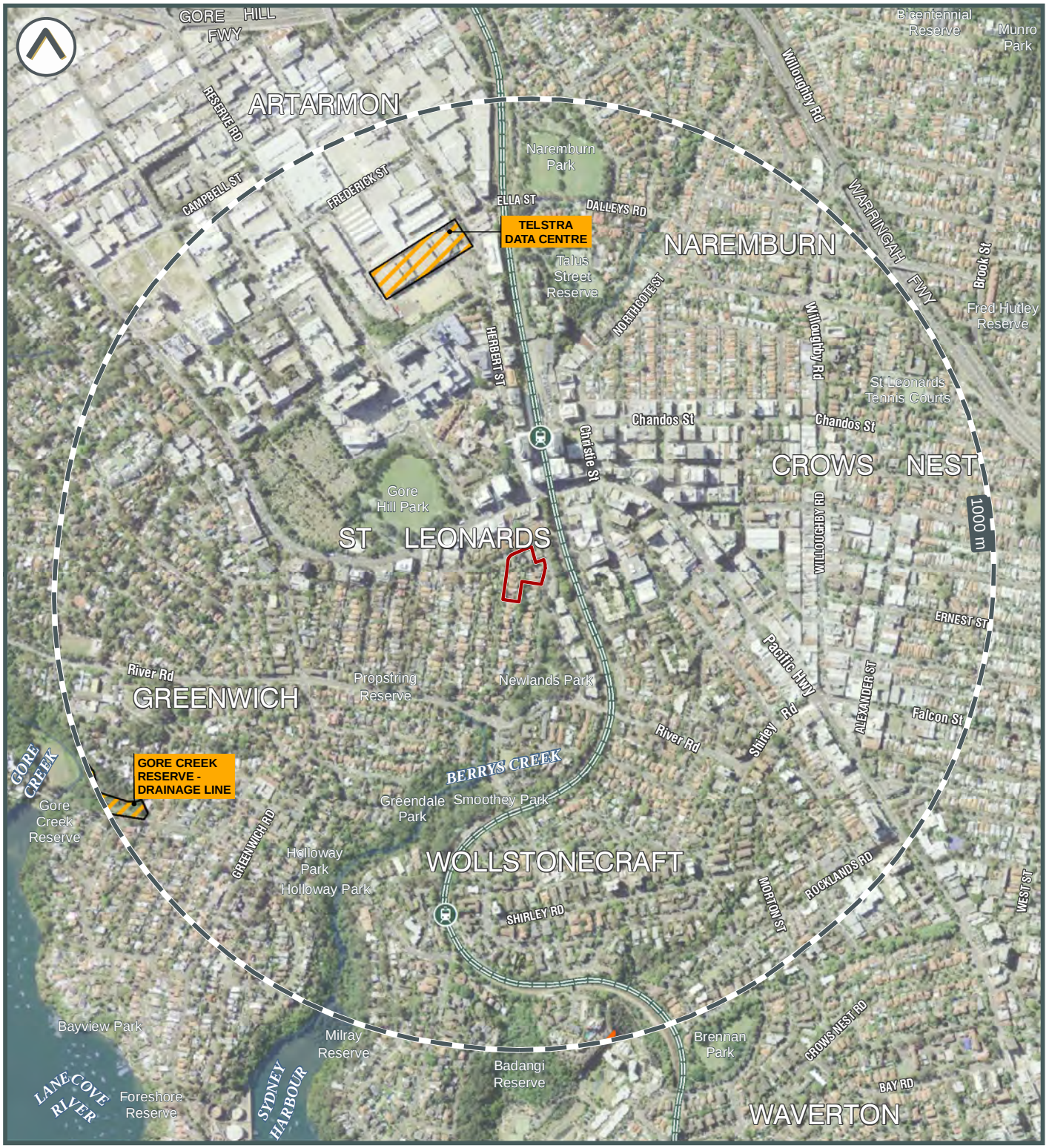
0 200 400 600 800m

Land Insight RESOURCES

CONTAMINATED LAND REGISTER AND POTENTIALLY CONTAMINATED AREAS

MAP 6

Due Diligence Insight



Subject area

Contaminated Land Register (EPA)

Current - Sites notified as contaminated

Contaminated Land Record of Notices

PFAS Sites

Potentially Contaminated Areas

Defence Sites

Former Gasworks Sites

0 200 400 600 800m

Land Insight RESOURCES

ENVIRONMENTAL REGISTER & LICENCES AND NPI FACILITIES

Due Diligence Insight

MAP 7

Subject area

NPI Facilities

POEO Register

POEO licences

Surrendered Licences still Regulated by EPA

Clean Up and Penalty Notices

0 200 400 600 800m

Land Insight RESOURCES

POTENTIALLY CONTAMINATING ACTIVITIES

MAP 8a

Due Diligence Insight

Subject area

Cattle dip/ saleyards	Gas supplier / terminals	Petrol stations	Telephone exchanges
Dry cleaners	Liquid fuel depots / terminals	Power stations	Waste management facilities
Fire Rescue sites	Mine/quarry	Substation locations	Wastewater Treatment Facility

Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.

0 200 400 600 800m

Land Insight RESOURCES

CURRENT COMMERCIAL AND TRADE DATA

MAP 8b

Due Diligence Insight

Subject area

Commercial & Trade Directory

- Other potentially contaminating activities
- Former potentially contaminating activities

Tanks

- Aboveground Storage Tank - Current
- Aboveground Storage Tank - Former
- Underground Storage Tank - Current
- Underground Storage Tank - Forrmer/Unknown
- Unknown

*This is not an exhaustive list of all tanks.

0 50 100 150 200 250m

Land Insight RESOURCES

FORMER POTENTIALLY CONTAMINATED LAND

Due Diligence Insight

MAP 8c

Subject area

Contaminated Legacy Areas

- Contaminated Legacy Areas
- Derelict Mines and Quarries
- Historical (Legacy) Landfills

Unexploded Ordnance (UXO) Areas

0 200 400 600 800m

Land Insight RESOURCES

HERITAGE

MAP 9

Due Diligence Insight

Subject area

Federal, State and Local Heritage

- Heritage Area (LEP)
- National Heritage List (NHL)
- Non-Aboriginal heritage item (SHR)
- Commonwealth Heritage List (CHL)
- World Heritage Area (WHA)

0 50 100 150 200 250m

Land Insight RESOURCES

NATURAL HAZARDS

MAP 10

Due Diligence Insight

Subject area

Flood Hazard

Fire

Bush Fire Prone Land

Vegetation Buffer

Vegetation Category 2

Coastal Management

Proximity Area for Coastal Wetlands

Coastal Wetlands

Coastal Environment Area Map

Coastal Use Area Map

0 200 400 600 800m

Land Insight RESOURCES

Land Insight RESOURCES

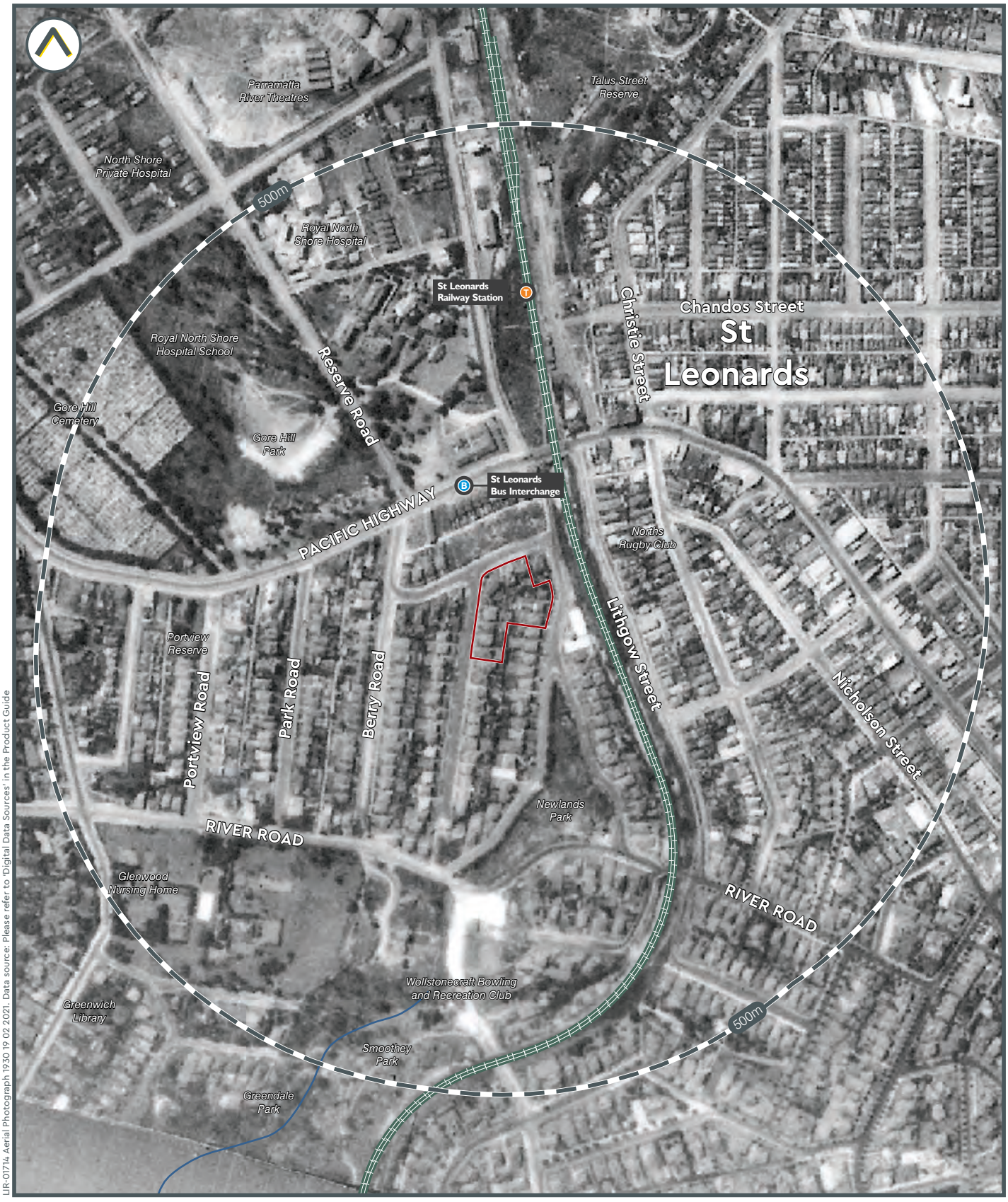
Appendix B

HISTORIC IMAGERY

HISTORIC AERIAL PHOTOGRAPH - 1930

MAP 11

Due Diligence Insight



Subject area

0 200m

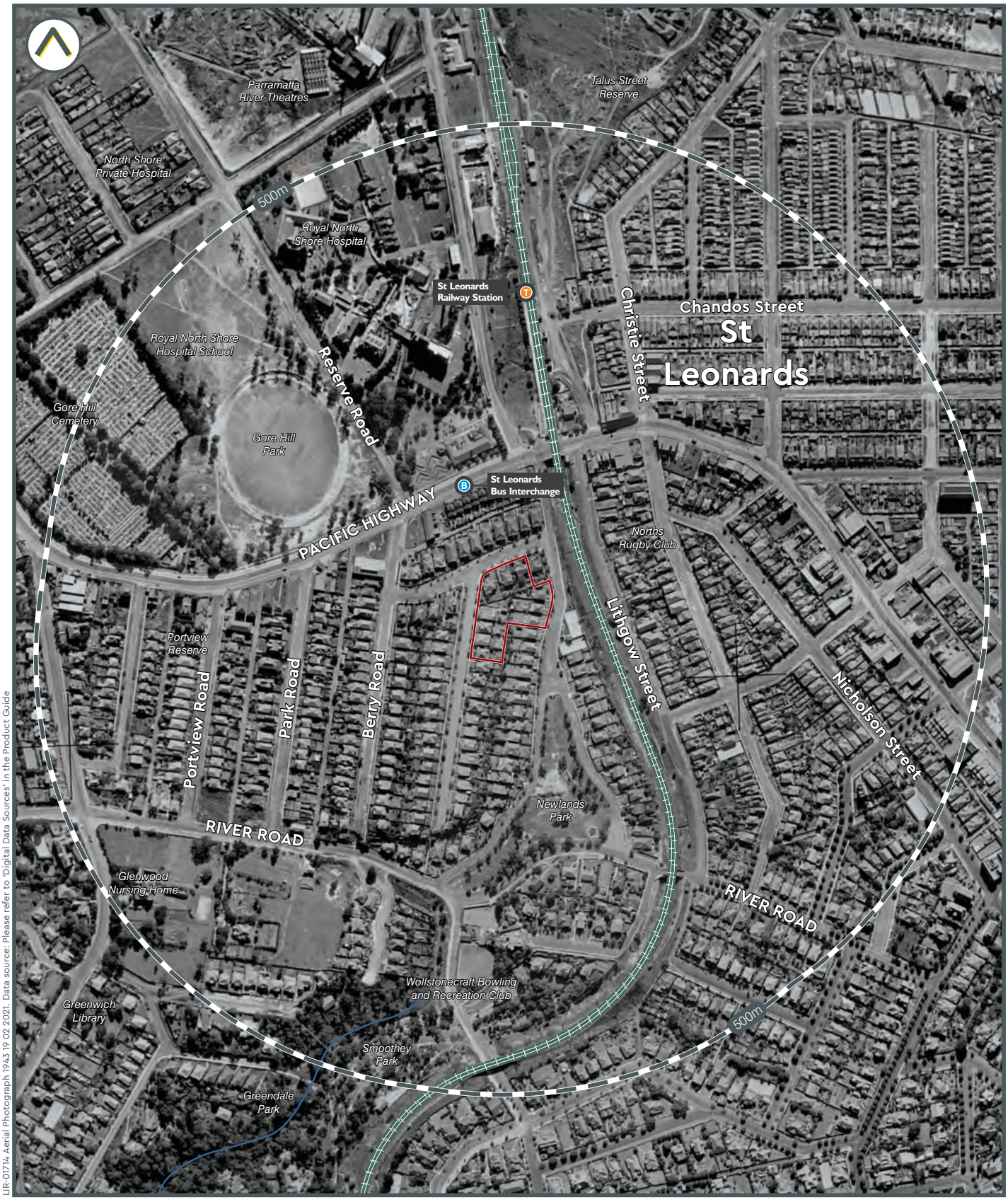
LIR-01714 Aerial Photograph 1930 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1943

