ENVIRONMENTAL INVESTIGATION SERVICES

REPORT

TO

ABC TISSUE PRODUCTS PTY LTD
C/- C.I.R. CONSTRUCTION PTY LTD

ON

STAGE 2 ENVIRONMENTAL SITE ASSESSMENT

FOR

PROPOSED NEW WAREHOUSE

AT

58-62 REDFERN STREET, WETHERILL PARK, NSW

10 MAY 2017 **REF: E29923K2rpt**

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EXECUTIVE SUMMARY

ABC Tissue Products Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS) to undertake a Stage 2 Environmental Site Assessment (ESA) for the proposed new warehouse at 58-62 Redfern Street, Wetherill Park, NSW. The site location is shown on Figure 1 and the assessment was confined to the site boundaries as shown on Figure 2.

EIS understand that the proposed development will include demolition of the existing warehouse and existing structures and construction of a new high rack warehouse with internal concrete slab.

Samples for this investigation were obtained from 17 sampling points plus 10 sampling points in the stage 1 ESA. This meets the minimum sampling density recommended by the EPA for an area of approximately 16,430m^2. Three monitoring well were installed in selected boreholes across the site. The standing water level in the monitoring wells ranged from 3.22-4.57mbgl on the 12/4/2017.

Asphaltic concrete or concrete pavement was encountered in all boreholes at 110mm to 300mm in depth. Fill material extended to depths of approximately 0.3m to 4.2m. The fill contained inclusions of: ash; slag; organic material; ironstone; igneous and shale gravel.

The natural soil typically consisted of silty clay of various colours. The clay contained inclusions of ironstone gravel. The natural soil extended to a maximum depth of approximately 4.7m in BH 306. Shale bedrock was encountered in the majority of the boreholes at depths ranging from approximately 0.3m to 4.4m.

The fill material at the site is classified as General Solid Waste (non-putrescible) (GSW). The fill material is considered to be suitable for re-use on the subject site (only) provided it meets geotechnical and earthwork requirements or it can be de disposed of to a NSW EPA landfill licensed to receive the waste stream. The natural silty clay and shale bedrock is classified as Virgin excavated natural material (VENM).

The soil results encountered were below the adopted human health and ecological guidelines. The groundwater results encountered various heavy metals above the GIL-ANZECC criteria however, these results are not considered to be significant. The remaining groundwater results were below the adopted criteria.

The site is considered to be suitable for the proposed development and further investigation is not required.

In the event unexpected conditions are encountered during development work or between sampling locations that may pose a contamination risk, all works should stop and an environmental consultant should be engaged to inspect the site and address the issue.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of the report.

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ABBREVIATIONS

Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Asbestos Health Screening Levels	**ASL**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Bureau of Meteorology	**BOM**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene	**BTEXN**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Construction Management Plan	**CMP**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Assessment Criteria	**EAC**
Ecological Investigation Levels	**EILs**
Ecological Screening Level	**ESL**
Environmental Management Plan	**EMP**
Excavated Natural Material	**ENM**
Environmental Protection Agency	**EPA**
Environmental Site Assessment	**ESA**
Ecological Screening Level	**ESL**
Fibre Cement Fragments	**FCF**
General Approvals of Immobilisation	**GAI**
General Solid Waste	**GSW**
Health Investigation Level	**HILs**
Hardness Modified Trigger Values	**HMTV**
Health Screening Level	**HSLs**
International Organisation of Standardisation	**ISO**
Lab Control Spike	**LCS**
Light Non-Aqueous Phase Liquid	**LNAPL**
Local Government Authority	**LGA**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Photo-ionisation Detector	**PID**

ABBREVIATIONS

Practical Quantitation Limit	**PQL**
Preliminary Site Investigation	**PSI**
Quality Assurance	**QA**
Quality Control	**QC**
Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Restricted Solid Waste	**RSW**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
Specific Contamination Concentration	**SCC**
Standard Penetration Test	**SPT**
Semi-Volatile Organic Compounds	**sVOC**
Standard Sampling Procedure	**SSP**
Standard Water Level	**SWL**
Standard Sampling Procedure	**SSP**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
Work Health and Safety	**WHS**

1 INTRODUCTION

ABC Tissue Products Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS)[1] to undertake a Stage 2 Environmental Site Assessment (ESA) for the proposed new warehouse at 58-62 Redfern Street, Wetherill Park, NSW. The site location is shown on Figure 1 and the assessment was confined to the site boundaries as shown on Figure 2.

This report supersedes the existing stage 1 ESA and addendum letter previously prepared by EIS for the site.

1.1 Proposed Development Details

EIS understand that the development will include demolition of the existing warehouse and existing structures and construction of a new high rack warehouse with internal concrete slab. We have assumed that development levels will be similar or close to existing ground surface with minimal excavation or filling being proposed.

1.2 Background

JK Geotechnics have previously undertaken a geotechnical investigation on the site (Reference: 28595V, dated 14 August 2015). The investigation included drilling of eight shallow boreholes. The investigation encountered odorous natural soils in BH3. The source and nature of the odour were not identified.

EIS have previously undertaken a Preliminary Stage 1 Environmental Site Assessment (ESA) at the site (Report reference: E29923Krpt, dated 19 December 2016). The report included a detailed site history review and a preliminary assessment of the soil contamination based on sampling from ten boreholes. A review of the Stage 1 ESA identified that the following data gaps remained on the site after the investigation:

- The areas beneath the existing buildings were not included in the original assessment;
- The presence of hazardous building materials in the existing buildings had not been assessed;
- The EPA minimum sampling density had not been met; and
- No groundwater or soil vapour assessment had been undertaken.

The purpose of the stage 2 ESA was to adopt the recommendations of the stage 1 ESA and target the odorous soil encountered in BH3 during the geotechnical investigation.

The hazardous building materials assessment has been completed on the site (Reference: E29923K, dated 27 April 2017).

[1] Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

1.3 Aim and Objectives

The primary aims of the assessment were review the potentially contaminating activities at the site, identify the potential for site contamination, and make a preliminary assessment of the soil and groundwater contamination conditions. The assessment objectives were to:

- Assess the current site conditions and use via a site walkover inspection;
- Assess the soil and groundwater contamination conditions via implementation of a preliminary sampling and analysis program;
- Update the conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Provide a preliminary waste classification for off-site disposal of soil;
- Assess whether further intrusive investigation and/or remediation is required; and
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint).

1.4 Scope of Work

The assessment was undertaken generally in accordance with an EIS proposal (Ref: EP44551K) of 16 March 2017 and written acceptance from the client of 21 March 2017. The scope of work included the following:

- Review of Stage 1 ESA;
- A walkover site inspection;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted site assessment criteria (SAC);
- Assessment of data quality; and
- Preparation of an ESA report presenting the results of the assessment, including a CSM and Tier 1 risk assessment.

The report was prepared with reference to regulations/guidelines outlined in the table below. Individual guidelines are also referenced within the text of the report.

Table 1-1: Guidelines

Guidelines/Regulations/Documents
Contaminated Land Management Act (1997)[2]
State Environmental Planning Policy No.55 – Remediation of Land (1998)[3]
Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)[4]

[2] NSW Government Legislation, (1997). *Contaminated Land Management Act 1997.* (referred to as CLM Act 1997)

[3] NSW Government, (1998). *State Environmental Planning Policy No. 55 – Remediation of Land.* (referred to as SEPP55)

[4] Department of Urban Affairs and Planning, and Environment Protection Authority, (1998). *Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land*. (SEPP55 Planning Guidelines)

Guidelines/Regulations/Documents
Guidelines for Consultants Reporting on Contaminated Sites (2011)[5]
Guidelines for the NSW Site Auditor Scheme, 2nd Edition (2006)[6]
National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)[7]

[5] NSW Office of Environment and Heritage (OEH), (2011). *Guidelines for Consultants Reporting on Contaminated Sites.* (referred to as Reporting Guidelines 2011)

[6] NSW DEC, (2006). *Guidelines for the NSW Site Auditor Scheme, 2nd ed.* (referred to as Site Auditor Guidelines 2006)

[7] National Environment Protection Council, (2013). *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 1999* (as amended 2013). (referred to as NEPM 2013)

2 SITE INFORMATION

2.1 Site Identification

Table 2-1: Site Identification

Current Site Owner:	ANZ Tissue Product Pty Ltd
Site Address:	58-62 Redfern Street, Wetherill Park, NSW
Lot & Deposited Plan:	Lot 5 DP 3682 and Part of Lot 234 DP 1037039
Current Land Use:	Industrial
Proposed Land Use:	Industrial
Local Government Authority (LGA):	Fairfield City Council
Current Zoning:	General Industrial (IN1)
Area of Proposed Development (m^2):	16,430
RL (AHD in m) (approx.):	40-43
Geographical Location (decimal degrees) (approx.):	Latitude: -33.842919367 Longitude: 150.914545164

2.2 Site Location and Regional Setting

The site is located in a predominantly industrial area of Wetherill Park. The site is bounded by Redfern Street to the immediate south. The site is located approximately 700m to the south of Prospect Creek.

2.3 Topography

The site is located in generally flat regional topography with the site itself characterised by a localised slope of approximately 1^0 the east.

2.4 Site Inspection

A walkover inspection of the site was undertaken by EIS on 9/11/2016 and 6/4/2017. The site appeared generally similar in configuration and operation. A summary of the findings is outlined in the following subsections:

2.4.1 Buildings, Structures and Roads

The buildings on site consisted of a number of sheds of varying size with one main and two smaller sheds at 60 Redfern Street and two large adjoining sheds at 62 Redfern Street all of which were constructed using sheet metal. Two smaller brick structures conjoined to the south-most shed at 62 Redfern Street and served as administrative and recreational areas. The site appeared to be used for manufacturing or distribution of paper tissue related products.

2.4.2 Boundary Conditions, Soil Stability and Erosion

The majority of the site was hard surfaced with no obvious signs of erosion seen on the site or at the site boundary.

2.4.3 Visible or Olfactory Indicators of Contamination

No obvious indicators of USTs were observed on the site. No visible or olfactory signs of contamination were observed during the investigation.

2.4.4 Presence of Drums/Chemicals, Waste and Fill Material

Inside the large ware house in the south-east section of the site various drums and large contains were observed which appeared to contain polymers and adhesives.

2.4.5 Drainage and Services

Surface water flows would be expected to be in a south easterly direction with the slight slope of the site. No services were identified as a potential migratory pathway.

2.4.6 Sensitive Environments

Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds.

2.4.7 Landscaped Areas and Visible Signs of Plant Stress

Redfern Street frontage was the only area on the site with landscaped areas. This area included several gum trees in a grassed area. All vegetation was observed to be in a good condition with no sign of stress or dieback.

2.5 Surrounding Land Use

During the site inspection, EIS observed the following land uses in the immediate surrounds:

- North – Commercial warehouse.
- South – Commercial shipping container storage yard.
- East – A crane/forklift company. Beyond which were industrial properties.
- West – Commercial warehouse that appeared to distribute materials.

2.6 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the assessment in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. No major services were identified that would be expected to act as preferential pathway for contamination migration.

2.7 Section 149 Planning Certificate

The s149 (2 and 5) planning certificates were reviewed for the assessment. Copies of the certificates are attached in the appendices. A summary of the relevant information is outlined below:

- The site is not located in an area of ecological significance;
- The site is not deemed to be: significantly contaminated; subject to a management order; subject of an approved voluntary management proposal; or subject to an on-going management order under the provisions of the CLM Act 1997;
- The site is not subject to a Site Audit Statement (SAS);
- The site is not located within an ASS risk area; and
- The site is not located in a heritage conservation area.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information presented in the Lotsearch report (attached in the appendices) indicated that the site is underlain by Bringelly Shale of the Wianamatta Group, which typically consists of shale, carbonaceous claystone, claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff.

3.2 Acid Sulfate Soil Risk and Planning

The site is not located in an acid sulfate soil (ASS) risk area according to the risk maps prepared by the Department of Land and Water Conservation.