MAP 12

Due Diligence Insight



Subject area

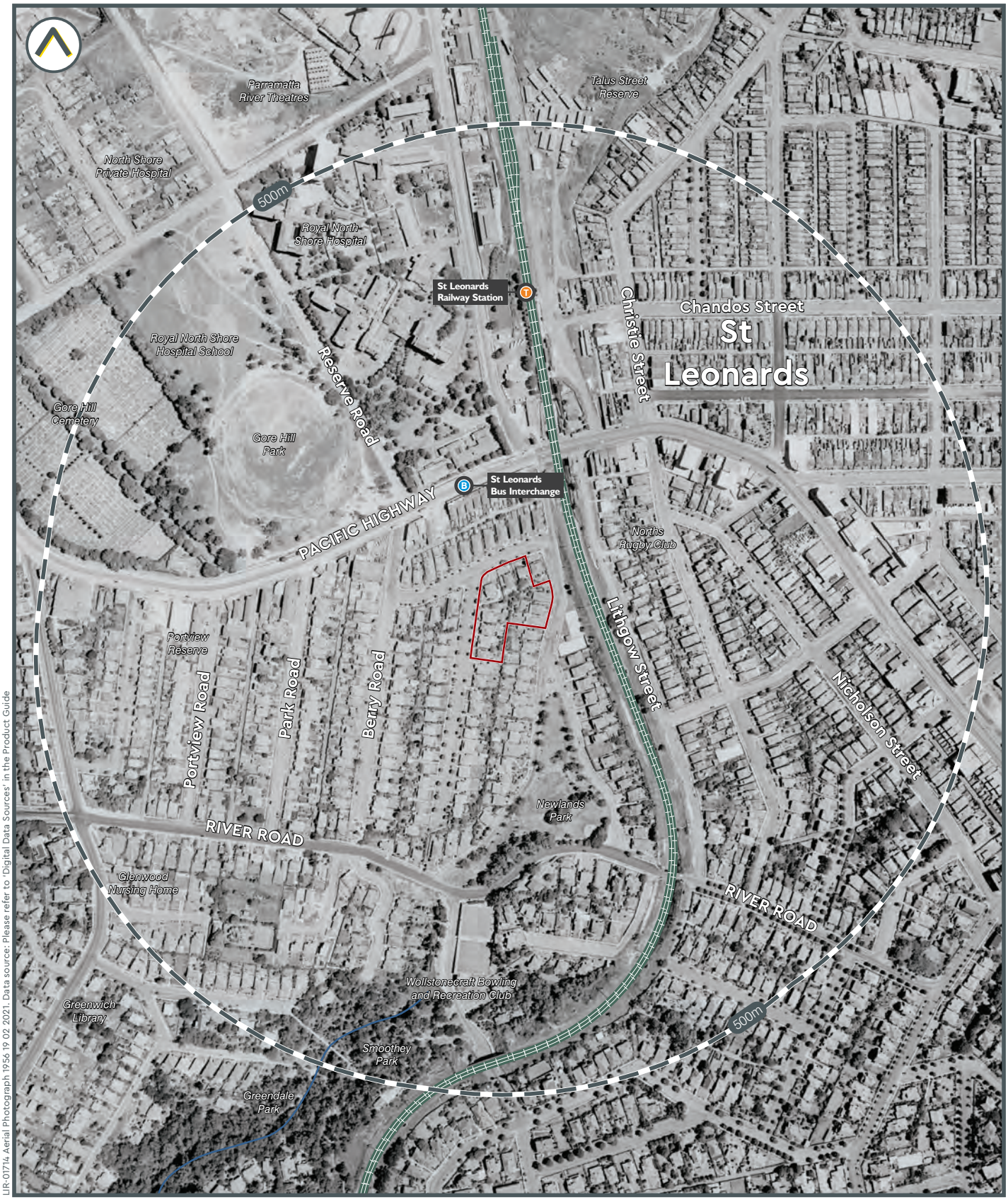
0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1956

MAP 14

Due Diligence Insight



Subject area

0 200m

LIR-01714 Aerial Photograph 1956 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1961

MAP 15

Due Diligence Insight

Subject area

0 200m

LIR-01714 Aerial Photograph 1961 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1965

MAP 16

Due Diligence Insight

LIR-01714 Aerial Photograph 1965 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1971

MAP 17

Due Diligence Insight

Subject area

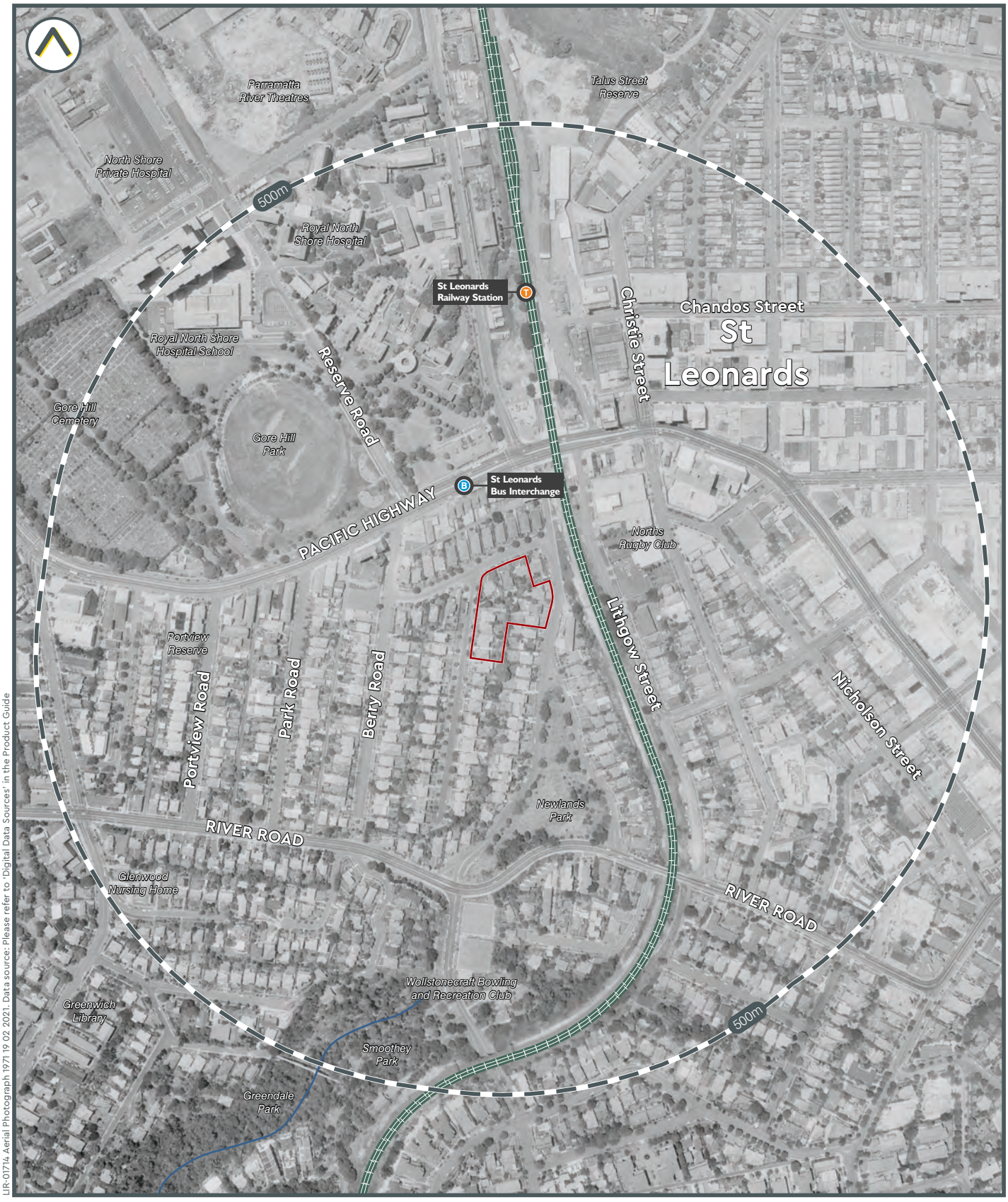
0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1976

MAP 18

Due Diligence Insight



Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1978

MAP 19

Due Diligence Insight

Subject area

0 200m

LIR-01714 Aerial Photograph 1978 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1986

MAP 20

Due Diligence Insight

Subject area

0 200m

LIR-01714 Aerial Photograph 1986 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1991

MAP 21

Due Diligence Insight

Subject area

0 200m

LIR-01714 Aerial Photograph 1991 19 02 2021, Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1994

MAP 22

Due Diligence Insight

LIR-01714 Aerial Photograph 1994 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 1998

MAP 23

Due Diligence Insight

LIR-01714 Aerial Photograph 1994 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2002

MAP 24

Due Diligence Insight

Subject area

0 200m

LIR-01714 Aerial Photograph 1994 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2004

MAP 25

Due Diligence Insight

LIR-01714 Aerial Photograph 1994 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

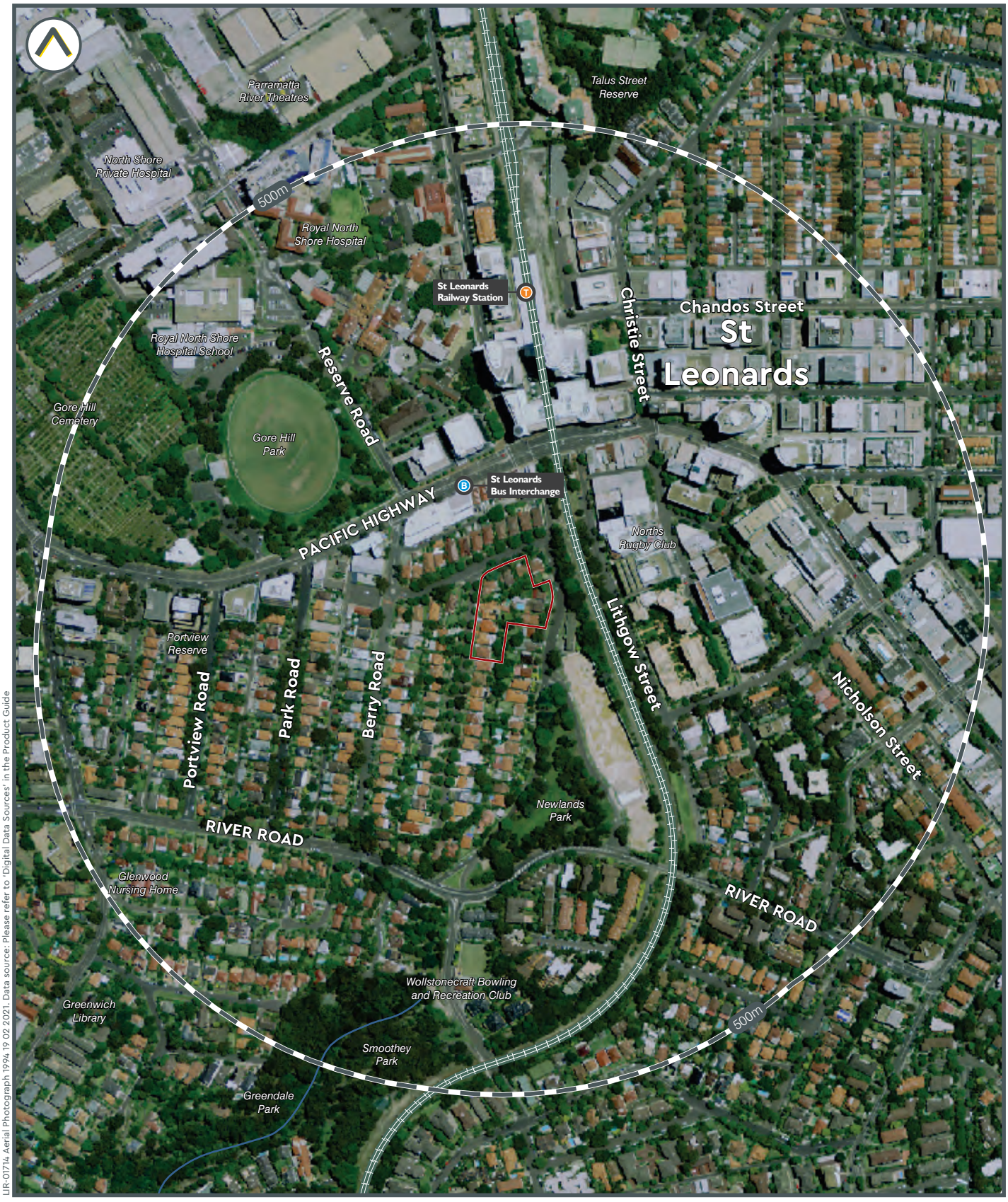
0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2007

MAP 26

Due Diligence Insight



LIR-01714 Aerial Photograph 1994 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2009

MAP 27

Due Diligence Insight

LIR-01714 Aerial Photograph 2009 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2012

MAP 28

Due Diligence Insight

LIR-01714 Aerial Photograph 2009 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2015

MAP 29

Due Diligence Insight

LIR-01714 Aerial Photograph 2015 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

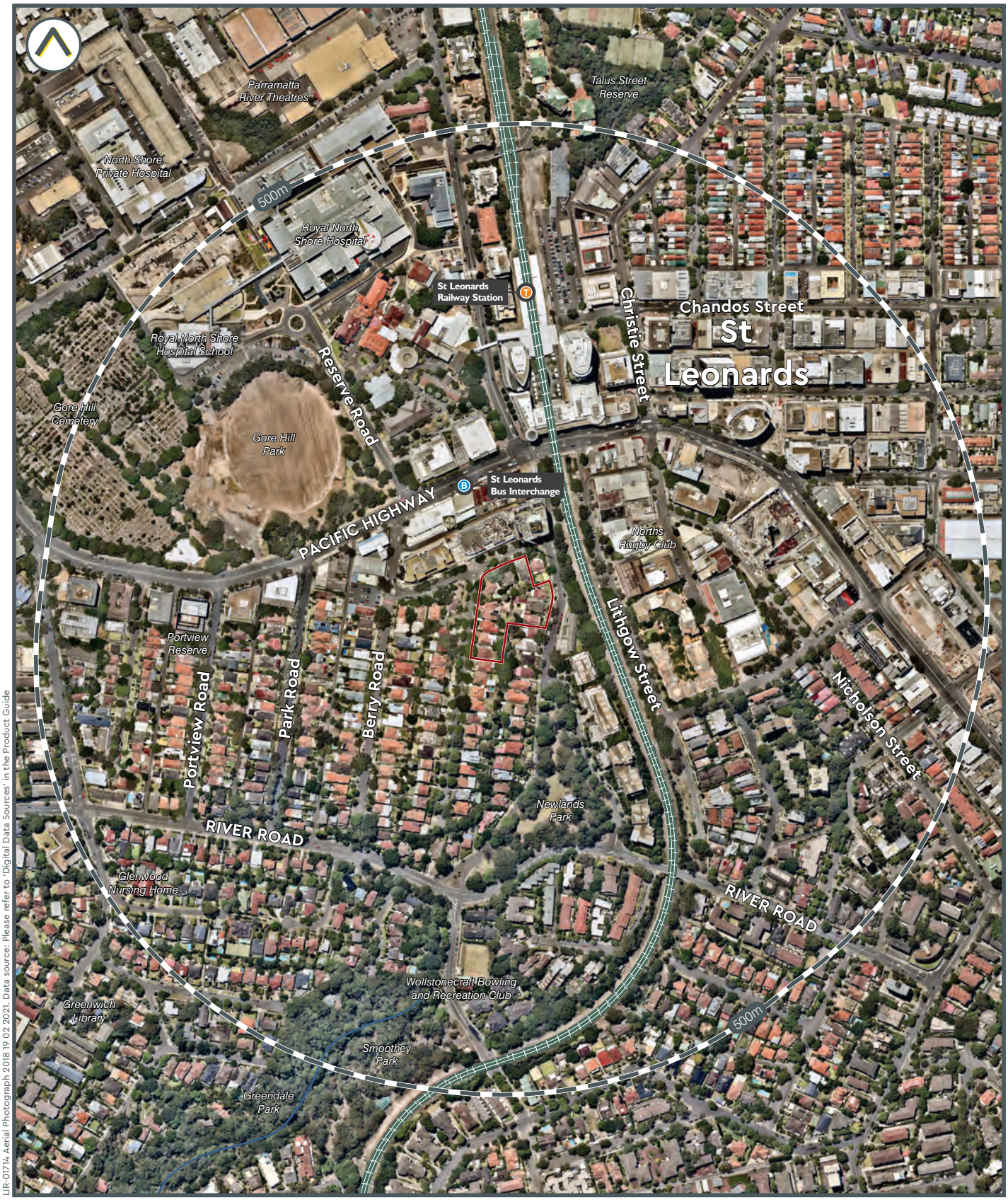
0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2018

MAP 30

Due Diligence Insight



LIR-01714 Aerial Photograph 2018 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 200m

Land Insight RESOURCES

HISTORIC AERIAL PHOTOGRAPH - 2020

MAP 31

Due Diligence Insight

Subject area

0 200m

LIR-01714 Aerial Photograph 2020 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

COUNTY OF CUMBERLAND PLANNING SCHEME - 1951

MAP 32

Due Diligence Insight

LIR-01714 Aerial Photograph 2018 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

1969-1991 1:25,000 TOPOGRAPHIC MAP (PARRAMATTA RIVER 9130-3N MAP 31

Due Diligence Insight

LIR-01714 Aerial Photograph 2020 19 02 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Land Insight RESOURCES

Appendix E Data Quality Objectives (DQO)

Step 1 – Defining the Problem

Preliminary assessment of contamination conditions at the site for due diligence purposes.

Step 2 – Identify the Decision

The following decisions were required to be made during the investigations:

- Has a preliminary assessment of contamination risk at the site been completed?
- Is additional assessment and/or management required at the site?

Step 3 – Identification of Inputs into the Decision

Inputs in the decision are:

- Site setting and history.
- Physical observations and photographs.
- Field screening of soil samples.
- Soil and groundwater analytical data.
- Site criteria.

Step 4 – Defining the Study Boundaries

The lateral study area is the site boundary as presented in Figure 2, Appendix A. The vertical extent of the investigation was between 0- 0.9m bgs.

Step 5 – Developing Decision Rules

The decision rules adopted to answer the decisions outlined in Step 2 are summarised in the following table:

Table E1: Summary of Decision Rules

No.	Decision to be Made	Decision Rule
1	Has a preliminary assessment of contamination risk at the site been completed?	If the scope of works detailed in Section 1.3 have been completed, the answer is yes.
2	Is additional assessment and/or management required at the site?	To be determined based on the findings of this investigation (refer to the conclusions in Section 11).

Step 6 – Specify Limits on Decision Errors

NSW EPA (1995) states that “Unless a site investigator can demonstrate otherwise, the EPA maintains that all statistical interpretation should be carried out at a confidence level of no lower than 95%”. To ensure compliance with this guideline, an overall acceptable error rate of <= 5% was adopted for this Project.

The pre-determined data quality indicators (DQIs) established for the Project are discussed below in relation to precision, accuracy, representativeness, comparability and completeness (PARCC parameters) as required by Step 6 of the DQO process.

Table E2: Data Quality Objectives and Indicators

Data Quality Objectives	Frequency	Data Quality Indicator
Precision		
Blind duplicates (intra laboratory) for primary COC only	1/20 Samples	<50% RPD
Laboratory duplicate	1/20 Samples	<50% RPD
Accuracy		
Surrogate spikes	All organic samples	70-130%
Laboratory control samples	1 per lab batch	70-130%
Matrix spikes	1 per lab batch	70-130%
Representativeness		
Sampling appropriate for media and analytes	-	Yes
Samples extracted and analysed within holding times.	-	Organics (7-14 days), inorganics (6 months)
Comparability		
Standard operating procedures for sample collection & handling	All samples	Yes
Standard analytical methods used for all analyses	All samples	Yes
Consistent field conditions, sampling staff and laboratory analysis	All samples	Yes
Limits of reporting appropriate and consistent	All samples	Yes
Completeness		
Sample description and COCs completed and appropriate	All samples	Yes
Appropriate documentation	All samples	Yes
Satisfactory frequency and result for QC samples	All samples	Yes
Data from critical samples is considered valid	-	Critical samples valid
Sensitivity		
Analytical methods and limits of recovery appropriate for media and adopted site assessment criteria	-	LOR<= Site assessment criteria

Step 7 – Optimise Design

With consideration to the investigation objectives, the review of available information, and the evaluation of operational decision rules, a resource-effective sampling and analysis plan is presented in Section 7 of the report.

Appendix F Borelogs

PROJECT NUMBER 21020	**DRILLING COMPANY** NA	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.6	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 25/02/21	**LOGGED BY** AM
		CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1	3	BH1_0.1			FILL: Gravelly silty sand, brown.		NO, NS, NAsb. NFCF
0.2					FILL: gravelly silty sand, brown.		NO, NS, NAsb. NFCF
0.5	3	BH1_0.5					
0.6					End of Borehole at 0.6m on refusal (potentially SDB)		

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PROJECT NUMBER 21020	**DRILLING COMPANY** NA	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.5	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 25/02/21	**LOGGED BY** AM
		CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
					LEAF LITTER		NO, NS, NAsb.
0.1	15	BH2_0.1			FILL / TOPSOIL: Clayey sand, dark brown		NO, NS, NAsb.
0.2					NATURAL: Sandy clay, light brown		NO, NS, NAsb.
0.3							
0.4	12	BH2_0.4					
0.5					End of Borehole at 0.5m programed depth		
0.6							
0.7							
0.8							
0.9							
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020
PROJECT NAME PSI New Hope St Leonards
CLIENT New Hope Group
ADDRESS St Leonards

DRILLING COMPANY NA
DRILLING METHOD HA
TOTAL DEPTH 0.3
DRILLING DATE 25/02/21

COORDINATES -
COORD SYS -
SURFACE ELEVATION -
LOGGED BY AM
CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1	10.6	BH3_0.1			TOPSOIL / FILL: dark brown		NO, NS, NAsb.
0.2							
0.3					Refusal on 0.3m PVC pipe		
0.4							
0.5							
0.6							
0.7							
0.8							
0.9							
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020	**DRILLING COMPANY** Morrow	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** SFA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 2.8	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 25/02/21	**LOGGED BY** AM
		CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.2		BH4_0.2			TOPSOIL / FILL: silty sand, dark brown, sandstone intrusions (cobbles)		NO, NS, NAsb.
0.8		BH4_1.0			NATURAL: Silty clay, grey to orange.		NO, NS, NAsb.
2.8					Refusal on 2.8m Sandstone		

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PROJECT NUMBER 21020
PROJECT NAME PSI New Hope St Leonards
CLIENT New Hope Group
ADDRESS St Leonards

DRILLING COMPANY NA
DRILLING METHOD HA
TOTAL DEPTH 0.3
DRILLING DATE 25/02/21

COORDINATES -
COORD SYS -
SURFACE ELEVATION -
LOGGED BY AM
CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1		BH5_0.1			TOPSOIL / FILL: dark brown, clayey sand		NO, NS, NAsb.
0.2							
0.3		BH5_0.3			Refusal on 0.3m on tree roots		
0.4							
0.5							
0.6							
0.7							
0.8							
0.9							
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020
PROJECT NAME PSI New Hope St Leonards
CLIENT New Hope Group
ADDRESS St Leonards

DRILLING COMPANY NA
DRILLING METHOD HA
TOTAL DEPTH 0.5
DRILLING DATE 25/02/21

COORDINATES -
COORD SYS -
SURFACE ELEVATION -
LOGGED BY AM
CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0					TOPSOIL / FILL: dark brown, clayey sand		NO, NS, NAsb.
0.1	6.7	BH7_0.1			CLAYEY SAND topsoil with inclusions of gravels and terracotta		NO, NS, NAsb
0.2							
0.3	3.9	BH7_0.3			CLAYEY SAND dark brown		NO, NS, NI, NAsb
0.4							
0.5	2.7	BH7_0.5					
0.5					Refusal on 0.5m on tree roots		
0.6							
0.7							
0.8							
0.9							
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020	**DRILLING COMPANY** -	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.3	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 25/02/21	**LOGGED BY** AM
		CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
					GRASS		NO, NS, NI, NAsb.
0.1					FILL / TOPSOIL: sandy clay, dark brown.		NO, NS, NI, NAsb
0.2		BH8_0.3					
0.3					Refusal on 0.3m on tree roots		
0.4							
0.5							
0.6							
0.7							
0.8							
0.9							
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020	**DRILLING COMPANY** -	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.9	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 25/02/21	**LOGGED BY** AM
		CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0					GRASS		NO, NS, NI, NAsb.
0.1		BH9_0.1			FILL: clayey sand / topsoil, dark brown		NO, NS, NI, NAsb
0.2							
0.3					FILL: silty clay, inclusions of light brown silty clay. Dark to light in depth.		NO, NS, NAsb.
0.4		BH9_0.4					
0.5							
0.6					FILL: silty clay		NO, NS, NI, NAsb.
0.7							
0.8		BH9_0.8					
0.9					Refusal on 0.9m on reached depth		
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020
PROJECT NAME PSI New Hope St Leonards
CLIENT New Hope Group
ADDRESS St Leonards