3.3 Hydrogeology

Hydrogeological information presented in the Lotsearch report (attached in the appendices) indicated that the regional aquifer in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There were a total of 25 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 500m from the site. This was utilised for monitoring purposes;
- The majority of the bores were registered for monitoring purposes; and
- The drillers log information from the closest registered bores typically identified fill and/or clay soil to depths of 1.2-4m, underlain by shale bedrock. Standing water levels (SWLs) in the bores ranged from 1.0mBGL to 19.0mBGL.

The information reviewed for this assessment indicated that the subsurface conditions at the site are likely to consist of residual soils overlying relatively shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low.

3.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Prospect Creek located approximately 700m to the north of the site. This is down gradient from site, however, the distance from the site limits its potential to be a receptor.

4 SITE HISTORY INFORMATION

4.1 Review of Historical Aerial Photographs

Historical aerial photographs were included in the Lotsearch report (attached in the appendices). EIS has reviewed the photographs and summarised relevant information in the following table:

Table 4-1: Summary of Historical Aerial Photographs

Year	Details
1955	The majority of the site appeared to be used for agriculture including, possibly market gardens. A creek appeared to be present in the southern section of the site running in an east to west direction. The northern section of the site appeared to be occupied by a homestead with various sheds observed. The surrounding areas appeared similar to the site and were most likely used for grazing and/or market garden purposes.
1961	The site and immediate surrounds appeared to be generally similar to the 1955 aerial photograph. However, the sheds in the northern section of the site appeared to have been reconfigured.
1965	The site and immediate surrounds appeared to be generally similar the 1961 aerial photograph. However, the homestead in the northern section of the site appeared to have been demolished.
1970	The site and immediate surrounds appeared to be generally similar the 1965 aerial photograph. However, several small structures appeared to have been built in the northern section of the site.
1982	The site and immediate surrounds appeared to be generally similar the 1970 aerial photograph. However, several small structures, in the northern section of the site, appeared to have been demolished. Industrial warehouses appeared to have been constructed to the north-west of the site.
1991	The remaining small structures in the northern section of the site appeared to have been demolished. The site appeared to have been redeveloped with various industrial buildings constructed and the surface appeared to be predominantly paved. Industrial warehouses appeared to have been constructed to the east of the site.
2004	The large shed in the eastern section of the site appeared to have been extended to the west. This building appeared similar to the existing (2016) building. Industrial warehouses appeared to have been constructed in the surrounding areas.
2009	The site and immediate surrounds appeared to be generally similar the 2004 aerial photograph. However, several building in the southern section of the site appeared to have been demolished.

Year	Details
2014	The site and immediate surrounds appeared to be generally similar the 2009 aerial photograph. However, various sections of the site appeared to be used for storing what appeared to be shipping containers.

4.2 Review of Historical Land Title Records

Historical land title records were reviewed for the assessment. The record search was undertaken by Advance Legal Searchers Pty Ltd. Copies of the title records are attached in the appendices.

The records indicated that the site was owned by a farmers from 1910-1919 and a textile company from 1963-1966. The professions of the individuals listed on the title records from 1966 are not considered to be associated with potentially contaminating activities.

4.3 SafeWork NSW Records

SafeWork NSW records were reviewed for the assessment. Copies of relevant documents are attached. A summary of the relevant information is provided in the following table:

Table 4-2: Summary of SafeWork NSW Records

Record Number/Year	License Details
35/030244 (2005)	A map indicates that a paint storage shed, paint decantering, liquid disposal tank, waste bin and scrap metal bin were located in the northern section of the site. Pact C – Dangerous Goods Storage details identified the following listed associated products: LPG 190 kg cylinder, (paint 250L and 100L) and toluene 200L. Based on the information “roofed store” EIS are of the opinion that these chemicals have been stored above ground.
35/030244 (1996)	Application for renewal 1 x decanting cylinder UN 1075 petroleum gases, Liquid 190kg
35/030244 (1995)	Application for new licence, amended or transfer 1 x decanting cylinder Liquid 190kg 1 x liquefied petroleum gases, Liquid 373L

4.4 NSW EPA Records

The Lotsearch report (attached in the appendices) included information from the NSW EPA databases for the following:

- Records maintained in relation to contaminated land under Section 58 of the CLM Act 1997;

- Records of notified sites under Section 60 of the CLM Act 1997 (Duty to Report Contamination); and
- Licensed activities under the Protection of the Environment Operations Act (1997[8]).

The search included the site area and surrounding areas in the report buffer of 1000m. The search indicated the following:

- There were no records for the site or within the search buffer listed under Section 58 of the CLM Act 1997;
- The site has not been notified under Section 60 of the CLM Act 1997. There were two notified properties in the report buffer which included Sims Wetherill Park (a metal industry) and Nationwide Oil Pty Ltd/Transpacific Industrial Services listed as "other industry".
- There were no records for licenced activities at the site under the POEO Act 1997. Current and historical licenses were identified for several properties within the report buffer. This included recovery of general waste and other types, container reconditioning, non-thermal treatment of hazardous waste, paper or pulp production, fuel production, plastic resins production and various similar related activities.

4.5 Historical Business Directory and Additional Lotsearch Information

Historical business records for the site and surrounding areas in the report buffer were included in the Lotsearch report (attached in the appendices). The records indicated the following:

- From 1950 to 1970 no businesses were listed in the directory;
- Various motor garages and service stations were listed within the surrounding area in the 1991 business directory these included Redd, John Automotive (south-east), Solo Oil Australia Pty Ltd (west), Gomez, J. M. Mechanical Repairs (south), D & O Mechanical Repairs (south-east), Vaccari (east), R. Mechanical Repairs (east) and Sam's Mechanical Service (south-east);
- Various other business activities in the surrounding area included truck and bus repairs, scrap metal merchants, engineering, tyre dealers, welders, sheet metal workers, auto electricians and various other similar related businesses; and
- Australian Portable Building Pty. Ltd., (Inc. In N.S.W) were listed on the site in the 1991 business directory and their activities included buildings pre-fabrication, portable and modular manufactures, distributors, erectors and hire services.

In addition to the above, EIS have reviewed additional information contained within the Lotsearch report and note the following:

- There were no local or state heritage items at the site or in the immediate surrounds; and
- There were no significant ecological constraints at the site or in the immediate surrounds.

[8] NSW Government Legislation, (1997). *Protection of the Environment Operations Act 1997.* (referred to as POEO Act 1997)

4.6 Summary of Site History Information

A summary of the historical land uses and activities is presented in the table below. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by EIS.

Table 4-3: Summary of Historical Land Uses

Year(s)	Potential Land Use / Activities	Supporting Evidence
1910-1963	Agricultural (grazing)	Land titles indicated the property was owned by a farmer and various individuals during the time period.
1963-1966	Agriculture and possibly textile	Land titles indicated the property was owned by a textile worker. The 1982 aerial photograph indicates that if this operation (textile) was undertaken on the site it would have most likely been in the northern section. The southern section of the site appeared to be used for agriculture during this time period. Alternatively 'textile worker' may been the profession of the site owner and no textile related activity may have been undertaken at the site.
1966-2001	Agriculture and Industrial	The land used appeared to change from agriculture to industrial sometime between 1982 and 1991. The land title suggests that various companies operated on the site during this time period however the specifics of their operation are unknown.
2001-now	Commercial industrial (manufacturing tissue and building related products)	Land titles identified the site was owned by ANZ tissue Product Pty Ltd from 2001 to now.

4.7 Integrity of Site History Information

The majority of the site history information has been obtained from government organisations as outlined in the relevant sections of this report. The veracity of the information from these sources is considered to be relatively high. A certain degree of information loss can be expected given the lack of specific land use details over time. EIS has relied upon the Lotsearch report and has not independently verified any information contained within. However, it is noted that the Lotsearch report is generated based on databases maintained by various government agencies and is expected to be reliable.

5 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

5.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 5-1: Potential Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
Fill material - The site appears to have been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
On-Site Commercial Use- The site may have been occupied by a textile operation between 1963-1966. The leakage and spillage of chemicals resulting in potential contamination may impacted the site.	Heavy metals, TRH, BTEX and VOCs
Historical agricultural use – The site appears to have been used for grazing and market garden purposes. This could have resulted in contamination across the site via use of machinery, application of pesticides and building/demolition of various structures. Old asbestos irrigation pipes may also be present.	Heavy metals, TRH, PAHs, OCPs, PCBs and asbestos
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site.	Asbestos, lead and PCBs
Off-Site Commercial Use – The site is located in a commercial/industrial area of Wetherill Park. The leakage and spillage of chemicals resulting in	Lead, TRH, BTEX, PAHs volatile organic compounds (VOCs) possibly including chlorinated solvents such as

Source / AEC	CoPC
potential contamination may have occurred on neighbouring properties which may impacted the subject site.	trichloroethylene (TCE) which is commonly used as a degreaser.

5.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 5-2: CSM

Potential mechanism for contamination	Potential mechanisms for contamination include: • Fill material – importation of impacted material, 'top-down' impacts (e.g. leaching from surficial material), or sub-surface release (e.g. impacts from buried material); • Historical agricultural use – 'top-down' and spills (e.g. application of pesticides, refuelling or repairing machinery, and other activities at the ground surface level); • Historical commercial/industrial use 'top-down' and spills (e.g. refuelling or repairing machinery, and other activities at the ground surface level); • Hazardous building materials – 'top-down' (e.g. demolition resulting in surficial impacts in unpaved areas); • Off-site land uses – 'top-down', spill or sub-surface release. Impacts to the site could occur via migration of contaminated groundwater.
Affected media	Soil/soil vapour and groundwater have been identified as potentially affected media. Other affected media can include surface water, indoor and ambient air.
Receptor identification	Human receptors include site occupants/users, construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users. Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and freshwater ecology in Prospect Creek.
Potential Exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and use of unpaved areas (i.e. the gardens) and basement (i.e. vapour inhalation).

	Potential exposure pathways for ecological receptors include primary contact and ingestion.

6 SAMPLING, ANALYSIS AND QUALITY PLAN

6.1 Data Quality Objectives (DQO)

The NEPM 2013 defines the DQO process as a seven step iterative planning tool used to define the type, quantity and quality of data needed to inform decisions relating to the environmental condition of the site. The DQO process is detailed in the Site Auditor Guidelines 2006 and the USEPA documents Data Quality Objectives Processes for Hazardous Waste Site Investigations (2000) and Guidance on Systematic Planning Using the Data Quality Objectives Process (2006). These seven steps are applicable to this assessment as summarised in the table below:

Table 6-1: DQOs – Seven Steps

Step	Input
State the Problem	The CSM has identified AEC at the site which may pose a risk to the site receptors. An additional intrusive investigation is required to assess the risk and comment on the suitability of the site for the proposed development or intended landuse.
Identify the Decisions/ Goal of the Study	The data collection is project specific and has been designed based on the following information: • Review of site information including site history; • AEC, CoPC, receptors, pathways and medium identified in the CSM; • Development of SAC for each media; and • The use of decision statements outlined below: 1. Are any of the results above the SAC? 2. Was asbestos encountered in any of the samples? 3. Is further investigation necessary? 4. Is the site suitable for the proposed development/land use? 1) Statistical analysis will be used to assess the laboratory data against the SAC. The following criteria will be adopted: ➢ The 95% Upper Confidence Limit (UCL) value of the arithmetic mean concentration of each contaminant should be less than the SAC; ➢ The standard deviation (SD) of the results must be less than 50% of the SAC; and ➢ No single value exceeds 250% of the relevant SAC. 2) Statistical calculations will not be undertaken if all results are below the SAC; and 3) Statistical calculations will not be undertaken on the following: ➢ Health Screening Levels (HSLs) – elevated point source contamination associated with petroleum hydrocarbons can pose a vapour risk to receptors; ➢ Ecological Investigation Levels (EILs) – elevated EILs can pose a potential point source ecological risk; and ➢ Groundwater Investigation Levels (GILs) – elevated GILs can indicate a wider groundwater contamination risk.

Step	Input
Identify Information Inputs	The following information will be collected: • Soil samples based on subsurface conditions; • Groundwater samples from monitoring wells; • The SAC will be designed based on the criteria outlined in NEPM 2013. Other criteria will be used as required and detailed in this report; • The samples will be analysed in accordance with the analytical methods outlined in NEPM 2013; • Field screening information (i.e. PID data, presence of hydrocarbons etc.) will be taken into consideration in selecting the analytical schedule; and • Any additional information that may arise during the field work will also be used as data inputs.
Define the Study Boundary	The sampling will be confined to the proposed development area of the site as shown in Figure 2.
Develop the analytical approach (or decision rule)	The following acceptable limits will be adopted for the data quality assessment: • The following acceptance criteria will be used to assess the RPD results: ➢ results > 10 times the practical quantitation limit (PQL), RPDs < 50% are acceptable; ➢ results between 5 and 10 times PQL, RPDs < 75% are acceptable; ➢ results < 5 times PQL, RPDs < 100% are acceptable; and ➢ An explanation is provided if RPD results are outside the acceptance criteria. • Acceptable concentrations in Trip Spike (TS), Trip Blanks (TB). Non-compliance to be documented in the report; • The following acceptance criteria will be used to assess the primary laboratory QA/QC results. Non-compliance to be documented: ➢ <u>RPDs</u>: - Results that are < 5 times the PQL, any RPD is acceptable; and - Results > 5 times the PQL, RPDs between 0-50% are acceptable; ➢ <u>LCS recovery and matrix spikes</u>: - 70-130% recovery acceptable for metals and inorganics; - 60-140% recovery acceptable for organics; and - 10-140% recovery acceptable for VOCs; ➢ <u>Surrogate spike recovery</u>: - 60-140% recovery acceptable for general organics; and - 10-140% recovery acceptable for VOCs; ➢ <u>Blanks</u>: All less than PQL.
Specify the performance or acceptance criteria	NEPM 2013 defines decision errors as '*incorrect decisions caused by using data which is not representative of site conditions*'. This can arise from errors during sampling or analytical testing. A combination of these errors is referred to as '*total study error*'. The study error can be managed through the correct choice of sample design and measurement.

Step	Input
	Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. In this case, for example, the PCC identified in the CSM is considered to pose a risk to receptors unless proven not to. The null hypothesis has been adopted for this assessment.
Optimise the design for obtaining data	The most resource-effective design will be used in an optimum manner to achieve the assessment objectives.

6.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this assessment is outlined in the table below:

Table 6-2: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	The NSW EPA Contaminated Sites Sampling Design Guidelines (1995[9]) recommend a sampling density for an environmental assessment based on the size of the investigation area. The guideline provides a minimum number of sampling points required for the investigation on a systematic sampling pattern. The guidelines recommend sampling from a minimum of 27 evenly spaced sampling points for this site with an area of approximately 16,430m^2. Samples for this investigation were obtained from 17 sampling points plus 10 sampling points in the stage 1 ESA meets the minimum sampling density recommended by the EPA.
Sampling Plan	The sampling locations were selected on access availability and site coverage. Additional sampling points were specifically targeted to assess the potential for contamination associated with the location BH3.
Sampling Equipment	Soil samples were obtained on 6/4/2017 in accordance with the standard sampling procedure (SSP) attached in the appendices. Sampling locations were set out using a tape measure. In-situ sampling locations were cleared for underground services by an external contractor prior to sampling as outlined in the SSP.

[9] NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines.* (referred to as EPA Sampling Design Guidelines 1995)

Aspect	Input
	The sample locations were drilled using the following equipment as shown on the borehole logs attached in the appendices: • Hydraulically operated drill rig equipped with spiral flight augers. Soil samples were obtained from a Standard Penetration Test (SPT) sampler or directly from the auger when conditions did not allow use of the SPT sampler; and • A four-wheel-drive (4wd) mounted hydraulically push tube rig. Soil samples were obtained from disposable polyethylene push tube samplers.
Sampling Collection and Field QA/QC	Soil samples were collected from the fill and natural profiles based on field observations. The sampling depths are shown on the logs attached in the appendices. Additional samples were obtained when relatively deep fill (>0.5m) was encountered. Samples were also obtained when there was a distinct change in lithology or based on the observations made during the investigation. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis. Samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. Sampling personnel used disposable nitrile gloves during sampling activities. The samples were labelled with the job number, sampling location, sampling depth and date in accordance with the SSP.
Field PID Screening for VOCs	A portable Photoionisation Detector (PID) was used to screen the samples for the presence of VOCs and to assist with selection of samples for hydrocarbon analysis. The sensitivity of the PID is dependent on the organic compound and varies for different mixtures of hydrocarbons. Some compounds give relatively high readings and some can be undetectable even though present in identical concentrations. The portable PID is best used semi-quantitatively to compare samples contaminated by the same hydrocarbon source. The PID is calibrated before use by measurement of an isobutylene standard gas. All the PID measurements are quoted as parts per million (ppm) isobutylene equivalents. PID calibration records are attached in the appendices. PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases.
Sample Preservation	Soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with the SSP.

Aspect	Input
	On completion of the fieldwork, the samples were delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

6.3 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology is outlined in the table below:

Table 6-3: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Groundwater monitoring wells were installed in three selected (MW301, MW302 and MW303) spread across the site as shown on Figure 2. The monitoring well locations were chosen to target the AEC and PCC encountered at the site.
Monitoring Well Installation Procedure	The monitoring well construction details are documented on the appropriate borehole logs attached in the appendices. The monitoring wells were installed to depths of approximately 6.0m below ground level. The installation depth was designed to make an assessment of shallow perched groundwater conditions. The wells were constructed as follows: • A 50mm diameter Class 18 PVC casing and machine slotted screen; • A 2mm sand filter pack was used around the screen section for groundwater infiltration; • A bentonite seal was used on top of the slotted section to seal the wells; and • A gatic cover installed at the surface with a concrete plug to limit the inflow of surface water.
Monitoring Well Development	The monitoring wells were development on 7/6/2017 using a submersible electrical pump. A minimum of 3 well volumes was removed or the wells were pumped dry in slow recharging conditions. The following parameters were monitored using calibrated field instruments (see SSP): • Standing water level (SWL) using an electronic dip meter; and • pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter. The field monitoring records and calibration data are attached in the appendices.
Groundwater Sampling	The monitoring wells were allowed to recharge for approximately 5 to 7 days after development. Groundwater samples were obtained on 12/4/2017. Prior to sampling, the monitoring wells were checked for the presence of Light Non-Aqueous Phase Liquids (LNAPLs) using an inter-phase probe electronic dip meter/dedicated disposable PVC bailer. The monitoring well head space was checked for VOCs using a calibrated PID unit. The samples were obtained using a peristaltic pump. During sampling, the following parameters were monitored using calibrated field instruments (see SSP):

Aspect	Input
	• Standing water level (SWL) using an electronic dip meter; and • pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter. Steady state conditions were considered to have been achieved when the difference in the pH measurements was less than 0.2 units and the difference in conductivity was less than 10%. Groundwater samples were obtained directly from the single use PVC tubing and placed in the sample containers. The use of low-flow sampling techniques (such as a micro-purge or peristaltic pump) generally provides for an increased confidence of accuracy, and in particular, improves the likelihood that the sample is representative of general aquifer conditions due to much lower aquifer disturbance during sampling. Duplicate samples were obtained by alternate filling of sample containers. This technique was adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc. Groundwater removed from the wells during development and sampling was transported to EIS in jerry cans and stored in holding drums prior to collection by a licensed waste water contractor for off-site disposal. The field monitoring record and calibration data are attached in the appendices.
Sample Preservation	The samples were preserved in accordance with water sampling requirements detailed in NEPM 2013 and placed in an insulated container with ice in accordance with the SSP. On completion of the fieldwork, the samples were delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

6.4 Analytical Schedule

The analytical schedule is outlined in the following table:

Table 6-4: Analytical Schedule

PCC/CoPC	Fill Samples	Natural Soil Samples	Groundwater Samples
Heavy Metals	20	4	3
TRH/BTEXN	20	4	3

PCC/CoPC	Fill Samples	Natural Soil Samples	Groundwater Samples
VOCs	Na	Na	3
PAHs	20	4	3
OCPs/OPPs	10	Na	Na
PCBs	10	Na	Na
Asbestos	10	Na	Na
pH/CEC/Clay Content (%)	1	Na	Na
pH/EC	Na	Na	3
TCLP Metals	2	Na	Na
TCLP PAHs	1	Na	Na
Asbestos in Fibre Cement Fragments (FCF)	Na	Na	Na

6.4.1 Laboratory Analysis

The samples were analysed by the NATA Accredited laboratory/s using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 6-5: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	164998 and 164998-A, 165176
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance) National Measurement Institute (NMI)	10552

7 SITE ASSESSMENT CRITERIA (SAC)

The SAC adopted for the assessment is outlined in the table below. The SAC has been derived from the NEPM 2013 and other guidelines as applicable. The guideline values for individual contaminants are presented in the attached report tables.

Table 7-1: SAC Adopted for this Investigation

Guideline	Applicability
Health Investigation Levels (HILs) (NEPM 2013)	The HIL-D criteria for 'commercial/industrial' have been adopted for this assessment. The proposed development is for a new warehouse. Therefore the commercial/industrial criteria are considered the most appropriate.
Health Screening Levels (HSLs) (NEPM 2013)	The HSL-D criteria for 'commercial/industrial' have been adopted for this assessment.
Ecological Assessment Criteria (EAC) (NEPM 2013)	A preliminary screening of ecological risk has been undertaken based on the limited information available at this stage. The EAC criteria for 'urban residential and public open space (URPOS)' exposure setting have been adopted. The EILs for selected metals have been derived as follows: • The ABC values for high traffic (25th percentiles) areas for new suburbs of NSW published in Olszowy et. al. (1995[10]) has been adopted for this assessment; and • One selected fill samples obtained from the surficial profile (<2m) across the site were analysed for pH, CEC and clay content. These results were substituted for the entire site to calculate the ACL. Technical Report no 39, Risk-Based Management and Remediation Guidance for benzo(a)pyrene prepared by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) (2017)[11] includes new ecological criteria for B(a)P. The new criteria for B(a)P has been adopted for this assessment.
Asbestos in Soil	The 'presence/absence' of asbestos in soil has been adopted as the assessment criterion for the Preliminary Site Investigation (PSI).

[10] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission.

[11] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, (2017), *risk-based management and remediation guidance for benzo(a)pyrene.* (referred to as CRCCARE 2017)

Guideline	Applicability
Waste Classification (WC) Criteria	The criteria outlined in the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2014[12]) has been adopted to classify the material for off-site disposal.
Groundwater Investigation Levels (GILs)	The NSW Department of Environment and Conservation (now EPA) Guidelines for the Assessment and Management of Groundwater Contamination (2007[13]) require an assessment of environmental values including: **1. <u>Aquatic Ecosystems:</u>** The closest receiving water body in the vicinity of the site is Prospect Creek. This water body predominantly sustains a freshwater ecosystem. Hence the freshwater water trigger values presented in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000[14]) have been adopted for the assessment (referred to as GIL-ANZECC-Fresh). The NSW EPA promotes the use of trigger values for the protection of 95% of aquatic ecosystems, except where the contaminants have the potential to bio-accumulate, in which case the 99% trigger values are recommended. The 95% trigger values have been adopted for this assessment. Where necessary, the low reliability trigger values are quoted. **2. <u>Human Uses</u>:** The groundwater bore search did not indicate the presence of bores registered for domestic use in the vicinity of the site. The extraction and use of groundwater for drinking purposes is unlikely to occur at the site. The site is also connected to the mains water supply. However, as a conservative measure the the Australian Drinking Water Guidelines (2011[15]) have been adopted for this assessment (referred to as GIL-ADWG). In the absence of locally endorsed guidelines for individual PAHs and VOCs in groundwater, the USEPA Region 9 PRGs for 'Tap Water' have been adopted as the GILs for individual PAHs and VOCs. It is noted that these guidelines have not been endorsed by NSW EPA and are used only as a preliminary screening tool. **3. <u>Health Risk in Non-use Scenarios</u>:** Health risks in non-use scenarios are usually associated with the presence of vapours associated with volatile contaminants.