DRILLING COMPANY -
DRILLING METHOD HA
TOTAL DEPTH 0.9
DRILLING DATE 25/02/21

COORDINATES -
COORD SYS -
SURFACE ELEVATION -
LOGGED BY AM
CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0					GRASS		NO, NS, NI, NAsb.
0.1					FILL / TOPSOIL: silty clay, dark brown.		NO, NS, NI, NAsb
0.2							
0.3	4	BH10_0.3					
0.4							
0.5							
0.6							
0.7							
0.8							
0.9					Refusal on 0.9m on reached depth		
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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BH11

PROJECT NUMBER 21020	**DRILLING COMPANY** -	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.5	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 25/02/21	**LOGGED BY** AM
		CHECKED BY TC

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1					TOPSOIL / FILL: sandy clay, gravel, sandstone and terracotta inclusions.		NO, NS, NI, NAsb.
0.2							
0.3		BH10_0.3			SAND: light brown		NO, NS, NI, NAsb
0.4							
0.5					Refusal on 0.5m on roots		
0.6							
0.7							
0.8							
0.9							
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020	**DRILLING COMPANY** -	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.4	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 4/02/22	**LOGGED BY** TC
		CHECKED BY PH

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1		BH12_0.1			TOPSOIL / FILL: sandy clay, gravel and concrete inclusions.		NO, NS, NI, NAsb.
0.2							
0.3		BH12_0.3					
0.4					Refusal on 0.4m on suspected concrete		
0.5							
0.6							
0.7							
0.8							
0.9							
1							
1.1							
1.2							
1.3							
1.4							
1.5							
1.6							
1.7							
1.8							
1.9							

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PROJECT NUMBER 21020	**DRILLING COMPANY** -	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.7	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 4/02/22	**LOGGED BY** TC
		CHECKED BY PH

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1		BH13_0.1			TOPSOIL / FILL: sandy clay, concrete and sandstone inclusions.		NO, NS, NI, NAsb.
0.4		BH13_0.5			SANDY CLAY: light brown		NO, NS, NI, NAsb
0.7					E.O.H at 0.7m. Program depth.		

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PROJECT NUMBER 21020	**DRILLING COMPANY** -	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.7	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 4/02/22	**LOGGED BY** TC
		CHECKED BY PH

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1		BH14_0.1			TOPSOIL / FILL: sandy clay.		NO, NS, NI, NAsb.
0.5		BH14_0.5			SANDY CLAY: light brown		NO, NS, NI, NAsb
0.7					E.O.H at 0.7m. Program depth.		

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PROJECT NUMBER 21020	**DRILLING COMPANY** -	**COORDINATES** -
PROJECT NAME PSI New Hope St Leonards	**DRILLING METHOD** HA	**COORD SYS** -
CLIENT New Hope Group	**TOTAL DEPTH** 0.7	**SURFACE ELEVATION** -
ADDRESS St Leonards	**DRILLING DATE** 4/02/22	**LOGGED BY** TC
		CHECKED BY PH

COMMENTS NO = No Odour, NS = No Staining, NAsb = No Potential Asbestos Containing Material Observed, NI = No Observed Inclusions

Depth (m)	PID (ppm)	Samples	Water	Graphic Log	Material Description	Moisture	Additional Observations
0.1		BH15_0.1			TOPSOIL / FILL: sandy clay.		NO, NS, NI, NAsb.
0.4		BH15_0.4					
0.6					SANDY CLAY: light brown		NO, NS, NI, NAsb
0.8					E.O.H at 0.7m. Program depth.		

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Appendix G Laboratory Certificates

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 288102-A

Client Details

Client	Geosyntec
Attention	Tyler Creese
Address	Suite 1, Level 9, 189 Kent Street, Sydney, NSW, 2000

Sample Details

Your Reference	**21020**
Number of Samples	additional analysis
Date samples received	04/02/2022
Date completed instructions received	11/02/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	16/02/2022
Date of Issue	16/02/2022

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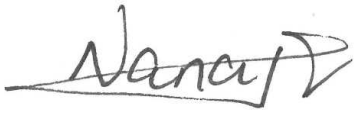
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Hannah Nguyen, Metals Supervisor
Kyle Gavrily, Chemist

Authorised By



Nancy Zhang, Laboratory Manager

TCLP Preparation - Acid				
Our Reference		288102-A-1	288102-A-3	288102-A-7
Your Reference	UNITS	BH5 (0.1)	BH7 (0.1)	BH13 (0.1)
Date Sampled		04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil
pH of soil for fluid# determ.	pH units	6.2	6.6	6.7
pH of soil TCLP (after HCl)	pH units	1.6	1.6	1.6
Extraction fluid used	-	1	1	1
pH of final Leachate	pH units	4.9	4.9	4.9

PAHs in TCLP (USEPA 1311)			
Our Reference	UNITS	288102-A-1	288102-A-7
Your Reference		BH5 (0.1)	BH13 (0.1)
Date Sampled		04/02/2022	04/02/2022
Type of sample		Soil	Soil
Date extracted	-	15/02/2022	15/02/2022
Date analysed	-	16/02/2022	16/02/2022
Naphthalene in TCLP	mg/L	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	114	110

Metals from Leaching Fluid pH 2.9 or 5			
Our Reference	UNITS	288102-A-1	288102-A-3
Your Reference		BH5 (0.1)	BH7 (0.1)
Date Sampled		04/02/2022	04/02/2022
Type of sample		Soil	Soil
Date extracted	-	14/02/2022	14/02/2022
Date analysed	-	14/02/2022	14/02/2022
Arsenic	mg/L	<0.05	<0.05
Cadmium	mg/L	<0.01	<0.01
Chromium	mg/L	<0.01	<0.01
Copper	mg/L	<0.01	<0.01
Lead	mg/L	0.1	0.07
Mercury	mg/L	<0.0005	<0.0005
Nickel	mg/L	<0.02	<0.02
Zinc	mg/L	0.4	0.5

Method ID	Methodology Summary
INORG-004	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Metals-020	Determination of various metals by ICP-AES following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.
Metals-021	Determination of Mercury by Cold Vapour AAS following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/02/2022	[NT]	[NT]	[NT]	[NT]	15/02/2022	[NT]
Date analysed	-			16/02/2022	[NT]	[NT]	[NT]	[NT]	16/02/2022	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	99	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	99	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	71	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	117	[NT]	[NT]	[NT]	[NT]	118	[NT]

QUALITY CONTROL: Metals from Leaching Fluid pH 2.9 or 5					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			14/02/2022	[NT]	[NT]	[NT]	[NT]	14/02/2022	[NT]
Date analysed	-			14/02/2022	[NT]	[NT]	[NT]	[NT]	14/02/2022	[NT]
Arsenic	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Cadmium	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	117	[NT]
Chromium	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	112	[NT]
Copper	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	115	[NT]
Lead	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	120	[NT]
Mercury	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	118	[NT]
Zinc	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	117	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client: Geosyntec	**Client Project Name and Number:** 21020	**Envirolab Services**	
Project Mgr: T.Creese		**12 Ashley St, Chatswood, NSW, 2067**	
Sampler: TC	**PO No.:**		
Address:	**Envirolab Services Quote No. :**	**Phone:** 02 9910 6200	
	Date results required: 5 Day TAT	**Fax:** 02 9910 6201	
Email: tyler.creese@geosyntec.com	**Or choose:**	**E-mail:** ahie@envirolabservices.com.au	
Phone: 61481775243 **Fax:**	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact:** Aileen Hie	

Sample information				Tests Required															Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combo 6a	PAH	8 Metals	CEC, pH	Combo 6											Provide as much information about the sample as you can
1	BH5 (0.1)	04/02/2022	Soil		X	X													Combo6a = 8 metals, TRH/BTEX, OCP/OPP, PCB, PAH, asbestos (AS4964)
2	BH5 (0.3)	04/02/2022	Soil																
3	BH7 (0.1)	04/02/2022	Soil																
4	BH7 (0.3)	04/02/2022	Soil		X	X													
5	BH12 (0.1)	04/02/2022	Soil																
6	BH12 (0.3)	04/02/2022	Soil	X															
7	BH13 (0.1)	04/02/2022	Soil	X															
8	BH13 (0.5)	04/02/2022	Soil				X												
9	BH14 (0.1)	04/02/2022	Soil	X															
10	BH14 (0.5)	04/02/2022	Soil																
11	BH15 (0.1)	04/02/2022	Soil																
12	BH15 (0.4) (0.5)	04/02/2022	Soil	X															
13	QC1	04/02/2022	Soil					X											
–	QA1	04/02/2022	Soil	Please send to euofins (analyse for Suite B9)															

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 258102
Date Received: 4/2/2022
Time Received: 1430
Received By:
Temp: Cool/Ambient
Cooling: Ice/Pack
Security: Intact

Relinquished by (company): Geosyntec	**Received by (company):** Env	**Samples Received:** Cool or Ambient (circle one)
Print Name: Tyler Creese	**Print Name:** ANG	**Temperature Recieved at:** 4°c (if applicable)
Date & Time: 4/2/22	**Date & Time:** 4/2/2022 1430	**Transported by:** Hand delivered / courier
Signature:	**Signature:**	**Page No:**

ELS Sighed K McIntyre 7/2/22 1200. CM

861143

Geosyntec Consultants Pty Ltd
Suite 1, Level 9, 189 Kent Street
Sydney
NSW 2000

Attention: **Tyler Creese**

Report **861143-S**
Project name 21020
Project ID 21020
Received Date Feb 07, 2022

Client Sample ID			**QA1**
Sample Matrix			**Soil**
Eurofins Sample No.			**S22-Fe11065**
Date Sampled			**Feb 04, 2022**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
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	%	76
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

Client Sample ID			QA1
Sample Matrix			Soil
Eurofins Sample No.			S22-Fe11065
Date Sampled			Feb 04, 2022
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	97
p-Terphenyl-d14 (surr.)	1	%	88
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05
a-HCH	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-HCH	0.05	mg/kg	< 0.05
d-HCH	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	0.5	mg/kg	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	87
Tetrachloro-m-xylene (surr.)	1	%	99
Heavy Metals			
Arsenic	2	mg/kg	3.2
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	16
Copper	5	mg/kg	55
Lead	5	mg/kg	41
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	5.4
Zinc	5	mg/kg	88
% Moisture	1	%	16

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

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

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B9			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Feb 08, 2022	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 08, 2022	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 08, 2022	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Feb 08, 2022	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Feb 08, 2022	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Feb 08, 2022	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	Feb 08, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Feb 08, 2022	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins | Environment Testing

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IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: Geosyntec Consultants Pty Ltd
Address: Suite 1, Level 9, 189 Kent Street
Sydney
NSW 2000

Project Name: 21020
Project ID: 21020

Order No.:
Report #: 861143
Phone: 02 9251 8070
Fax:

Received: Feb 7, 2022 2:20 PM
Due: Feb 14, 2022
Priority: 5 Day
Contact Name: Tyler Creese