[12] NSW EPA, (2014), *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

[13] NSW DEC (2007), *Guidelines for the Assessment and Management of Groundwater Contamination* (referred to as Groundwater Guidelines 2011)

[14] ANZECC, (2000), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* (referred to as ANZECC 2000)

[15] National Health and Medical Research Council, (2011), *Australian Drinking Water Guidelines.* (referred to as ADWG 2011)

Guideline	Applicability
	The HSL D for 'commercial/industrial' have been adopted for this investigation.

8 INVESTIGATION RESULTS

8.1 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the table below. Reference should be made to the borehole logs attached in the appendices for further details.

Table 8-1: Summary of Subsurface Conditions

Profile	Description (m in bgl)
Pavement	Asphaltic Concrete (AC)/Concrete pavement was encountered in all boreholes at 110mm to 300mm in depth.
Fill	Fill material was encountered at the surface or beneath the pavement in all boreholes with the exception of BH 303 and extended to depths of approximately 0.3m to 4.2m. BH 307, BH 312 and BH316 were terminated in the fill at a maximum depth of approximately 2.25m. The fill typically comprised of: silty clay; silty sandy gravel; silty sandy clay; silty gravelly clay; silty sandy clay and sandy gravelly clay. The fill contained inclusions of: ash; slag; organic material; ironstone; igneous and shale gravel. Hydrocarbon odours were encountered in the fill in BH306 beneath the concrete pavement and decreased with depth.
Natural Soil	The natural soil typically consisted of silty clay of various colours. The clay contained inclusions of ironstone gravel. The natural soil extended to a maximum depth of approximately 4.7m in BH 306.
Bedrock	Shale bedrock was encountered in the majority of the boreholes at depths ranging from approximately 0.3m to 4.4m.
Groundwater	BH301 and BH302 encountered seepage during drilling. The remaining boreholes were dry after the completion of drilling.

8.2 Field Screening

A summary of the field screening results are presented in the table below.

Table 8-2: Summary of Field Screening

Aspect	Details (m in bgl)
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. The results ranged from 0ppm to 0.6ppm equivalent isobutylene. However these results are not considered to be significant. Samples with elevated PID readings were analysed for TRH and BTEXN.

Aspect	Details (m in bgl)
Groundwater Depth	Groundwater seepage was encountered in boreholes BH301 and BH303 during drilling at depths of approximately 3.0 to 5.0. The remaining boreholes were dry during and a short time after completion of drilling. SWL measured in the monitoring wells installed at the site ranged from 2.22 to 4.75m.
Groundwater Field Parameters	Field measurements recorded during sampling are as follows: - pH ranged from 6.30 to 6.59; - EC ranged from 3348µS/cm to 24708µS/cm; - Eh ranged from 54.6mV to 147.6mV; and - DO ranged from 0.4ppm to 1.8ppm.
LNAPLs petroleum hydrocarbons	Free phase LNAPLs were not detected using the interphase probe during groundwater sampling.

8.3 Soil Laboratory Results

The soil laboratory results for EIS Stage 1 ESA and this investigation are compared to the relevant SAC in the attached report tables. A summary of the results assessed against the SAC is presented below.

Table 8-3: Summary of Soil Laboratory Results

Analyte	Results Compared to SAC
Heavy Metals	**HILs:** All heavy metal results were below the HIL-D criteria. **EILs:** All heavy metal results were below the EIL- Commercial/Industrial criteria. **WC:** Four nickel results were above the CT1 criteria. TCLP leachates were prepared from the four samples and analysed for nickel. The results were less than the TCLP1 criteria.
TRH	**HSLs:** All TRH results were below the HSL-D criteria. **ESLs:** All TRH results were below the ESL- Commercial/Industrial criteria. **WC:** All TRH results were less than the relevant CT1 criteria.
BTEXN	**HSLs:**

Analyte	Results Compared to SAC
	All BTEXN results were below the HSL-D criteria. **ESLs:** All BTEXN results were below the ESL- Commercial/Industrial criteria. **WC:** All BTEX results were less than the relevant CT1 criteria.
PAHs	**HILs:** All PAH results were below the HIL-D criteria. **HSLs:** All naphthalene results were below the HSL-D criteria. **ESLs:** All benzo(a)pyrene results were below the ESL- Commercial/Industrial criteria. **EILs:** All naphthalene results were below the EIL- Commercial/Industrial criteria. **WC:** Two B(a)P results were above the relevant CT1 criteria. All total PAH results were less than the CT1 criteria. TCLP leachates were prepared from the two samples and analysed for PAHs. The results were less than the TCLP1 criteria.
OCPs & OPPs	**HILs:** All OCP and OPP results were below the HIL-D criteria. **EILs:** All DDT results were below the EIL- Commercial/Industrial criteria. **WC:** All OCP and OPP results were less than the relevant CT1 criteria.
PCBs	**HILs:** All PCB results were below the HIL-D criterion. **WC:** All PCB results were less than the SCC1 criterion.
Asbestos	Asbestos was not detected in the samples analysed for the investigation.

8.4 Groundwater Laboratory Results

The groundwater laboratory results are presented in the attached report tables. A summary of the results assessed against the SAC is presented below.

Table 8-4: Summary of Groundwater Laboratory Results

Analyte	Results Compared to SAC
Heavy Metals	**GIL-ANZECC-Fresh:** Elevated concentrations of individual metals were encountered above the GIL-ANZECC criteria as outlined below: • Two Cadmium results were above the GIL-ANZECC criteria. The maximum result encountered was 0.7ug/L in MW303; • MW301 encountered a copper result of 6ug/L, above the GIL-ANZECC criteria of 1.4ug/L.; • Three Nickel results were above the GIL-ANZECC criteria. The maximum result encountered was 33ug/L in MW301; and • Three Zinc results were above the GIL-ANZECC criteria. The maximum result encountered was 38ug/L in MW301. **GIL-(ADWG):** Three elevated Nickel were encountered above the GIL-ADWG criteria. The maximum result encountered was 33ug/L in MW301. The remaining heavy metals were below the GIL-ADWG criteria.
TRH & BTEXN	**GIL-ANZECC-Fresh:** All BTEXN results were below the GIL-ANZECC criteria. **HSLs:** All TRH and BTEXN results were below the GIL-HSL-D criteria. **GIL-(ADWG):** All TRH and BTEXN results were below the GIL-ADWG criteria.
PAHs	**GIL-ANZECC-Fresh:** All PAH results were below the GIL-ANZECC criteria. **HSLs:** All naphthalene results were below the GIL-HSL-D criteria. **GIL-(ADWG):** All PAHs results were below the GIL-ADWG criteria.
OCPs & OPPs	**GIL-ANZECC-Fresh:** All results were below the GIL-ANZECC criteria.

Analyte	Results Compared to SAC
	GIL-(ADWG): All results were below the GIL-ADWG criteria.
VOCs	**GIL-ANZECC-Fresh:** All VOC results were below the GIL-ANZECC criteria. **GIL-(ADWG):** All VOC results were below the GIL-ADWG criteria.
Other Parameters	The results for pH and EC are summarised below: • pH ranged from 6.8 to 7. The pH of the groundwater is neutral. • EC ranged from 2,800µS/cm to 21,000µS/cm. The groundwater is considered to be saline.

9 DATA QUALITY ASSESSMENT

As part of the data quality assessment the following data quality indicators (DQIs) were assessed: precision, accuracy, representativeness, completeness and comparability as outlined in the table below. Reference should be made to the appendices for an explanation of the individual DQI.

Table 9-1: Assessment of DQIs

Completeness
Field Considerations: • The investigation was designed to target the AEC identified at the site; • Samples were obtained from various depths based on the subsurface conditions encountered at the sampling locations. All samples were recorded on the borehole logs. All sampling points are shown on the attached Figure 2; • The investigation was undertaken by trained staff in accordance with the SSP; and • Documentation maintained during the field work is attached in the appendices where applicable. Laboratory Considerations: • Selected samples were analysed for a range of PCC/CoPC; • All samples were analysed by NATA registered laboratory/s in accordance with the analytical methods outlined in NEPM 2013; • Appropriate analytical methods and PQLs were used by the laboratory/s; and • Appropriate sample preservation, handling, holding time and COC procedures were adopted for the investigation.
Comparability
Field Considerations: • The investigation was undertaken by trained staff in accordance with the SSP; • The climate conditions encountered during the field work were noted on the site description record maintained in the job file; and • Consistency was maintained during sampling in accordance with the SSP. Laboratory Considerations: • All samples were analysed in accordance with the analytical methods outlined in NEPM 2013; • Appropriate PQLs were used by the laboratory/s for all analysis (other than those outlined above); • All primary, intra-laboratory duplicate/s and other QA/QC samples were analysed by the same laboratory; and • The same units were used by the laboratory/s for all of the analysis.
Representativeness
Field Considerations: • The investigation was designed to obtain appropriate media encountered during the field work as outlined in the SAQP. Dust and/or vapour sampling was outside the scope of this assessment; and

- All media based on the subsurface conditions encountered during the field work was sampled. All media identified in the SAQP was sampled.

Laboratory Considerations:

- All samples were analysed in accordance with the SAQP.

Precision

Field Considerations:

- The investigation was undertaken in accordance with the SSP.

Laboratory Considerations:

- Analysis of field QA/QC samples including inter and intra-laboratory duplicates, trip blanks (TB) and trip spikes (TS) as outlined below;
- The field QA/QC frequency adopted for the investigation is outlined below;
- Calculation of the Relative Percentage Difference (RPD) from the primary and duplicate results (the RPD calculation equation is outlined in the attached appendices); and
- Assessment of RPD results against the acceptance criteria outlined in **Section 6.1.**

Intra-laboratory RPD Results:

Soil Samples at a frequency of 10% of the primary samples:

- Dup JDC2 is a soil duplicate of primary sample BH302 (0.25-0.45m); and
- Dup HL2 is a soil duplicate of primary sample BH309 (0.21-0.4m).

Groundwater Samples at a frequency of 33% of the primary samples:

- Dup JDCW is a groundwater duplicate of primary sample MW301.

The intra-laboratory results are presented in the attached report tables. The results indicated that field precision was acceptable.

Inter-laboratory RPD Results:

Soil Samples at a frequency of 5% of the primary samples:

- Dup JDC1 is a soil duplicate of primary sample BH301 (0.26-0.4m).

The RPD values for a range of individual PAHs and heavy metals were outside the acceptance criteria. Values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogenous matrices. The PAH values outside of the acceptable limits have been ascribed to the very low concentrations of PAHs in the samples. At very low concentrations slight differences in concentrations can result in large RPDs.

The exceedances are not considered to have had an adverse impact on the data set as a whole.

Trip Spike (TS):

One groundwater TS was analysed for BTEX at a frequency of one spike per batch of volatiles. The results are presented in the attached report tables.

The results ranged from 93% to 101% and indicated that field preservation methods were appropriate.

Trip Blank (TB):
One soil TB was analysed for BTEX at a frequency of one blank per batch of volatiles. The results are presented in the attached report tables.

The results were all less than the PQLs.

Accuracy

Field Considerations:

- The investigation was undertaken in accordance with the SSP.

Laboratory Considerations:

- The analytical quality assessment adopted by the laboratory/s was in accordance with the NATA and NEPM 2013 requirements as outlined in the analytical report/s;
- A review of the report/s indicates the following comments noted by the laboratory/s:

Envirolab Report 164998 – The laboratory RPD acceptance criteria was exceeded in one sample for copper. A triplicate result was issued to account for this.

Envirolab Report 165176 – For the determination of dissolved metals in samples 1 and 4, the unpreserved sample was filtered through 0.45um filter at the lab due to the appearance of colloids and/or sediment in the supplied HN03 bottle.

10 WASTE CLASSIFICATION OF SOIL FOR OFF-SITE DISPOSAL

The waste classification of soil for off-site disposal is summarised in the following table:

Table 10-1: Waste Classification

Site Extent / Material Type	Classification	Disposal Option
Fill material in the investigation area	General Solid Waste (non-putrescible) (GSW)	A NSW EPA landfill licensed to receive the waste stream. The landfill should be contacted to obtain the required approvals prior to commencement of excavation. Alternatively, the fill material is considered to be suitable for re-use on the subject site (only) provided it meets geotechnical and earthwork requirements and is placed beneath the concrete pavement.
Natural silty clay and shale bedrock in the investigation area	Virgin excavated natural material (VENM)	VENM is considered suitable for re-use on-site, or alternatively, the information included in this report may be used to assess whether the material is suitable for beneficial reuse at another site as fill material. Alternatively, the natural material can be disposed of as VENM to a facility licensed by the NSW EPA to receive the waste stream.

11 TIER 1 RISK ASSESSMENT AND REVIEW OF PCSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low. The assessment identified the following elevated concentrations of heavy metals (cadmium, copper, nickel and zinc) above the adopted GIL criteria. Heavy metal concentrations above the GIL-ANZECC Fresh criteria are often encountered in urban groundwater. The presence of these heavy metals may be associated with leaking infrastructure and/or surface run off. No significant elevated concentrations of heavy metals above the HIL-D criteria were identified during the study. Therefore there is unlikely to be a point source for the metals at the site and the presence of heavy metals in the groundwater is more likely to be a regional issue. The risk posed to the environmental and human receptors outlined in the CSM is considered to be low due to the following reasons:

- Prospect Creek receives water from the surrounding urban area and is not considered to be a pristine ecosystem. Therefore the metals elevations are not considered to be significant; and
- This development will be paved and connected to the mains water supply therefore the risk of final site occupiers coming into contact with the groundwater is considered to be very low.

12 CONCLUSION

EIS consider that the report objectives outlined in **Section 1.3** have been addressed.

The decision statements specified in table 6.1 are addressed below:

1. Are any of the results above the SAC? Yes. There were some minor elevations of heavy metals above the GIL-ANZECC Fresh criteria. These were not considered to be significant and are most likely a regional issue.
2. Was asbestos encountered in any of the samples? No
3. Is further investigation necessary? No
4. Is the site suitable for the proposed development/land use? Yes

In the event unexpected conditions are encountered during development work or between sampling locations that may pose a contamination risk, all works should stop and an environmental consultant should be engaged to inspect the site and address the issue. A contingency plan that includes an unexpected finds protocol should be prepared that can be implemented if there are any unexpected finds during earthworks.

12.1 Regulatory Requirement

The regulatory requirements applicable for the site are outlined in the following table:

Table 12-1: Regulatory Requirement

Guideline	Applicability
Duty to Report Contamination 20015[16]	EIS consider that there is no requirement to notify the NSW EPA.
POEO Act 1997	Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner.

[16] NSW Environmental; Protection Agency, (2015), *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997.* (referred to as Duty to Report Contamination 2009)

13 LIMITATIONS

The report limitations are outlined below:

- EIS accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the EIS proposal; and terms of contract between EIS and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, EIS has not undertaken any verification process, except where specifically stated in the report;
- EIS has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- EIS accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- EIS have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. EIS should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

LIST OF IN-TEXT TABLES

IMPORTANT INFORMATION ABOUT THIS REPORT

These notes have been prepared by EIS to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors
This report has been prepared in response to specific project requirements as stated in the EIS proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

EIS/J&K will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by EIS to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions
Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data
Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Assessment Limitations
Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Assessments by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Assessment Report

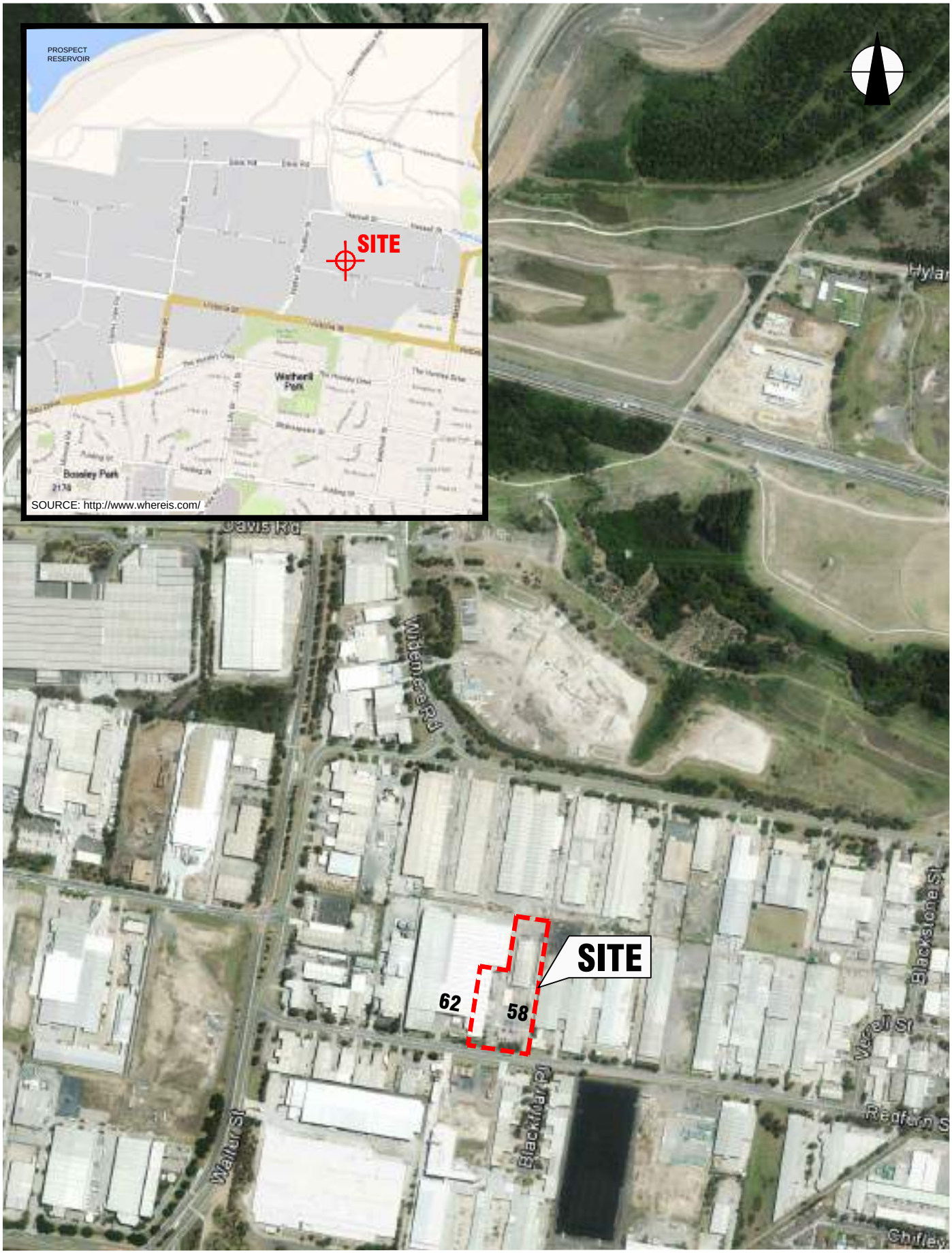
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

REPORT FIGURES



AERIAL IMAGE SOURCE: GOOGLE EARTH PRO 7.1.5.1557
AERIAL IMAGE ©: 2015 GOOGLE INC.

This plan should be read in conjunction with the EIS report.

Title: **SITE LOCATION PLAN**

Location: 58-62 REDFERN STREET
WETHERILL PARK, NSW

Report No: E29923K

Figure No: 1

ENVIRONMENTAL INVESTIGATION SERVICES

EIS

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LEGEND

- APPROXIMATE SITE BOUNDARY
- BH (Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m), (2017)
- BH/MW(Fill Depth) — BOREHOLE AND GROUND WATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
- BH (Fill Depth) — BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m), (2016)
- BH — GEOTECHNICAL BOREHOLE LOCATION (2015)

0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

This plan should be read in conjunction with the EIS report.

Title: **SAMPLE LOCATION PLAN**

Location: 58-62 REDFERN STREET WETHERILL PARK, NSW

Report No: E29923K

Figure No: 2

ENVIRONMENTAL INVESTIGATION SERVICES

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LABORATORY SUMMARY TABLES

TABLE A
SOIL LABORATORY RESULTS COMPARED TO HILs
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium VI [2]	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P TEQ [3]	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC) [1]			3000	900	3600	240000	1500	730	6000	400000	4000	40	80	2000	2500	45	530	3600	50	2000	7	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH201	0.5-0.6	Fill: silty clay	9	LPQL	11	41	19	LPQL	15	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH202	0.2-0.4	Fill: silty clay	4	LPQL	10	37	16	LPQL	17	69	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH203	1.1-1.2	Fill: silty clay	4	LPQL	12	40	18	LPQL	10	74	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH204	0.4-0.6	Fill: silty clay	LPQL	LPQL	16	18	12	LPQL	9	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH204	1.3-1.5	Silty clay	LPQL	LPQL	13	40	18	LPQL	12	72	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH205	0.2-0.4	Fill: silty clay	5	LPQL	20	39	26	LPQL	16	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH205	0.8-1.0	Silty clay	LPQL	LPQL	9	37	18	LPQL	50	130	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH206	0.2-0.4	Fill: silty clay	LPQL	LPQL	12	55	19	LPQL	20	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH206	1.0-1.2	Silty clay	LPQL	LPQL	8	22	9	LPQL	34	120	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH207	0.2-0.4	Fill: sandy gravel	LPQL	LPQL	16	71	13	LPQL	16	39	13.37	0.97	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH208	0.25-0.35	Fill: silty clay	5	7.3	32	58	43	LPQL	31	220	6.6	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.2	No asbestos detected
BH209	0.2-0.3	Fill: gravel	LPQL	LPQL	38	56	13	LPQL	42	36	2.7	0.3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH209	1.1-1.2	Silty clay	LPQL	LPQL	10	30	11	LPQL	7	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH210	0.2-0.4	Fill: sandy clay	6	LPQL	9	40	16	LPQL	14	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH301	0.26-0.4	Fill: silty sandy gravel	LPQL	LPQL	27	74	10	LPQL	24	39	11.78	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH301	3.0-3.2	Fill: silty clay	16	LPQL	26	15	22	LPQL	14	28	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH302	0.25-0.45	Fill: silty clay	6	LPQL	16	39	19	LPQL	17	83	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH303	0.5-0.8	Silty Clay	LPQL	LPQL	9	11	10	0.2	10	34	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH304	0.15-0.3	Fill: silty clay	LPQL	LPQL	11	50	17	LPQL	17	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH305	0.15-0.35	Fill: silty sandy clay	LPQL	LPQL	17	41	17	LPQL	23	79	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH306	0.13-0.3	Fill: silty clay	4	LPQL	12	36	17	LPQL	15	68	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH306	3.0-3.2	Fill: silty clay	6	LPQL	27	18	23	LPQL	15	47	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH308	0.3-0.6	Fill: silty gravelly clay	5	LPQL	15	42	19	LPQL	18	93	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH309	0.21-0.4	Fill: silty clay	6	LPQL	11	39	20	LPQL	13	75	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH309	2.0-2.2	Fill: silty clay	6	LPQL	23	40	22	LPQL	14	61	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH310	0.15-0.35	Fill: silty clay	6	LPQL	10	47	19	LPQL	12	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH311	0.12-0.3	Fill: silty sandy clay	6	LPQL	2	15	6	LPQL	14	38	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH312	0.11-0.3	Fill: silty clay	7	LPQL	14	42	19	LPQL	17	96	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH313	0.3-0.5	Fill: silty clay	LPQL	LPQL	17	54	10	LPQL	70	130	4.8	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH314	0.2-0.4	Fill: silty clay	6	LPQL	13	41	19	LPQL	20	120	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH314	0.8-1.0	Fill: silty clay	5	LPQL	19	31	21	LPQL	10	47	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH315	0.5-0.95	Fill: silty clay	6	LPQL	11	32	16	LPQL	9	53	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH316	0.2-0.5	Fill: silty clay	LPQL	LPQL	11	78	12	LPQL	47	58	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH317	0.18-0.38	Fill: silty clay	12	LPQL	4	39	13	LPQL	22	65	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH301	0.26-0.4	Fill: silty sandy gravel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH306	3.6-3.8	Silty clay	6	LPQL	14	14	15	LPQL	4	14	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH308	1.1-1.3	Silty clay	LPQL	LPQL	8	35	14	LPQL	2	22	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH311	0.3-0.5	Shale	LPQL	LPQL	2	34	17	LPQL	13	14	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH313	0.3-0.5	Fill: sandy gravelly clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH313	3.6-3.8	Shale	7	LPQL	4	20	9	LPQL	5	26	LPQL	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH316	0.2-0.5	Fill: silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			34	34	34	34	34	34	34	34	34	34	24	24	24	24	24	24	24	24	24	20
Maximum Value			16	7.3	38	78	43	0.2	70	220	13.37	0.97	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.2	NC

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013, HIL-D: 'Commercial/Industrial'

2 - The results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.