Eurofins Analytical Services Manager : Asim Khan

Sample Detail						Moisture Set	Eurofins Suite B9
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QA1	Feb 04, 2022		Soil	S22-Fe11065	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 follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
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.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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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. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. 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							
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	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
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							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	95			70-130	Pass	
TRH C10-C14	%	125			70-130	Pass	
Naphthalene	%	94			70-130	Pass	
TRH C6-C10	%	93			70-130	Pass	
TRH >C10-C16	%	117			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	120			70-130	Pass	
Toluene	%	116			70-130	Pass	
Ethylbenzene	%	113			70-130	Pass	
m&p-Xylenes	%	89			70-130	Pass	
o-Xylene	%	88			70-130	Pass	
Xylenes - Total*	%	89			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	94			70-130	Pass	
Acenaphthylene	%	96			70-130	Pass	
Anthracene	%	91			70-130	Pass	
Benz(a)anthracene	%	88			70-130	Pass	
Benzo(a)pyrene	%	93			70-130	Pass	
Benzo(b&j)fluoranthene	%	99			70-130	Pass	
Benzo(g.h.i)perylene	%	90			70-130	Pass	
Benzo(k)fluoranthene	%	90			70-130	Pass	
Chrysene	%	92			70-130	Pass	
Dibenz(a.h)anthracene	%	87			70-130	Pass	
Fluoranthene	%	91			70-130	Pass	
Fluorene	%	96			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	88			70-130	Pass	
Naphthalene	%	93			70-130	Pass	
Phenanthrene	%	105			70-130	Pass	
Pyrene	%	91			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	74			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
4.4'-DDD	%	78			70-130	Pass	
4.4'-DDE	%	70			70-130	Pass	
4.4'-DDT	%	90			70-130	Pass	
a-HCH	%	73			70-130	Pass	
Aldrin	%	84			70-130	Pass	
b-HCH	%	84			70-130	Pass	
d-HCH	%	79			70-130	Pass	
Dieldrin	%	72			70-130	Pass	
Endosulfan I	%	79			70-130	Pass	
Endosulfan II	%	87			70-130	Pass	
Endosulfan sulphate	%	74			70-130	Pass	
Endrin	%	91			70-130	Pass	
Endrin aldehyde	%	74			70-130	Pass	
Endrin ketone	%	73			70-130	Pass	
g-HCH (Lindane)	%	73			70-130	Pass	
Heptachlor	%	88			70-130	Pass	
Heptachlor epoxide	%	72			70-130	Pass	
Hexachlorobenzene	%	73			70-130	Pass	
Methoxychlor	%	80			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	99			80-120	Pass	
Cadmium	%	105			80-120	Pass	
Chromium	%	106			80-120	Pass	
Copper	%	104			80-120	Pass	
Lead	%	105			80-120	Pass	
Mercury	%	99			80-120	Pass	
Nickel	%	104			80-120	Pass	
Zinc	%	97			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S22-Fe11736	NCP	%	93			70-130	Pass	
TRH C10-C14	S22-Fe10986	NCP	%	118			70-130	Pass	
Naphthalene	S22-Fe11736	NCP	%	73			70-130	Pass	
TRH C6-C10	S22-Fe11736	NCP	%	93			70-130	Pass	
TRH >C10-C16	S22-Fe10986	NCP	%	110			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S22-Fe11736	NCP	%	97			70-130	Pass	
Toluene	S22-Fe11736	NCP	%	92			70-130	Pass	
Ethylbenzene	S22-Fe11736	NCP	%	86			70-130	Pass	
m&p-Xylenes	S22-Fe11736	NCP	%	91			70-130	Pass	
o-Xylene	S22-Fe11736	NCP	%	87			70-130	Pass	
Xylenes - Total*	S22-Fe11736	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S22-Fe15974	NCP	%	81			70-130	Pass	
Acenaphthylene	S22-Fe15974	NCP	%	84			70-130	Pass	
Anthracene	S22-Fe15974	NCP	%	78			70-130	Pass	
Benz(a)anthracene	S22-Fe15974	NCP	%	79			70-130	Pass	
Benzo(a)pyrene	S22-Fe15974	NCP	%	86			70-130	Pass	
Benzo(b&j)fluoranthene	S22-Fe15974	NCP	%	88			70-130	Pass	
Benzo(g.h.i)perylene	S22-Fe15974	NCP	%	87			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(k)fluoranthene	S22-Fe15974	NCP	%	86			70-130	Pass	
Chrysene	S22-Fe15974	NCP	%	87			70-130	Pass	
Dibenz(a.h)anthracene	S22-Fe15974	NCP	%	79			70-130	Pass	
Fluoranthene	S22-Fe15974	NCP	%	87			70-130	Pass	
Fluorene	S22-Fe15974	NCP	%	87			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S22-Fe15974	NCP	%	82			70-130	Pass	
Naphthalene	S22-Fe15974	NCP	%	90			70-130	Pass	
Phenanthrene	S22-Fe15974	NCP	%	82			70-130	Pass	
Pyrene	S22-Fe15974	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S22-Fe15974	NCP	%	95			70-130	Pass	
4.4'-DDD	S22-Fe15974	NCP	%	90			70-130	Pass	
4.4'-DDE	S22-Fe15974	NCP	%	85			70-130	Pass	
4.4'-DDT	S22-Fe15974	NCP	%	105			70-130	Pass	
a-HCH	S22-Fe15974	NCP	%	90			70-130	Pass	
Aldrin	S22-Fe15974	NCP	%	85			70-130	Pass	
b-HCH	S22-Fe15974	NCP	%	87			70-130	Pass	
d-HCH	S22-Fe15974	NCP	%	93			70-130	Pass	
Dieldrin	S22-Fe15974	NCP	%	91			70-130	Pass	
Endosulfan I	S22-Fe15974	NCP	%	98			70-130	Pass	
Endosulfan II	S22-Fe15974	NCP	%	87			70-130	Pass	
Endosulfan sulphate	S22-Fe15974	NCP	%	97			70-130	Pass	
Endrin	S22-Fe15974	NCP	%	103			70-130	Pass	
Endrin aldehyde	S22-Fe15974	NCP	%	87			70-130	Pass	
Endrin ketone	S22-Fe15974	NCP	%	95			70-130	Pass	
g-HCH (Lindane)	S22-Fe15974	NCP	%	94			70-130	Pass	
Heptachlor	S22-Fe15974	NCP	%	99			70-130	Pass	
Heptachlor epoxide	S22-Fe15974	NCP	%	91			70-130	Pass	
Hexachlorobenzene	S22-Fe15974	NCP	%	92			70-130	Pass	
Methoxychlor	S22-Fe15974	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S22-Fe11183	NCP	%	116			75-125	Pass	
Cadmium	S22-Fe09862	NCP	%	112			75-125	Pass	
Chromium	S22-Fe09862	NCP	%	117			75-125	Pass	
Copper	S22-Fe11183	NCP	%	116			75-125	Pass	
Lead	S22-Fe09862	NCP	%	103			75-125	Pass	
Mercury	S22-Fe11183	NCP	%	117			75-125	Pass	
Nickel	S22-Fe11183	NCP	%	123			75-125	Pass	
Zinc	S22-Fe09862	NCP	%	105			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S22-Fe11740	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S22-Fe10995	NCP	mg/kg	< 20	23	17	30%	Pass	
TRH C15-C28	S22-Fe10995	NCP	mg/kg	160	170	8.0	30%	Pass	
TRH C29-C36	S22-Fe10995	NCP	mg/kg	110	120	4.0	30%	Pass	
Naphthalene	S22-Fe11740	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S22-Fe11740	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S22-Fe10995	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S22-Fe10995	NCP	mg/kg	230	240	6.0	30%	Pass	
TRH >C34-C40	S22-Fe10995	NCP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S22-Fe11740	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S22-Fe11740	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S22-Fe11740	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S22-Fe11740	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S22-Fe11740	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S22-Fe11740	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S22-Fe15973	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S22-Fe15973	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	S22-Fe15973	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S22-Fe11185	NCP	mg/kg	14	23	50	30%	Fail	Q15
Cadmium	S22-Fe11185	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S22-Fe11185	NCP	mg/kg	24	41	53	30%	Fail	Q15
Copper	S22-Fe11185	NCP	mg/kg	34	49	36	30%	Fail	Q15
Lead	S22-Fe11185	NCP	mg/kg	22	37	51	30%	Fail	Q15

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Mercury	S22-Fe11185	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S22-Fe11185	NCP	mg/kg	20	30	42	30%	Fail	Q15
Zinc	S22-Fe11185	NCP	mg/kg	93	150	46	30%	Fail	Q02
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S22-Fe10991	NCP	%	10	9.4	7.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Asim Khan	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)
Roopesh Rangarajan	Senior Analyst-Volatile (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

coc recd : 1430

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client: Geosyntec	**Client Project Name and Number:** 21020	**Envirolab Services**	
Project Mgr: T.Creese		12 Ashley St, Chatswood, NSW, 2067	
Sampler: TC	**PO No.:**		
Address:	**Envirolab Services Quote No. :**	**Phone:** 02 9910 6200	
	Date results required: 5 Day TAT	**Fax:** 02 9910 6201	
Email: tyler.creese@geosyntec.com	**Or choose:**	**E-mail:** ahie@envirolabservices.com.au	
Phone: 61481775243 **Fax:**	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact:** Aileen Hie	

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combo 6a	PAH	8 Metals	CEC, pH	Combo 6										Provide as much information about the sample as you can
1	BH5 (0.1)	04/02/2022	Soil		X	X												
2	BH5 (0.3)	04/02/2022	Soil															Combo6a = 8 metals, TRH/BTEX, OCP/OPP, PCB, PAH, asbestos (AS4964)
3	BH7 (0.1)	04/02/2022	Soil															
4	BH7 (0.3)	04/02/2022	Soil		X	X												
5	BH12 (0.1)	04/02/2022	Soil															
6	BH12 (0.3)	04/02/2022	Soil	X														
7	BH13 (0.1)	04/02/2022	Soil	X														
8	BH13 (0.5)	04/02/2022	Soil				X											
9	BH14 (0.1)	04/02/2022	Soil	X														
10	BH14 (0.5)	04/02/2022	Soil															
11	BH15 (0.1)	04/02/2022	Soil															
12	BH15 (0.4) (0.5)	04/02/2022	Soil	X														
13	QC1	04/02/2022	Soil					X										
–	QA1	04/02/2022	Soil	Please send to euofins (analyse for Suite B9)														

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Lab No: 288102
Date Received: 4/2/2022
Time Received: 1430
Received By:
Temp: Cool/Ambient
Cooling: Ice / Pack
Security: Intact

Relinquished by (company): Geosyntec	**Received by (company):** EG	**Samples Received:** Cool or Ambient (circle one)
Print Name: Tyler Creese	**Print Name:** DNG	**Temperature Recieved at:** 4°c (if applicable)
Date & Time: 4/2/22	**Date & Time:** 4/2/2022 1430	**Transported by:** Hand delivered / courier
Signature:	**Signature:**	**Page No:**

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 288102

Client Details

Client	Geosyntec
Attention	Tyler Creese
Address	Suite 1, Level 9, 189 Kent Street, Sydney, NSW, 2000

Sample Details

Your Reference	**21020**
Number of Samples	13 Soil
Date samples received	04/02/2022
Date completed instructions received	04/02/2022

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	11/02/2022
Date of Issue	11/02/2022

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Panika Wongchanda
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Josh Williams, LC Supervisor
Kyle Gavrily, Chemist
Lucy Zhu, Asbestos Supervisor
Priya Samarawickrama, Senior Chemist
Thomas Beenie, Lab Technician

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		288102-6	288102-7	288102-9	288102-12	288102-13
Your Reference	UNITS	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_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
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	89	102	92	89	91

svTRH (C10-C40) in Soil						
Our Reference	UNITS	288102-6	288102-7	288102-9	288102-12	288102-13
Your Reference		BH12 (0.3)	BH13 (0.1)	BH14 (0.1)	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	200	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	150	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	350	<50	<50	<50
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	310	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	310	<50	<50	<50
Surrogate o-Terphenyl	%	87	98	91	83	85

PAHs in Soil						
Our Reference		288102-1	288102-4	288102-6	288102-7	288102-9
Your Reference	UNITS	BH5 (0.1)	BH7 (0.3)	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	0.9	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Phenanthrene	mg/kg	0.9	1.1	<0.1	4.7	0.2
Anthracene	mg/kg	0.4	0.5	<0.1	1.1	<0.1
Fluoranthene	mg/kg	2.5	2.2	<0.1	10	0.5
Pyrene	mg/kg	2.7	2.3	<0.1	11	0.4
Benzo(a)anthracene	mg/kg	1.1	0.8	<0.1	5.5	0.3
Chrysene	mg/kg	1.2	1	<0.1	6.5	0.2
Benzo(b,j+k)fluoranthene	mg/kg	2.1	2	<0.2	6.9	0.4
Benzo(a)pyrene	mg/kg	1.5	1.1	<0.05	4.3	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	0.7	0.6	<0.1	2.0	0.1
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	<0.1	0.8	<0.1
Benzo(g,h,i)perylene	mg/kg	0.9	0.8	<0.1	2.5	0.2
Total +ve PAH's	mg/kg	14	12	<0.05	56	2.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	2.1	1.6	<0.5	6.6	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	2.1	1.6	<0.5	6.6	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	2.1	1.6	<0.5	6.6	<0.5
Surrogate p-Terphenyl-d14	%	100	104	96	102	93

PAHs in Soil			
Our Reference		288102-12	288102-13
Your Reference	UNITS	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022
Type of sample		Soil	Soil
Date extracted	-	07/02/2022	07/02/2022
Date analysed	-	07/02/2022	07/02/2022
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	1	0.3
Pyrene	mg/kg	0.8	0.3
Benzo(a)anthracene	mg/kg	0.5	0.2
Chrysene	mg/kg	0.4	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.8	0.3
Benzo(a)pyrene	mg/kg	0.4	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	0.3	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	0.1
Total +ve PAH's	mg/kg	4.6	1.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.6	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.7	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.7	<0.5
Surrogate p-Terphenyl-d14	%	102	96

Organochlorine Pesticides in soil						
Our Reference		288102-6	288102-7	288102-9	288102-12	288102-13
Your Reference	UNITS	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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
Endosulfan II	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
Endrin Aldehyde	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
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	94	94	97	98