3 - B(a)P TEQ - Benzo(a)pyrene Toxicity Equivalence Quotient has been calculated based on 8 carcinogenic PAHs and their Toxic Equivalence Factors (TEFs) outlined in NEPM 2013

Concentration above the SAC **VALUE**

Abbreviations:

PAHs: Polycyclic Aromatic Hydrocarbons
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
OPP: Organophosphorus Pesticides
OCP: Organochlorine Pesticides
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
HILs: Health Investigation Levels
NA: Not Analysed
NC: Not Calculated
NSL: No Set Limit
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure

TABLE B
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID [2]
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1	
HSL Land Use Category [1]					COMMERCIAL/INDUSTRIAL							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH201	0.5-0.6	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH202	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH203	1.1-1.2	Fill: silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH204	0.4-0.6	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH204	1.3-1.5	Silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH205	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH205	0.8-1.0	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH206	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH206	1.0-1.2	Fill: silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH207	0.2-0.4	Fill: sandy gravel	0m to < 1m	Sand	LPQL	60	LPQL	LPQL	LPQL	LPQL	0.2	0
BH208	0.25-0.35	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH209	0.2-0.3	Fill: gravel	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH209	1.1-1.2	Silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH210	0.2-0.4	Fill: sandy clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH301	0.26-0.4	Fill: silty sandy gravel	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH301	3.0-3.2	Fill: silty clay	2m to <4m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH302	0.25-0.45	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH303	0.5-0.8	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH304	0.15-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.5
BH305	0.15-0.35	Fill: silty sandy clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH306	0.13-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH306	3.0-3.2	Fill: silty clay	2m to <4m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH308	0.3-0.6	Fill: silty gravelly clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH309	0.21-0.4	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH309	2.0-2.2	Fill: silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.6
BH310	0.15-0.35	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.2
BH311	0.12-0.3	Fill: silty sandy clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH312	0.11-0.3	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH313	0.3-0.5	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH314	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH314	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH315	0.5-0.95	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH316	0.2-0.5	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH317	0.18-0.38	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH301	0.26-0.4	Fill: silty sandy gravel	0m to < 1m	Clay	NA	NA	NA	NA	NA	NA	NA	0
BH306	3.6-3.8	Silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH308	1.1-1.3	Silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH311	0.3-0.5	Shale	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH313	0.3-0.5	Fill: sandy gravelly clay	0m to < 1m	Clay	NA	NA	NA	NA	NA	NA	NA	0
BH313	3.6-3.8	Shale	2m to <4m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH316	0.2-0.5	Fill: silty clay	0m to < 1m	Clay	NA	NA	NA	NA	NA	NA	NA	0
Total Number of Samples					34	34	34	34	34	34	34	34
Maximum Value					LPQL	60	LPQL	LPQL	LPQL	LPQL	0.2	0.6

Explanation:
1 - Site Assessment Criteria (SAC): NEPM 2013
2 - Field PID values obtained during the investigation

Concentration above the SAC **VALUE**
The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

Abbreviations:

UCL: Upper Level Confidence Limit on Mean Value	NC: Not Calculated	PQL: Practical Quantitation Limit
HSLs: Health Screening Levels	NL: Not Limiting	LPQL: Less than PQL
NA: Not Analysed	SAC: Site Assessment Criteria	NEPM: National Environmental Protection Measure

SITE ASSESSMENT CRITERIA

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1
HSL Land Use Category [1]					COMMERCIAL/INDUSTRIAL						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
BH201	0.5-0.6	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH202	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH203	1.1-1.2	Fill: silty clay	1m to <2m	Clay	480	NL	6	NL	NL	NL	NL
BH204	0.4-0.6	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH204	1.3-1.5	Silty clay	1m to <2m	Clay	480	NL	6	NL	NL	NL	NL
BH205	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH205	0.8-1.0	Silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH206	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH206	1.0-1.2	Fill: silty clay	1m to <2m	Clay	480	NL	6	NL	NL	NL	NL
BH207	0.2-0.4	Fill: sandy gravel	0m to < 1m	Sand	260	NL	3	NL	NL	230	NL
BH208	0.25-0.35	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH209	0.2-0.3	Fill: gravel	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH209	1.1-1.2	Silty clay	1m to <2m	Clay	480	NL	6	NL	NL	NL	NL
BH210	0.2-0.4	Fill: sandy clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH301	0.26-0.4	Fill: silty sandy gravel	0m to < 1m	Sand	260	NL	3	NL	NL	230	NL
BH301	3.0-3.2	Fill: silty clay	2m to <4m	Clay	NL	NL	9	NL	NL	NL	NL
BH302	0.25-0.45	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH303	0.5-0.8	Silty Clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH304	0.15-0.3	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH305	0.15-0.35	Fill: silty sandy clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH306	0.13-0.3	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH306	3.0-3.2	Fill: silty clay	2m to <4m	Clay	NL	NL	9	NL	NL	NL	NL
BH308	0.3-0.6	Fill: silty gravelly clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH309	0.21-0.4	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH309	2.0-2.2	Fill: silty clay	1m to <2m	Clay	480	NL	6	NL	NL	NL	NL
BH310	0.15-0.35	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH311	0.12-0.3	Fill: silty sandy clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH312	0.11-0.3	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH313	0.3-0.5	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH314	0.2-0.4	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH314	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH315	0.5-0.95	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH316	0.2-0.5	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH317	0.18-0.38	Fill: silty clay	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH301	0.26-0.4	Fill: silty sandy gravel	0m to < 1m	Clay	NA	NA	NA	NA	NA	NA	NA
BH306	3.6-3.8	Silty clay	1m to <2m	Clay	480	NL	6	NL	NL	NL	NL
BH308	1.1-1.3	Silty clay	1m to <2m	Clay	480	NL	6	NL	NL	NL	NL
BH311	0.3-0.5	Shale	0m to < 1m	Clay	310	NL	4	NL	NL	NL	NL
BH313	0.3-0.5	Fill: sandy gravelly clay	0m to < 1m	Clay	NA	NA	NA	NA	NA	NA	NA
BH313	3.6-3.8	Shale	2m to <4m	Clay	NL	NL	9	NL	NL	NL	NL
BH316	0.2-0.5	Fill: silty clay	0m to < 1m	Clay	NA	NA	NA	NA	NA	NA	NA

TABLE C
SOIL LABORATORY RESULTS COMPARED TO EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category [1]				COMMERCIAL/INDUSTRIAL																			
							AGED HEAVY METALS-EILs						EILs		ESLs								
				pH	CEC (cmol$_c$/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05
Ambient Background Concentration (ABC) [2]				-	-	-	NSL	8	18	104	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH201	0.5-0.6	Fill: silty clay	Fine	9.9	42	8	9	11	41	19	15	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH202	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	4	10	37	16	17	69	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH203	1.1-1.2	Fill: silty clay	Fine	9.9	42	8	4	12	40	18	10	74	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH204	0.4-0.6	Fill: silty clay	Fine	9.9	42	8	LPQL	16	18	12	9	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH204	1.3-1.5	Silty clay	Fine	9.9	42	8	LPQL	13	40	18	12	72	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH205	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	5	20	39	26	16	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH205	0.8-1.0	Silty clay	Fine	9.9	42	8	LPQL	9	37	18	50	130	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH206	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	LPQL	12	55	19	20	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH206	1.0-1.2	Silty clay	Fine	9.9	42	8	LPQL	8	22	9	34	120	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH207	0.2-0.4	Fill: sandy gravel	Coarse	9.9	42	8	LPQL	16	71	13	16	39	0.2	LPQL	LPQL	60	1100	1300	LPQL	LPQL	LPQL	LPQL	0.97
BH208	0.25-0.35	Fill: silty clay	Fine	9.9	42	8	5	32	58	43	31	220	LPQL	LPQL	LPQL	LPQL	610	260	LPQL	LPQL	LPQL	LPQL	0.2
BH209	0.2-0.3	Fill: gravel	Coarse	9.9	42	8	LPQL	38	56	13	42	36	LPQL	LPQL	LPQL	LPQL	360	490	LPQL	LPQL	LPQL	LPQL	0.3
BH209	1.1-1.2	Silty clay	Fine	9.9	42	8	LPQL	10	30	11	7	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH210	0.2-0.4	Fill: sandy clay	Fine	9.9	42	8	6	9	40	16	14	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH301	0.26-0.4	Fill: silty sandy gravel	Coarse	9.9	42	8	LPQL	27	74	10	24	39	LPQL	LPQL	LPQL	LPQL	700	920	LPQL	LPQL	LPQL	LPQL	0.88
BH301	3.0-3.2	Fill: silty clay	Fine	9.9	42	8	16	26	15	22	14	28	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH302	0.25-0.45	Fill: silty clay	Fine	9.9	42	8	6	16	39	19	17	83	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH303	0.5-0.8	Silty Clay	Fine	9.9	42	8	LPQL	9	11	10	10	34	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH304	0.15-0.3	Fill: silty clay	Fine	9.9	42	8	LPQL	11	50	17	17	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH305	0.15-0.35	Fill: silty sandy clay	Fine	9.9	42	8	LPQL	17	41	17	23	79	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH306	0.13-0.3	Fill: silty clay	Fine	9.9	42	8	4	12	36	17	15	68	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH306	3.0-3.2	Fill: silty clay	Fine	9.9	42	8	6	27	18	23	15	47	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH308	0.3-0.6	Fill: silty gravelly clay	Fine	9.9	42	8	5	15	42	19	18	93	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH309	0.21-0.4	Fill: silty clay	Fine	9.9	42	8	6	11	39	20	13	75	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH309	2.0-2.2	Fill: silty clay	Fine	9.9	42	8	6	23	40	22	14	61	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH310	0.15-0.35	Fill: silty clay	Fine	9.9	42	8	6	10	47	19	12	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH311	0.12-0.3	Fill: silty sandy clay	Fine	9.9	42	8	6	2	15	6	14	38	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH312	0.11-0.3	Fill: silty clay	Fine	9.9	42	8	7	14	42	19	17	96	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH313	0.3-0.5	Fill: silty clay	Fine	9.9	42	8	LPQL	17	54	10	70	130	LPQL	NA	LPQL	LPQL	300	430	LPQL	LPQL	LPQL	LPQL	0.2
BH314	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	6	13	41	19	20	120	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH314	0.8-1.0	Fill: silty clay	Fine	9.9	42	8	5	19	31	21	10	47	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH315	0.5-0.95	Fill: silty clay	Fine	9.9	42	8	6	11	32	16	9	53	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH316	0.2-0.5	Fill: silty clay	Fine	9.9	42	8	LPQL	11	78	12	47	58	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH317	0.18-0.38	Fill: silty clay	Fine	9.9	42	8	12	4	39	13	22	65	LPQL	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH301	0.26-0.4	Fill: silty sandy gravel	Fine	9.9	42	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH306	3.6-3.8	Silty clay	Fine	9.9	42	8	6	14	14	15	4	14	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH308	1.1-1.3	Silty clay	Fine	9.9	42	8	LPQL	8	35	14	2	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH311	0.3-0.5	Shale	Fine	9.9	42	8	LPQL	2	34	17	13	14	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH313	0.3-0.5	Fill: sandy gravelly clay	Fine	9.9	42	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH313	3.6-3.8	Shale	Fine	9.9	42	8	7	4	20	9	5	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH316	0.2-0.5	Fill: silty clay	Fine	9.9	42	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples				34	34	34	34	34	34	34	34	34	34	24	34	34	34	34	34	34	34	34	34
Maximum Value				9.9	42	8	16	38	78	43	70	220	0.2	LPQL	LPQL	60	1100	1300	LPQL	LPQL	LPQL	LPQL	0.97

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013

2 - ABC Values for selected metals has been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with low traffic have been quoted)

Concentration above the SAC — VALUE

Substituted pH, CEC and Clay Content

The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

Abbreviations:

EILs: Ecological Investigation Levels
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
UCL: Upper Level Confidence Limit on Mean Value
ESLs: Ecological Screening Levels
NA: Not Analysed
LPQL: Less than PQL
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure
NC: Not Calculated
NSL: No Set Limit
ABC: Ambient Background Concentration

EIL AND ESL ASSESSMENT CRITERIA

Land Use Category [1]				COMMERCIAL/INDUSTRIAL																			
							AGED HEAVY METALS-EILs						EILs		ESLs								
				pH	CEC (cmol$_c$/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05
Ambient Background Concentration (ABC) [2]				-	-	-	NSL	8	18	104	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH201	0.5-0.6	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH202	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH203	1.1-1.2	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH204	0.4-0.6	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH204	1.3-1.5	Silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH205	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH205	0.8-1.0	Silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH206	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH206	1.0-1.2	Silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH207	0.2-0.4	Fill: sandy gravel	Coarse	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	1700	3300	75	135	165	180	172
BH208	0.25-0.35	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH209	0.2-0.3	Fill: gravel	Coarse	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	1700	3300	75	135	165	180	172
BH209	1.1-1.2	Silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH210	0.2-0.4	Fill: sandy clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH301	0.26-0.4	Fill: silty sandy gravel	Coarse	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	1700	3300	75	135	165	180	172
BH301	3.0-3.2	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH302	0.25-0.45	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH303	0.5-0.8	Silty Clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH304	0.15-0.3	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH305	0.15-0.35	Fill: silty sandy clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH306	0.13-0.3	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH306	3.0-3.2	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH308	0.3-0.6	Fill: silty gravelly clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH309	0.21-0.4	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH309	2.0-2.2	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH310	0.15-0.35	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH311	0.12-0.3	Fill: silty sandy clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH312	0.11-0.3	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH313	0.3-0.5	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH314	0.2-0.4	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH314	0.8-1.0	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH315	0.5-0.95	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH316	0.2-0.5	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH317	0.18-0.38	Fill: silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	--	215	170	2500	6600	95	135	185	95	172
BH301	0.26-0.4	Fill: silty sandy gravel	Fine	9.9	42	8	--	--	1218	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH306	3.6-3.8	Silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH308	1.1-1.3	Silty clay	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH311	0.3-0.5	Shale	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH313	0.3-0.5	Fill: sandy gravelly clay	Fine	9.9	42	8	--	--	1218	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH313	3.6-3.8	Shale	Fine	9.9	42	8	160	668	358	1904	965	2077	370	640	215	170	2500	6600	95	135	185	95	172
BH316	0.2-0.5	Fill: silty clay	Fine	9.9	42	8	--	--	1218	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE D
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful [2]	Total Scheduled[3]		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	250	0.2	0.5	1	3	100
General Solid Waste CT1 [1]			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	<50	<50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1 [1]			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	<50	<50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2 [1]			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	<50	<50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2 [1]			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	<50	<50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH201	0.5-0.6	Fill: silty clay	9	LPQL	11	41	19	LPQL	15	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH202	0.2-0.4	Fill: silty clay	4	LPQL	10	37	16	LPQL	17	69	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH203	1.1-1.2	Fill: silty clay	4	LPQL	12	40	18	LPQL	10	74	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH204	0.4-0.6	Fill: silty clay	LPQL	LPQL	16	18	12	LPQL	9	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH204	1.3-1.5	Silty clay	LPQL	LPQL	13	40	18	LPQL	12	72	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH205	0.2-0.4	Fill: silty clay	5	LPQL	20	39	26	LPQL	16	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH205	0.8-1.0	Silty clay	LPQL	LPQL	9	37	18	LPQL	**50**	130	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH206	0.2-0.4	Fill: silty clay	LPQL	LPQL	12	55	19	LPQL	20	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH206	1.0-1.2	Silty clay	LPQL	LPQL	8	22	9	LPQL	34	120	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH207	0.2-0.4	Fill: sandy gravel	LPQL	LPQL	16	71	13	LPQL	16	39	13.37	**0.97**	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	450	1000	1450	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH208	0.25-0.35	Fill: silty clay	5	7.3	32	58	43	LPQL	31	220	6.6	0.2	LPQL	LPQL	LPQL	LPQL	0.2	LPQL	LPQL	320	400	720	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH209	0.2-0.3	Fill: gravel	LPQL	LPQL	38	56	13	LPQL	**42**	36	2.7	0.3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	120	380	500	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH209	1.1-1.2	Silty clay	LPQL	LPQL	10	30	11	LPQL	7	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH210	0.2-0.4	Fill: sandy clay	6	LPQL	9	40	16	LPQL	14	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH301	0.26-0.4	Fill: silty sandy gravel	LPQL	LPQL	27	74	10	LPQL	24	39	11.78	**0.88**	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	280	730	1010	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH301	3.0-3.2	Fill: silty clay	16	LPQL	26	15	22	LPQL	14	28	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH302	0.25-0.45	Fill: silty clay	6	LPQL	16	39	19	LPQL	17	83	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH303	0.5-0.8	Silty Clay	LPQL	LPQL	9	11	10	0.2	10	34	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH304	0.15-0.3	Fill: silty clay	LPQL	LPQL	11	50	17	LPQL	17	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH305	0.15-0.35	Fill: silty sandy clay	LPQL	LPQL	17	41	17	LPQL	23	79	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH306	0.13-0.3	Fill: silty clay	4	LPQL	12	36	17	LPQL	15	68	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH306	3.0-3.2	Fill: silty clay	6	LPQL	27	18	23	LPQL	15	47	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH308	0.3-0.6	Fill: silty gravelly clay	5	LPQL	15	42	19	LPQL	18	93	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH309	0.21-0.4	Fill: silty clay	6	LPQL	11	39	20	LPQL	13	75	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH309	2.0-2.2	Fill: silty clay	6	LPQL	23	40	22	LPQL	14	61	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH310	0.15-0.35	Fill: silty clay	6	LPQL	10	47	19	LPQL	12	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
BH311	0.12-0.3	Fill: silty sandy clay	6	LPQL	2	15	6	LPQL	14	38	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH312	0.11-0.3	Fill: silty clay	7	LPQL	14	42	19	LPQL	17	96	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH313	0.3-0.5	Fill: silty clay	LPQL	LPQL	17	54	10	LPQL	**70**	130	4.8	0.2	NA	NA	NA	NA	NA	LPQL	LPQL	120	320	440	LPQL	LPQL	LPQL	LPQL	NA
BH314	0.2-0.4	Fill: silty clay	6	LPQL	13	41	19	LPQL	20	120	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH314	0.8-1.0	Fill: silty clay	5	LPQL	19	31	21	LPQL	10	47	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH315	0.5-0.95	Fill: silty clay	6	LPQL	11	32	16	LPQL	9	53	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH316	0.2-0.5	Fill: silty clay	LPQL	LPQL	11	78	12	LPQL	**47**	58	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH317	0.18-0.38	Fill: silty clay	12	LPQL	4	39	13	LPQL	22	65	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH301	0.26-0.4	Fill: silty sandy gravel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH306	3.6-3.8	Silty clay	6	LPQL	14	14	15	LPQL	4	14	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH308	1.1-1.3	Silty clay	LPQL	LPQL	8	35	14	LPQL	2	22	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH311	0.3-0.5	Shale	LPQL	LPQL	2	34	17	LPQL	13	14	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH313	0.3-0.5	Fill: sandy gravelly clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH313	3.6-3.8	Shale	7	LPQL	4	20	9	LPQL	5	26	LPQL	LPQL	NA	NA	NA	NA	NA	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
BH316	0.2-0.5	Fill: silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of samples			34	34	34	34	34	34	34	34	34	34	24	24	24	24	24	34	34	34	34	34	34	34	34	34	20
Maximum Value			16	7.3	38	78	43	0.2	70	220	13.37	0.97	LPQL	LPQL	LPQL	LPQL	0.2	LPQL	LPQL	450	1000	1450	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

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

[2] - Assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion

[3] - Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde

Concentration above the CT1 — **VALUE**
Concentration above SCC1 — **VALUE**
Concentration above the SCC2 — **VALUE**

Abbreviations:

PAHs: Polycyclic Aromatic Hydrocarbons
B(a)P: Benzo(a)pyrene
PQL: Practical Quantitation Limit
LPQL: Less than PQL
PID: Photoionisation Detector
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
NA: Not Analysed
NC: Not Calculated
NSL: No Set Limit
SAC: Site Assessment Criteria
TRH: Total Recoverable Hydrocarbons
CT: Contaminant Threshold
SCC: Specific Contaminant Concentration
HILs: Health Investigation Levels
NEPM: National Environmental Protection Measure
BTEX: Monocyclic Aromatic Hydrocarbons

TABLE E
SOIL LABORATORY TCLP RESULTS
All data in mg/L unless stated otherwise

			Arsenic	Cadmium	Chromium	Lead	Mercury	Nickel	B(a)P
PQL - Envirolab Services			0.05	0.01	0.01	0.03	0.0005	0.02	0.001
TCLP1 - General Solid Waste [1]			5	1	5	5	0.2	2	0.04
TCLP2 - Restricted Solid Waste [1]			20	4	20	20	0.8	8	0.16
TCLP3 - Hazardous Waste [1]			>20	>4	>20	>20	>0.8	>8	>0.16
Sample Reference	**Sample Depth**	**Sample Description**							
BH205	0.8-1.0	Fill: silty clay	NA	NA	NA	NA	NA	0.03	NA
BH207	0.2-0.4	Fill: sandy gravel	NA	NA	NA	NA	NA	NA	LPQL
BH209	0.2-0.3	Fill: gravel	NA	NA	NA	NA	NA	0.04	NA
BH301	0.26-0.4	Fill: silty sandy gravel	NA	NA	NA	NA	NA	NA	LPQL
BH306	3.6-3.8	Silty clay	NA	NA	NA	NA	NA	NA	NA
BH308	1.1-1.3	Silty clay	NA	NA	NA	NA	NA	NA	NA
BH311	0.3-0.5	Shale	NA	NA	NA	NA	NA	NA	NA
BH313	0.3-0.5	Fill: sandy gravelly clay	NA	NA	NA	NA	NA	0.04	NA
BH313	3.6-3.8	Shale	NA	NA	NA	NA	NA	NA	NA
BH316	0.2-0.5	Fill: silty clay	NA	NA	NA	NA	NA	0.07	NA
Total Number of samples			0	0	0	0	0	4	2
Maximum Value			LPQL	LPQL	LPQL	LPQL	LPQL	0.07	LPQL

Explanation:

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

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**

Abbreviations:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
B(a)P: Benzo(a)pyrene
NC: Not Calculated
NA: Not Analysed
TCLP: Toxicity Characteristics Leaching Procedure

TABLE F
GROUNDWATER LABORATORY RESULTS COMPARED TO HSLs
All data in µg/L unless stated otherwise

				C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID [2]
PQL - Envirolab Services				10	50	1	1	1	3	1	
Land Use Category [1]				COMMERCIAL/INDUSTRIAL							
Sample Reference	**Water Depth**	**Depth Category[3]**	**Soil Category**								
MW301	4.57	4m to <8m	Clay	LPQL	69	LPQL	LPQL	LPQL	LPQL	LPQL	0
MW302	3.99	2m to <4m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
MW303	3.22	2m to <4m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples				3	3	3	3	3	3	3	3
Maximum Value				LPQL	69	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL

Explanation:
1 - Groundwater Investigation Levels (GILs): NEPM 2013
2 - Field PID values obtained from the monitroing well headspace during the investigation