Organophosphorus Pesticides in Soil						
Our Reference		288102-6	288102-7	288102-9	288102-12	288102-13
Your Reference	UNITS	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	94	94	97	98

PCBs in Soil						
Our Reference		288102-6	288102-7	288102-9	288102-12	288102-13
Your Reference	UNITS	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	94	94	97	98

Acid Extractable metals in soil						
Our Reference		288102-1	288102-4	288102-6	288102-7	288102-9
Your Reference	UNITS	BH5 (0.1)	BH7 (0.3)	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
Arsenic	mg/kg	<4	4	<4	<4	29
Cadmium	mg/kg	<0.4	0.8	<0.4	<0.4	<0.4
Chromium	mg/kg	7	16	6	11	7
Copper	mg/kg	25	52	8	27	23
Lead	mg/kg	270	340	18	18	190
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	4	3	3	2
Zinc	mg/kg	120	250	21	57	81

Acid Extractable metals in soil			
Our Reference		288102-12	288102-13
Your Reference	UNITS	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022
Type of sample		Soil	Soil
Date prepared	-	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	5	15
Copper	mg/kg	17	130
Lead	mg/kg	110	23
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	2	3
Zinc	mg/kg	75	57

Moisture						
Our Reference		288102-1	288102-4	288102-6	288102-7	288102-9
Your Reference	UNITS	BH5 (0.1)	BH7 (0.3)	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
Moisture	%	20	23	9.4	18	18

Moisture			
Our Reference		288102-12	288102-13
Your Reference	UNITS	BH15 (0.4)	QC1
Date Sampled		04/02/2022	04/02/2022
Type of sample		Soil	Soil
Date prepared	-	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022
Moisture	%	14	19

Asbestos ID - soils					
Our Reference		288102-6	288102-7	288102-9	288102-12
Your Reference	UNITS	BH12 (0.3)	BH13 (0.1)	BH14 (0.1)	BH15 (0.4)
Date Sampled		04/02/2022	04/02/2022	04/02/2022	04/02/2022
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Sample mass tested	g	Approx. 50g	Approx. 30g	Approx. 30g	Approx. 30g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil		
Our Reference		288102-8
Your Reference	UNITS	BH13 (0.5)
Date Sampled		04/02/2022
Type of sample		Soil
Date prepared	-	07/02/2022
Date analysed	-	07/02/2022
pH 1:5 soil:water	pH Units	6.4

CEC		
Our Reference	UNITS	288102-8
Your Reference		BH13 (0.5)
Date Sampled		04/02/2022
Type of sample		Soil
Date prepared	-	07/02/2022
Date analysed	-	09/02/2022
Exchangeable Ca	meq/100g	5.3
Exchangeable K	meq/100g	0.2
Exchangeable Mg	meq/100g	0.5
Exchangeable Na	meq/100g	<0.1
Cation Exchange Capacity	meq/100g	6.0

Method ID	Methodology Summary
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.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	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-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Date analysed	-			08/02/2022	9	08/02/2022	08/02/2022		08/02/2022	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	9	<25	<25	0	93	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	9	<25	<25	0	93	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	9	<0.2	<0.2	0	98	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	9	<0.5	<0.5	0	83	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	9	<1	<1	0	85	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	9	<2	<2	0	99	[NT]
o-Xylene	mg/kg	1	Org-023	<1	9	<1	<1	0	100	[NT]
Naphthalene	mg/kg	1	Org-023	<1	9	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	103	9	92	86	7	93	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Date analysed	-			08/02/2022	9	08/02/2022	08/02/2022		08/02/2022	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	9	<50	<50	0	85	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	9	<100	<100	0	86	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	9	<100	<100	0	109	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	9	<50	<50	0	85	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	9	<100	<100	0	86	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	9	<100	<100	0	109	[NT]
Surrogate o-Terphenyl	%		Org-020	84	9	91	82	10	105	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Date analysed	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	84	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	81	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	84	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	9	0.2	0.4	67	104	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	9	0.5	0.8	46	98	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	9	0.4	0.6	40	91	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	9	0.3	0.4	29	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	9	0.2	0.3	40	69	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	9	0.4	0.6	40	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	9	0.2	0.3	40	98	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	9	0.1	0.2	67	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	9	0.2	0.3	40	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	97	9	93	97	4	97	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Date analysed	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	80	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	82	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	89	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	89	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	96	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	88	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	92	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	96	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	92	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	76	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	101	9	94	98	4	88	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Date analysed	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	104	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	95	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	95	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	114	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	102	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	93	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	82	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	101	9	94	98	4	88	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Date analysed	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	92	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	101	9	94	98	4	88	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			07/02/2022	9	07/02/2022	07/02/2022		07/02/2022	[NT]
Date analysed	-			08/02/2022	9	08/02/2022	08/02/2022		08/02/2022	[NT]
Arsenic	mg/kg	4	Metals-020	<4	9	29	19	42	102	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	9	<0.4	<0.4	0	100	[NT]
Chromium	mg/kg	1	Metals-020	<1	9	7	6	15	100	[NT]
Copper	mg/kg	1	Metals-020	<1	9	23	18	24	100	[NT]
Lead	mg/kg	1	Metals-020	<1	9	190	150	24	102	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	9	<0.1	<0.1	0	120	[NT]
Nickel	mg/kg	1	Metals-020	<1	9	2	2	0	101	[NT]
Zinc	mg/kg	1	Metals-020	<1	9	81	64	23	97	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			07/02/2022	[NT]	[NT]	[NT]	[NT]	07/02/2022	[NT]
Date analysed	-			07/02/2022	[NT]	[NT]	[NT]	[NT]	07/02/2022	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			07/02/2022	[NT]	[NT]	[NT]	[NT]	07/02/2022	[NT]
Date analysed	-			09/02/2022	[NT]	[NT]	[NT]	[NT]	09/02/2022	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos: Excessive sample volume was provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples 288102-6, 7, 9, 12 were sub-sampled from bags provided by the client.

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CERTIFICATE OF ANALYSIS 262917

Client Details

Client	Zoic Environmental
Attention	Tyler Creese
Address	Suite 1, Level 9, 189 Kent Street, Sydney, NSW, 2000

Sample Details

Your Reference	**21020**
Number of Samples	21 SOIL
Date samples received	26/02/2021
Date completed instructions received	26/02/2021

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	05/03/2021
Date of Issue	03/03/2021

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vTRH(C6-C10)/BTEXN in Soil						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_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
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	75	76	81	75	78

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-20
Your Reference	UNITS	BH08	BH09	BH10	BH11	DUP-1
Depth		0.3	0.4	0.3	0.5	-
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_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
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	82	72	73	81	73

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		262917-21
Your Reference	UNITS	BH01
Depth		0.5
Date Sampled		25/02/2021
Type of sample		SOIL
Date extracted	-	01/03/2021
Date analysed	-	02/03/2021
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	78

svTRH (C10-C40) in Soil						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	220	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	270	<100	<100	140
TRH >C_{10} -C_{16}	mg/kg	<50	66	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	66	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	370	<100	110	170
TRH >C_{34} -C_{40}	mg/kg	<100	160	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	600	<50	110	170
Surrogate o-Terphenyl	%	81	94	87	85	87

svTRH (C10-C40) in Soil						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-20
Your Reference	UNITS	BH08	BH09	BH10	BH11	DUP-1
Depth		0.3	0.4	0.3	0.5	-
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	84	88	83	83

svTRH (C10-C40) in Soil		
Our Reference		262917-21
Your Reference	UNITS	BH01
Depth		0.5
Date Sampled		25/02/2021
Type of sample		SOIL
Date extracted	-	01/03/2021
Date analysed	-	01/03/2021
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	80

PAHs in Soil						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
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	0.7	<0.1	0.2	1.5	1.8
Anthracene	mg/kg	0.2	<0.1	<0.1	0.3	0.3
Fluoranthene	mg/kg	1.6	<0.1	0.4	3.3	4.0
Pyrene	mg/kg	1.5	<0.1	0.4	3.0	3.6
Benzo(a)anthracene	mg/kg	0.7	<0.1	0.1	1.5	1.7
Chrysene	mg/kg	0.7	<0.1	0.2	1.4	1.7
Benzo(b,j+k)fluoranthene	mg/kg	1	<0.2	0.3	2.4	3.1
Benzo(a)pyrene	mg/kg	0.79	<0.05	0.2	1.6	1.9
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6	<0.1	0.1	1.1	1.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(g,h,i)perylene	mg/kg	0.5	<0.1	0.1	1.0	1.2
Total +ve PAH's	mg/kg	8.5	<0.05	1.9	18	21
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.1	<0.5	<0.5	2.1	2.8
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.1	<0.5	<0.5	2.2	2.8
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.2	<0.5	<0.5	2.2	2.8
Surrogate p-Terphenyl-d14	%	97	103	96	100	101

PAHs in Soil						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-20
Your Reference	UNITS	BH08	BH09	BH10	BH11	DUP-1
Depth		0.3	0.4	0.3	0.5	-
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
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	1.0	<0.1	0.2	0.2	1.8
Anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	0.4
Fluoranthene	mg/kg	2.2	0.2	0.6	0.4	3.7
Pyrene	mg/kg	2.0	0.1	0.6	0.4	3.4
Benzo(a)anthracene	mg/kg	0.9	<0.1	0.3	0.2	1.6
Chrysene	mg/kg	0.9	<0.1	0.3	0.2	1.6
Benzo(b,j+k)fluoranthene	mg/kg	2	<0.2	0.5	0.4	2.7
Benzo(a)pyrene	mg/kg	1.0	<0.05	0.3	0.3	1.7
Indeno(1,2,3-c,d)pyrene	mg/kg	0.8	<0.1	0.2	0.2	1.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(g,h,i)perylene	mg/kg	0.7	<0.1	0.2	0.2	1.1
Total +ve PAH's	mg/kg	12	0.3	3.1	2.5	20
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.4	<0.5	<0.5	<0.5	2.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.4	<0.5	<0.5	<0.5	2.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.5	<0.5	<0.5	<0.5	2.5
Surrogate p-Terphenyl-d14	%	99	101	102	99	99

PAHs in Soil		
Our Reference		262917-21
Your Reference	UNITS	BH01
Depth		0.5
Date Sampled		25/02/2021
Type of sample		SOIL
Date extracted	-	01/03/2021
Date analysed	-	01/03/2021
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.2
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.6
Pyrene	mg/kg	0.5
Benzo(a)anthracene	mg/kg	0.3
Chrysene	mg/kg	0.3
Benzo(b,j+k)fluoranthene	mg/kg	0.6
Benzo(a)pyrene	mg/kg	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2
Total +ve PAH's	mg/kg	3.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.6
Surrogate p-Terphenyl-d14	%	100

Organochlorine Pesticides in soil						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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
Endosulfan II	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
Endrin Aldehyde	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
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	97	99	100	102

Organochlorine Pesticides in soil						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-20
Your Reference	UNITS	BH08	BH09	BH10	BH11	DUP-1
Depth		0.3	0.4	0.3	0.5	-
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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
Endosulfan II	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
Endrin Aldehyde	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
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	100	100	99	99

Organochlorine Pesticides in soil		
Our Reference		262917-21
Your Reference	UNITS	BH01
Depth		0.5
Date Sampled		25/02/2021
Type of sample		SOIL
Date extracted	-	01/03/2021
Date analysed	-	01/03/2021
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	100

PCBs in Soil						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	97	99	100	102

PCBs in Soil						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-20
Your Reference	UNITS	BH08	BH09	BH10	BH11	DUP-1
Depth		0.3	0.4	0.3	0.5	-
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	100	100	99	99

PCBs in Soil		
Our Reference		262917-21
Your Reference	UNITS	BH01
Depth		0.5
Date Sampled		25/02/2021
Type of sample		SOIL
Date extracted	-	01/03/2021
Date analysed	-	01/03/2021
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	100

Acid Extractable metals in soil						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
Date analysed	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
Arsenic	mg/kg	<4	<4	5	4	37
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	12	12	8	14
Copper	mg/kg	15	33	13	25	40
Lead	mg/kg	44	24	52	270	110
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Nickel	mg/kg	2	8	2	4	4
Zinc	mg/kg	48	70	24	150	110

Acid Extractable metals in soil						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-20
Your Reference	UNITS	BH08	BH09	BH10	BH11	DUP-1
Depth		0.3	0.4	0.3	0.5	-
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
Date analysed	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
Arsenic	mg/kg	5	<4	5	<4	35
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	6	6	9	10
Copper	mg/kg	20	6	35	180	32
Lead	mg/kg	78	17	83	170	77
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	0.1
Nickel	mg/kg	4	2	2	6	3
Zinc	mg/kg	77	19	100	160	89

Acid Extractable metals in soil		
Our Reference		262917-21
Your Reference	UNITS	BH01
Depth		0.5
Date Sampled		25/02/2021
Type of sample		SOIL
Date prepared	-	02/03/2021
Date analysed	-	02/03/2021
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	8
Copper	mg/kg	14
Lead	mg/kg	29
Mercury	mg/kg	<0.1
Nickel	mg/kg	2
Zinc	mg/kg	38

Moisture						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
Moisture	%	19	28	18	22	20

Moisture						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-20
Your Reference	UNITS	BH08	BH09	BH10	BH11	DUP-1
Depth		0.3	0.4	0.3	0.5	-
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	01/03/2021	01/03/2021	01/03/2021	01/03/2021	01/03/2021
Date analysed	-	02/03/2021	02/03/2021	02/03/2021	02/03/2021	02/03/2021
Moisture	%	23	18	26	13	19

Moisture		
Our Reference		262917-21
Your Reference	UNITS	BH01
Depth		0.5
Date Sampled		25/02/2021
Type of sample		SOIL
Date prepared	-	01/03/2021
Date analysed	-	02/03/2021
Moisture	%	13

Asbestos ID - soils						
Our Reference		262917-2	262917-4	262917-6	262917-8	262917-11
Your Reference	UNITS	BH02	BH03	BH04	BH05	BH07
Depth		0.1	0.3	0.6	0.1	0.3
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	03/03/2021	03/03/2021	03/03/2021	03/03/2021	03/03/2021
Sample mass tested	g	Approx. 25g	Approx. 15g	Approx. 45g	Approx. 35g	Approx. 40g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		262917-13	262917-15	262917-17	262917-19	262917-21
Your Reference	UNITS	BH08	BH09	BH10	BH11	BH01
Depth		0.3	0.4	0.3	0.5	0.5
Date Sampled		25/02/2021	25/02/2021	25/02/2021	25/02/2021	25/02/2021
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	03/03/2021	03/03/2021	03/03/2021	03/03/2021	03/03/2021
Sample mass tested	g	Approx. 20g	Approx. 30g	Approx. 50g	Approx. 35g	Approx. 40g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Method ID	Methodology Summary
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-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	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-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	262917-4
Date extracted	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
Date analysed	-			02/03/2021	2	02/03/2021	02/03/2021		02/03/2021	02/03/2021
TRH C_6 - C_9	mg/kg	25	Org-023	<25	2	<25	<25	0	84	79
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	2	<25	<25	0	84	79
Benzene	mg/kg	0.2	Org-023	<0.2	2	<0.2	<0.2	0	93	82
Toluene	mg/kg	0.5	Org-023	<0.5	2	<0.5	<0.5	0	84	76
Ethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	79	76
m+p-xylene	mg/kg	2	Org-023	<2	2	<2	<2	0	82	80
o-Xylene	mg/kg	1	Org-023	<1	2	<1	<1	0	85	90
naphthalene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	79	2	75	92	20	87	83

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
Date analysed	-			[NT]	21	02/03/2021	02/03/2021		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	21	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	21	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	21	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	21	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	21	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	21	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	21	78	77	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	262917-4
Date extracted	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
Date analysed	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	2	<50	<50	0	138	118
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	2	<100	<100	0	118	84
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	2	<100	<100	0	92	110
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	2	<50	<50	0	138	118
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	2	<100	<100	0	118	84
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	2	<100	<100	0	92	110
Surrogate o-Terphenyl	%		Org-020	97	2	81	88	8	111	94

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
Date analysed	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	21	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	21	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	21	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	21	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	21	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	21	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	21	80	85	6	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	262917-4
Date extracted	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
Date analysed	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	101	91
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	101	99
Fluorene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	102	100
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	2	0.7	0.7	0	111	97
Anthracene	mg/kg	0.1	Org-022/025	<0.1	2	0.2	0.1	67	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	2	1.6	1.7	6	104	97
Pyrene	mg/kg	0.1	Org-022/025	<0.1	2	1.5	1.5	0	109	99
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	0.7	0.8	13	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	2	0.7	0.8	13	120	108
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	2	1	1	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	2	0.79	0.83	5	103	100
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	2	0.6	0.6	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	2	0.5	0.5	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	101	2	97	99	2	101	102

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
Date analysed	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	21	0.2	0.2	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	21	0.6	0.5	18	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	21	0.5	0.5	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	21	0.3	0.3	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	21	0.3	0.3	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	21	0.6	0.5	18	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	21	0.4	0.3	29	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	21	0.2	0.2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	21	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	21	100	100	0	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	262917-4
Date extracted	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
Date analysed	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	103	96
HCB	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	98	91
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	109	95
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	99	99
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	112	103
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	101	101
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	113	99
Endrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	109	105
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	101	99
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	112	109
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	100	2	98	99	1	98	98

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
Date analysed	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	21	100	101	1	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	262917-4
Date extracted	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
Date analysed	-			01/03/2021	2	01/03/2021	01/03/2021		01/03/2021	01/03/2021
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	100	99
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	100	2	98	99	1	98	98

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
Date analysed	-			[NT]	21	01/03/2021	01/03/2021		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	21	100	101	1	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	262917-4
Date prepared	-			02/03/2021	2	02/03/2021	02/03/2021		02/03/2021	02/03/2021
Date analysed	-			02/03/2021	2	02/03/2021	02/03/2021		02/03/2021	02/03/2021
Arsenic	mg/kg	4	Metals-020	<4	2	<4	<4	0	111	107
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	<0.4	<0.4	0	114	97
Chromium	mg/kg	1	Metals-020	<1	2	5	5	0	110	93
Copper	mg/kg	1	Metals-020	<1	2	15	15	0	109	93
Lead	mg/kg	1	Metals-020	<1	2	44	35	23	107	84
Mercury	mg/kg	0.1	Metals-021	<0.1	2	<0.1	<0.1	0	116	116
Nickel	mg/kg	1	Metals-020	<1	2	2	2	0	109	90
Zinc	mg/kg	1	Metals-020	<1	2	48	39	21	109	70

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	21	02/03/2021	02/03/2021		[NT]	[NT]
Date analysed	-			[NT]	21	02/03/2021	02/03/2021		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	21	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	21	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	21	8	8	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	21	14	14	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	21	29	22	27	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	21	2	2	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	21	38	32	17	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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: Sample 262917-6 was sub-sampled from a jar provided by the client.

Asbestos: Excessive sample volumes were provided for asbestos analysis.
A portion of the supplied samples were sub-sampled according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples 262917-2,4,8,11,13,15,17,19,21 were sub-sampled from bags provided by the client.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client: Zoic Environmental	**Client Project Name and Number:** 21020	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067	
Project Mgr: T.Creese			
Sampler: TC	**PO No.:**	**Phone:** 02 9910 6200	
Address:	**Envirolab Services Quote No. :**	**Fax:** 02 9910 6201	
	Date results required: Standard TAT	**E-mail:** ahie@envirolabservices.com.au	
Email: tyler.creese@zoic.com.au	**Or choose:**		
Phone: 61481775243 **Fax:**	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact:** Aileen Hie	

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combo 5a	Combo 5		Suite B7											Provide as much information about the sample as you can
1	BH01 (0.3) (0.1).	25/2/21	Soil	X														asbestos = PIA
2	BH02 (0.1)			X														
3	BH02 (0.4)																	
4	BH03 (0.3)			X														
5	BH04 (0.2) (0.1).																	
6	BH04 (0.6)			X														
7	BH04 (1.5)																	
8	BH05 (0.1)			X														
9	BH05 (0.3)																	
10	BH07 (0.1)																	
11	BH07 (0.3)			X														
12	BH07 (0.5)																	
13	BH08 (0.3)			X														
14	BH09 (0.1)																	
15	BH09 (0.4)			X														
16	BH09 (0.9)																	
17	BH10 (0.3)			X														
18	BH11 (0.1)																	
19	BH11 (0.5)			X														
20	Dup-1				X													
21 MGT	Trip-1			Send to Eurofins X														
extra 21	BH1 (0.5)																	

ENVIROLAB GROUP
Envirolab Services
12 Ashley
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 262917
Date Received: 26/2/2021
Time Received: 11:30am
Received By: MVV
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (company): Zoic	**Received by (company):** ENVIROLAB	**Samples Received:** Cool or Ambient (circle one)
Print Name: T.Creese	**Print Name:** MA VINA VEGA	**Temperature Recieved at:** 18 (if applicable)
Date & Time: 25/2/21	**Date & Time:** 26/2/2021 @ 11:30am	**Transported by:** Hand delivered / courier
Signature:	**Signature:**	**Page No:**

Zoic Environmental Pty Ltd
Suite 1, Level 9, 189 Kent Street
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Tyler Creese**

Report **777233-S**
Project name 21020
Received Date Mar 01, 2021

Client Sample ID			**TRIP-1**
Sample Matrix			**Soil**
Eurofins Sample No.			**S21-Ma02046**
Date Sampled			**Feb 25, 2021**
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	94
TRH C29-C36	50	mg/kg	85
TRH C10-C36 (Total)	50	mg/kg	179
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	%	93
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	150
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	150
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	2.1
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	2.3
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.6
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	1.3
Benzo(a)pyrene	0.5	mg/kg	1.6
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.1
Benzo(g.h.i)perylene	0.5	mg/kg	1.1
Benzo(k)fluoranthene	0.5	mg/kg	1.3
Chrysene	0.5	mg/kg	1.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5

Client Sample ID			TRIP-1
Sample Matrix			**Soil**
Eurofins Sample No.			**S21-Ma02046**
Date Sampled			**Feb 25, 2021**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Fluoranthene	0.5	mg/kg	3.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.9
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	1.7
Pyrene	0.5	mg/kg	3.1
Total PAH*	0.5	mg/kg	17.1
2-Fluorobiphenyl (surr.)	1	%	91
p-Terphenyl-d14 (surr.)	1	%	85
Heavy Metals			
Arsenic	2	mg/kg	42
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	12
Copper	5	mg/kg	35
Lead	5	mg/kg	85
Mercury	0.1	mg/kg	0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	88
% Moisture	1	%	18

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Mar 04, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Mar 04, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 04, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 04, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Mar 04, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Mar 04, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Mar 01, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			

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Company Name: Zoic Environmental Pty Ltd
Address: Suite 1, Level 9, 189 Kent Street
Sydney
NSW 2000

Project Name: 21020

Order No.:
Report #: 777233
Phone: 02 9251 8070
Fax:

Received: Mar 1, 2021 1:47 PM
Due: Mar 8, 2021
Priority: 5 Day
Contact Name: Tyler Creese

Eurofins Analytical Services Manager : Asim Khan

Sample Detail						Moisture Set	Eurofins Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
Mayfield Laboratory							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	TRIP-1	Feb 25, 2021		Soil	S21-Ma02046	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 follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	97			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	81			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	96			70-130	Pass	
Toluene	%	96			70-130	Pass	
Ethylbenzene	%	95			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
o-Xylene	%	93			70-130	Pass	
Xylenes - Total*	%	93			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	130			70-130	Pass	
TRH C6-C10	%	97			70-130	Pass	
TRH >C10-C16	%	82			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	86			70-130	Pass	
Anthracene	%	84			70-130	Pass	
Benz(a)anthracene	%	86			70-130	Pass	
Benzo(a)pyrene	%	81			70-130	Pass	
Benzo(b&j)fluoranthene	%	87			70-130	Pass	
Benzo(g.h.i)perylene	%	89			70-130	Pass	
Benzo(k)fluoranthene	%	78			70-130	Pass	
Chrysene	%	87			70-130	Pass	
Dibenz(a.h)anthracene	%	92			70-130	Pass	
Fluoranthene	%	86			70-130	Pass	
Fluorene	%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	84			70-130	Pass	
Naphthalene	%	88			70-130	Pass	
Phenanthrene	%	83			70-130	Pass	
Pyrene	%	86			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	95			80-120	Pass	
Cadmium	%	99			80-120	Pass	
Chromium	%	103			80-120	Pass	
Copper	%	103			80-120	Pass	
Lead	%	102			80-120	Pass	
Mercury	%	112			80-120	Pass	
Nickel	%	103			80-120	Pass	
Zinc	%	104			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S21-Ma07439	NCP	%	102			70-130	Pass	
TRH C10-C14	S21-Ma06473	NCP	%	82			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Ma01952	NCP	%	82			70-130	Pass	
Toluene	S21-Ma01952	NCP	%	82			70-130	Pass	
Ethylbenzene	S21-Ma01952	NCP	%	83			70-130	Pass	
m&p-Xylenes	S21-Ma01952	NCP	%	81			70-130	Pass	
o-Xylene	S21-Ma01952	NCP	%	85			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total*	S21-Ma01952	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S21-Ma01952	NCP	%	96			70-130	Pass	
TRH C6-C10	S21-Ma07439	NCP	%	108			70-130	Pass	
TRH >C10-C16	S21-Ma01955	NCP	%	70			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Ma11905	NCP	%	80			70-130	Pass	
Acenaphthylene	S21-Ma11905	NCP	%	84			70-130	Pass	
Anthracene	S21-Ma11905	NCP	%	82			70-130	Pass	
Benz(a)anthracene	S21-Ma11905	NCP	%	82			70-130	Pass	
Benzo(a)pyrene	S21-Ma11905	NCP	%	75			70-130	Pass	
Benzo(b&j)fluoranthene	S21-Ma11905	NCP	%	68			70-130	Fail	Q08
Benzo(g.h.i)perylene	S21-Ma11905	NCP	%	80			70-130	Pass	
Benzo(k)fluoranthene	S21-Ma11905	NCP	%	79			70-130	Pass	
Chrysene	S21-Ma11905	NCP	%	84			70-130	Pass	
Dibenz(a.h)anthracene	S21-Ma11905	NCP	%	84			70-130	Pass	
Fluoranthene	S21-Ma11905	NCP	%	81			70-130	Pass	
Fluorene	S21-Ma11905	NCP	%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Ma11905	NCP	%	78			70-130	Pass	
Naphthalene	S21-Ma11905	NCP	%	88			70-130	Pass	
Phenanthrene	S21-Ma11905	NCP	%	82			70-130	Pass	
Pyrene	S21-Ma11905	NCP	%	79			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Ma05806	NCP	%	106			75-125	Pass	
Cadmium	S21-Ma05806	NCP	%	107			75-125	Pass	
Chromium	S21-Ma05806	NCP	%	101			75-125	Pass	
Copper	S21-Ma05806	NCP	%	85			75-125	Pass	
Lead	S21-Ma05806	NCP	%	114			75-125	Pass	
Mercury	S21-Ma05806	NCP	%	121			75-125	Pass	
Nickel	S21-Ma05806	NCP	%	107			75-125	Pass	
Zinc	S21-Ma05806	NCP	%	123			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S21-Ma01859	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S21-Ma05637	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Ma05637	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Ma05637	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-Ma01859	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-Ma01859	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-Ma01859	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-Ma01859	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-Ma01859	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-Ma01859	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S21-Ma01859	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-Ma01859	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S21-Ma05637	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Ma05637	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Ma05637	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Ma11904	NCP	mg/kg	0.6	< 0.5	19	30%	Pass	
Benzo(b&j)fluoranthene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Ma11904	NCP	mg/kg	0.5	< 0.5	7.0	30%	Pass	
Dibenz(a.h)anthracene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Ma11904	NCP	mg/kg	0.7	< 0.5	58	30%	Fail	Q15
Fluorene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Ma11904	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Ma11904	NCP	mg/kg	0.8	< 0.5	52	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe48610	NCP	mg/kg	10	15	36	30%	Fail	Q15
Cadmium	S21-Fe48610	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Fe48610	NCP	mg/kg	23	35	41	30%	Fail	Q15
Copper	S21-Fe48610	NCP	mg/kg	32	28	13	30%	Pass	
Lead	S21-Fe48610	NCP	mg/kg	18	27	42	30%	Fail	Q15
Mercury	S21-Fe48610	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe48610	NCP	mg/kg	17	19	13	30%	Pass	
Zinc	S21-Fe48610	NCP	mg/kg	44	50	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Ma02485	NCP	%	35	35	2.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	N/A
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Asim Khan	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

#177233

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client: Zoic Environmental	**Client Project Name and Number:** 21020	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067
Project Mgr: T.Creese	**PO No.:**	
Sampler: TC	**Envirolab Services Quote No. :**	**Phone:** 02 9910 6200
Address:	**Date results required:** Standard TAT	**Fax:** 02 9910 6201
	Or choose:	**E-mail:** ahie@envirolabservices.com.au
Email: tyler.creese@zoic.com.au		
Phone: 61481775243 **Fax:**	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Contact:** Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combo 5a	Combo 5		Suite B7											Provide as much information about the sample as you can
1	BH01 (0.3) (0.1).	25/2/21	Soil	X														asbestos = P/A
2	BH02 (0.1)			X														
3	BH02 (0.4)																	
4	BH03 (0.3)			X														
5	BH04 (0.2) (0.1).																	
6	BH04 (0.6)			X														
7	BH04 (1.5)																	
8	BH05 (0.1)			X														
9	BH05 (0.3)																	
10	BH07 (0.1)																	
11	BH07 (0.3)			X														
12	BH07 (0.5)																	
13	BH08 (0.3)			X														
14	BH09 (0.1)																	
15	BH09 (0.4)			X														
16	BH09 (0.9)																	
17	BH10 (0.3)			X														
18	BH11 (0.1)																	
19	BH11 (0.5)			X														
20	Dup-1				X													
21 MGT	Trip-1			Send to EGA for TRH's X														
ext 21	BH1 (0.5)																	

ENVIROLAB Service: 12 Ashley Chatswood NSW 2067 Ph: (02) 9910 6200
Job No: 262917
Date Received: 26/2/2021
Time Received: 11:30am
Received By: MVV
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (company): Zoic	**Received by (company):** ENVIROLAB	**Samples Received:** Cool or Ambient (circle one)
Print Name: T.Creese	**Print Name:** MA VINA VEGA	**Temperature Recieved at:** 18 (if applicable)
Date & Time: 25/2/21	**Date & Time:** 26/2/2021 @ 11:30am	**Transported by:** Hand delivered / courier
Signature:	**Signature:**	**Page No:**

EA SYD E-MAIL 26/2/21 10:00 AM

Appendix H Calibration Certificates

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-105923**

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	PID	✓	10.6 ev
Alarms	Beeper	✓	Low: 50ppm; High: 100ppm; TWA: N/A; STEL: N/A
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		93ppm Isobutylene	NATA	SY361		91.7ppm

Calibrated by: **Chris Edwards**

Calibration date: **24/02/2021**

Next calibration due: **23/08/2021**

Appendix I QA/QC Assessment

Table I1: QA/QC Assessment

Data Quality Objective	Sampling Frequency	Frequency Achieved?	DQI	DQI Met?
Precision				
Intra-Laboratory Field Duplicates	1/11 samples (soil only)	Yes	>5xLOR: 50% RPD	Yes.
Inter-Laboratory Field Duplicates	1/11 samples (soil only)	Yes	>5xLOR: 50% RPD	Yes, noting TRH (C16-34) ranged from 0-100% RPD, likely due to heterogeneity of fill material.
Laboratory duplicates	1/20 samples	Yes	>5xLOR: 50% RPD	Yes, noting PAH compounds ranged from 0-167% RPD, likely due to heterogeneity of fill material.
Laboratory method blanks	1/10 samples	Yes	< LOR	Yes
Accuracy				
Matrix spikes	1/10 samples	Yes	Acceptable recoveries: 70 to 130% for metals and inorganics 60-140% for organics 10-140% for sVOC and speciated phenols	Yes.
Laboratory control spike	1/10 samples	Yes	As Matrix spikes	Yes.
Surrogate spike	1/10 samples	Yes	As Matrix spikes	Yes.
Representativeness				
Sampling handling storage and transport appropriate for media and analytes	All	Yes	Received by laboratory cooled and with container in good condition	Yes
Samples extracted and analysed within holding times.	All	Yes	Hold Times: 7 days - organics 6 months – inorganics	Yes
Comparability				
Standard operating procedures used for sample collection and handling (including decontamination)	All Samples	Yes	Yes	Yes
Standard analytical methods used for all analyses	All Samples	Yes	Yes	Yes
Consistent field conditions, sampling staff and laboratory analysis	All Samples	Yes	Yes	Yes
Limits of reporting appropriate and consistent	All Samples	Yes	Yes	Yes
Completeness				

Data Quality Objective	Sampling Frequency	Frequency Achieved?	DQI	DQI Met?
Soil description and COCs completed and appropriate	All Samples	Yes	Yes	Yes, soil logging details and laboratory certificates provided in Appendices.
Appropriate documentation for testing	All Samples	Yes	Yes	Yes
Data set to be 95% complete after validation	All Samples	Yes	Yes	Yes

Appendix J Statistical Analysis

1				UCL Statistics for Uncensored Full Data Sets							
2											
3			User Selected Options								
4			Date/Time of Computation	ProUCL 5.115/02/2022 2:37:29 PM							
5			From File	WorkSheet.xls							
6			Full Precision	OFF							
7			Confidence Coefficient	95%							
8			Number of Bootstrap Operations	2000							
9											
10											
11	C0										
12											
13					General Statistics						
14				Total Number of Observations	12			Number of Distinct Observations	8		
15								Number of Missing Observations	0		
16				Minimum	0.5			Mean	1.667		
17				Maximum	6.6			Median	0.95		
18				SD	1.773			Std. Error of Mean	0.512		
19				Coefficient of Variation	1.064			Skewness	2.217		
20											
21					Normal GOF Test						
22				Shapiro Wilk Test Statistic	0.709			Shapiro Wilk GOF Test			
23				5% Shapiro Wilk Critical Value	0.859			Data Not Normal at 5% Significance Level			
24				Lilliefors Test Statistic	0.255			Lilliefors GOF Test			
25				5% Lilliefors Critical Value	0.243			Data Not Normal at 5% Significance Level			
26					Data Not Normal at 5% Significance Level						
27											
28					Assuming Normal Distribution						
29				95% Normal UCL				95% UCLs (Adjusted for Skewness)			
30				95% Student's-t UCL	2.586			95% Adjusted-CLT UCL (Chen-1995)	2.859		
31								95% Modified-t UCL (Johnson-1978)	2.641		
32											
33					Gamma GOF Test						
34				A-D Test Statistic	0.818			Anderson-Darling Gamma GOF Test			
35				5% A-D Critical Value	0.748			Data Not Gamma Distributed at 5% Significance Level			
36				K-S Test Statistic	0.23			Kolmogorov-Smirnov Gamma GOF Test			
37				5% K-S Critical Value	0.25			Detected data appear Gamma Distributed at 5% Significance Level			
38					Detected data follow Appr. Gamma Distribution at 5% Significance Level						
39											
40					Gamma Statistics						
41				k hat (MLE)	1.408			k star (bias corrected MLE)	1.112		
42				Theta hat (MLE)	1.183			Theta star (bias corrected MLE)	1.499		
43				nu hat (MLE)	33.8			nu star (bias corrected)	26.68		
44				MLE Mean (bias corrected)	1.667			MLE Sd (bias corrected)	1.581		
45								Approximate Chi Square Value (0.05)	15.91		
46				Adjusted Level of Significance	0.029			Adjusted Chi Square Value	14.65		
47											
48					Assuming Gamma Distribution						
49				95% Approximate Gamma UCL (use when n>=50)	2.796			95% Adjusted Gamma UCL (use when n<50)	3.036		
50											
51					Lognormal GOF Test						
52				Shapiro Wilk Test Statistic	0.853			Shapiro Wilk Lognormal GOF Test			
53				5% Shapiro Wilk Critical Value	0.859			Data Not Lognormal at 5% Significance Level			

54				Lilliefors Test Statistic	0.236		Lilliefors Lognormal GOF Test					
55				5% Lilliefors Critical Value	0.243		Data appear Lognormal at 5% Significance Level					
56	Data appear Approximate Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59				Minimum of Logged Data	-0.693				Mean of logged Data	0.116		
60				Maximum of Logged Data	1.887				SD of logged Data	0.887		
61												
62	Assuming Lognormal Distribution											
63				95% H-UCL	3.437				90% Chebyshev (MVUE) UCL	2.892		
64				95% Chebyshev (MVUE) UCL	3.479				97.5% Chebyshev (MVUE) UCL	4.295		
65				99% Chebyshev (MVUE) UCL	5.897							
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data appear to follow a Discernible Distribution at 5% Significance Level											
69												
70	Nonparametric Distribution Free UCLs											
71				95% CLT UCL	2.509				95% Jackknife UCL	2.586		
72				95% Standard Bootstrap UCL	2.461				95% Bootstrap-t UCL	3.477		
73				95% Hall's Bootstrap UCL	5.675				95% Percentile Bootstrap UCL	2.533		
74				95% BCA Bootstrap UCL	2.792							
75				90% Chebyshev(Mean, Sd) UCL	3.202				95% Chebyshev(Mean, Sd) UCL	3.898		
76				97.5% Chebyshev(Mean, Sd) UCL	4.863				99% Chebyshev(Mean, Sd) UCL	6.76		
77												
78	Suggested UCL to Use											
79				95% Adjusted Gamma UCL	3.036							
80												
81	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
82	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
83												
84	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
85	Recommendations are based upon data size, data distribution, and skewness.											
86	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
87	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
88												

Method A - Correlation Coefficient																		
	Black Coal Tar 1	Black Coal Tar 2	Black Coal Tar 3	Brown Coal Tar	Steelworks Tar 1	Steelworks Tar 2	Weathered Coal Tar	Creosote 1	Creosote 2	Weathered Creosote	Ash form Black Coal 1	Ash from Black Coal 2	Ash from Black Coal 3	Ash from Brown Coal	Bitumen	Coke	Waste Oil Petrol	Waste Oil Diesel
BHZ-5	0.00	0.54	0.84	-0.26	0.40	0.36	0.33	0.47	0.12	0.53	0.98	0.95	0.94	0.96	0.14	0.98	0.45	0.90
TPZ-2	0.40	0.76	0.87	0.05	0.64	0.75	0.32	0.40	0.20	0.43	0.96	0.95	0.98	0.98	0.35	0.99	0.48	0.78
TPZ-10	0.21	0.70	0.84	-0.05	0.54	0.68	0.23	0.49	0.36	0.46	0.96	0.95	0.98	0.98	0.30	0.99	0.33	0.78
D	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

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