Concentration above the SAC	VALUE
Site specific assesment (SSA) required	VALUE

The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below

Abbreviations:

UCL: Upper Level Confidence Limit on Mean Value	PQL: Practical Quantitation Limit
HSLs: Health Screening Levels	LPQL: Less than PQL
NA: Not Analysed	SAC: Site Assessment Criteria
NC: Not Calculated	NEPM: National Environmental Protection Measure
NL: Not Limiting	SSA: Site Specific Assessment

HSL GROUNDWATER ASSESSMENT CRITERIA

				C_6-C_{10} (F1)	$>C_{10}$-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services				10	50	1	1	1	3	1
Land Use Category [1]				COMMERCIAL/INDUSTRIAL						
Sample Reference	**Water Depth**	**Depth Category[3]**	**Soil Category**							
MW301	4.57	4m to <8m	Clay	NL	NL	30000	NL	NL	NL	NL
MW302	3.99	2m to <4m	Clay	NL	NL	30000	NL	NL	NL	NL
MW303	3.22	2m to <4m	Clay	NL	NL	30000	NL	NL	NL	NL

TABLE G
SUMMARY OF GROUNDAWATER LABORATORY RESULTS COMPARED TO GILs
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	GIL - ANZECC 2000 [1] Fresh Waters	GIL - ADWG [2]	SAMPLES		
				MW301	MW302	MW303
Inorganic Compounds and Parameters						
pH	0.1	6.5 - 8.5 [i]	6.5 - 8.5 [d]	6.8	7	7
Electrical Conductivity (µS/cm)	1	NSL	NSL	2800	19000	21000
Metals and Metalloids						
Arsenic (As III)	1	24	10	LPQL	1	3
Cadmium	0.1	0.2	2	LPQL	0.3	0.7
Chromium (total)	1	1 [a^]	50 [a^]	LPQL	LPQL	LPQL
Copper	1	1.4	2000	6	LPQL	LPQL
Lead	1	3.4	10	LPQL	LPQL	LPQL
Total Mercury (inorganic)	0.05	0.06	1	LPQL	LPQL	LPQL
Nickel	1	11	20	33	22	27
Zinc	1	8	3000 [d]	38	18	28
Total Recoverable Hydrocarbons (TRH)						
C_6-C_9 (assessed using F1)	10	NSL	NSL	LPQL	LPQL	LPQL
>C_9-C_{14} (assessed using F2)	50	NSL	NSL	69	LPQL	LPQL
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)						
Benzene	1	950	1	LPQL	LPQL	LPQL
Toluene	1	180 [a]	800	LPQL	LPQL	LPQL
Ethylbenzene	1	80 [a]	300	LPQL	LPQL	LPQL
m+p-xylene	2	75 [m]	NSL	LPQL	LPQL	LPQL
o-xylene	1	350 [a]	NSL	LPQL	LPQL	LPQL
Total xylenes	2	NSL	600	LPQL	LPQL	LPQL
Volatile Organic Compounds (VOCs), including chlorinated VOCs						
Dichlorodifluoromethane	10	NSL	200 [b]	LPQL	LPQL	LPQL
Chloromethane	10	NSL	190 [b]	LPQL	LPQL	LPQL
Vinyl Chloride	10	100 [a]	0.3	LPQL	LPQL	LPQL
Bromomethane	10	NSL	7.5 [b]	LPQL	LPQL	LPQL
Chloroethane	10	NSL	NSL	LPQL	LPQL	LPQL
Trichlorofluoromethane	10	NSL	5200 [b]	LPQL	LPQL	LPQL
1,1-Dichloroethene	1	700 [a]	30	LPQL	LPQL	LPQL
Trans-1,2-dichloroethene	1	NSL	360 [b]	LPQL	LPQL	LPQL
1,1-dichloroethane	1	90 [a]	2.8 [b]	LPQL	LPQL	LPQL
Cis-1,2-dichloroethene	1	NSL	36 [b]	LPQL	LPQL	LPQL
Bromochloromethane	1	NSL	83 [b]	LPQL	LPQL	LPQL
Chloroform	1	370 [a]	0.22 [b]	LPQL	LPQL	LPQL
2,2-dichloropropane	1	NSL	NSL	LPQL	LPQL	LPQL
1,2-dichloroethane	1	1900 [a]	3	LPQL	LPQL	LPQL
1,1,1-trichloroethane	1	270 [a]	8000 [b]	LPQL	LPQL	LPQL
1,1-dichloropropene	1	NSL	NSL	LPQL	LPQL	LPQL
Cyclohexane	1	NSL	13000 [b]	LPQL	LPQL	LPQL
Carbon tetrachloride	1	240 [a]	NSL	LPQL	LPQL	LPQL
Benzene	1	see BTEX	see BTEX	LPQL	LPQL	LPQL
Dibromomethane	1	NSL	8.3 [b]	LPQL	LPQL	LPQL
1,2-dichloropropane	1	900 [a]	0.44 [b]	LPQL	LPQL	LPQL
Trichloroethene	1	330 [n]	NSL	LPQL	LPQL	LPQL
Bromodichloromethane	1	NSL	0.13 [b]	LPQL	LPQL	LPQL
trans-1,3-dichloropropene	1	0.1 [p]	0.47 [b]	LPQL	LPQL	LPQL
cis-1,3-dichloropropene	1	0.1 [p]	0.47 [b]	LPQL	LPQL	LPQL
1,1,2-trichloroethane	1	6500	0.28 [b]	LPQL	LPQL	LPQL
Toluene	1	see BTEX	see BTEX	LPQL	LPQL	LPQL
1,3-dichloropropane	1	1100 [a]	370 [b]	LPQL	LPQL	LPQL
Dibromochloromethane	1	NSL	0.87 [b]	LPQL	LPQL	LPQL
1,2-dibromoethane	1	NSL	0.0075 [b]	LPQL	LPQL	LPQL
Tetrachloroethene	1	70 [a]	11 [b]	LPQL	LPQL	LPQL
1,1,1,2-tetrachloroethane	1	400 [q]	0.57 [b]	LPQL	LPQL	LPQL
Chlorobenzene	1	55 [a]	300	LPQL	LPQL	LPQL
Ethylbenzene	1	see BTEX	see BTEX	LPQL	LPQL	LPQL
Bromoform	1	NSL	3.3 [b]	LPQL	LPQL	LPQL
m+p-xylene	2	see BTEX	see BTEX	LPQL	LPQL	LPQL
Styrene	1	NSL	1200 [b]	LPQL	LPQL	LPQL
1,1,2,2-tetrachloroethane	1	400 [a]	0.076 [b]	LPQL	LPQL	LPQL
o-xylene	1	see BTEX	see BTEX	LPQL	LPQL	LPQL
1,2,3-trichloropropane	1	NSL	0.00075 [b]	LPQL	LPQL	LPQL
Isopropylbenzene	1	30	NSL	LPQL	LPQL	LPQL
Bromobenzene	1	NSL	62 [b]	LPQL	LPQL	LPQL
n-propyl benzene	1	NSL	660 [b]	LPQL	LPQL	LPQL
2-chlorotoluene	1	NSL	240 [b]	LPQL	LPQL	LPQL
4-chlorotoluene	1	NSL	240 [b]	LPQL	LPQL	LPQL
1,3,5-trimethyl benzene	1	NSL	120 [b]	LPQL	LPQL	LPQL
Tert-butyl benzene	1	NSL	NSL	LPQL	LPQL	LPQL
1,2,4-trimethyl benzene	1	NSL	15 [b]	LPQL	LPQL	LPQL
1,3-dichlorobenzene	1	260 [a]	300 [d]	LPQL	LPQL	LPQL
Sec-butyl benzene	1	NSL	NSL	LPQL	LPQL	LPQL
1,4-dichlorobenzene	1	60 [a]	40	LPQL	LPQL	LPQL
4-isopropyl toluene	1	NSL	NSL	LPQL	LPQL	LPQL
1,2-dichlorobenzene	1	160 [a]	1500	LPQL	LPQL	LPQL
n-butyl benzene	1	NSL	NSL	LPQL	LPQL	LPQL
1,2-dibromo-3-chloropropane	1	NSL	0.00033 [b]	LPQL	LPQL	LPQL
1,2,4-trichlorobenzene	1	85	1.2 [b]	LPQL	LPQL	LPQL
Hexachlorobutadiene	1	NSL	0.14 [b]	LPQL	LPQL	LPQL
1,2,3-trichlorobenzene	1	3	7 [b]	LPQL	LPQL	LPQL
Polycyclic Aromatic Hydrocarbons (PAHs)						
Naphthalene	0.2	16 [a]	6.1 [b]	LPQL	LPQL	LPQL
Acenaphthylene	0.1	NSL	NSL	LPQL	LPQL	LPQL
Acenaphthene	0.1	NSL	530 [b]	LPQL	LPQL	LPQL
Fluorene	0.1	NSL	290 [b]	LPQL	LPQL	LPQL
Phenanthrene	0.1	0.6 [c]	NSL	LPQL	LPQL	LPQL
Anthracene	0.1	0.01 [c]	1800 [b]	LPQL	LPQL	LPQL
Fluoranthene	0.1	1 [c]	800 [b]	LPQL	LPQL	LPQL
Pyrene	0.1	NSL	120 [b]	LPQL	LPQL	LPQL
Benzo(a)anthracene	0.1	NSL	0.012 [b]	LPQL	LPQL	LPQL
Chrysene	0.1	NSL	3.4 [b]	LPQL	LPQL	LPQL
Benzo(b,j+k)fluoranthene	0.2	NSL	0.034 [br]	LPQL	LPQL	LPQL
Benzo(a)pyrene	0.1	0.1 [c]	0.01	LPQL	LPQL	LPQL
Indeno(1,2,3-c,d)pyrene	0.1	NSL	NSL	LPQL	LPQL	LPQL
Dibenzo(a,h)anthracene	0.1	NSL	NSL	LPQL	LPQL	LPQL
Benzo(g,h,i)perylene	0.1	NSL	NSL	LPQL	LPQL	LPQL

Explanation:

1 - ANZECC Australian Water Quality Guidelines for Fresh Waters (ANZECC 2000) - Trigger Values for protection of 95% of species
2 - NHMRC Australian Drinking Water Guidelines (ADWG 2011)
a - In the absence of a high reliability guideline concentration, the moderate or low reliability guideline concentration has been quoted
a^ - The GIL for Cr VI has been adopted as a conservative measure
b - In the absence of Australian guidelines, the USEPA Region 9 Regional Screening Levels for tapwater (May 2016 tables) have been adopted as a preliminary screening tool.
c - 99% trigger values adopted due to the potential for bioaccumulation effects
d - In the absence of a health guideline the aesthetic guideline concentration has been quoted
m - Guideline value adopted for m-Xylene. We note that the m-Xylene guideline value is 75ug/L and the p-Xylene guideline value is 200ug/L. However these two isomers cannot be distinguished analytically, therefore EIS have adopted the more conservative guideline value
n - In the absence of a guideline value for Trichloroethene, the guideline concentration for 1,1,2 Trichloroethylene has been adopted
p - In the absence of a guideline value for cis or trans 1,3 Dichloropropene, the guideline concentration for 1,3 Dichloropropene has been adopted
q - In the absence of a guideline concentration for 1,1,1,2 Tetrachloroethane, the guideline concentration for 1,1,2,2 Tetrachloroethane has been adopted
r - The more conservative value for Benzo(b)fluoranthene has been adopted

Concentration above the GIL — VALUE

Abbreviations:

NA: Not Analysed — PQL: Practical Quantitation Limit
NSL: No Set Limit — LPQL: Less than Practical Quantitation Limit
GIL - Groundwater Investigation Levels — (-) : Not Applicable

TABLE H (a)
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH302 (0.25-0.45m)	Arsenic	4	6	7	6.5	15
Dup Ref = JDC2	Cadmium	0.4	LPQL	LPQL	NC	NC
	Chromium	1	16	12	14.0	29
Envirolab Report: 164998	Copper	1	39	43	41.0	10
	Lead	1	19	20	19.5	5
	Mercury	0.1	LPQL	LPQL	NC	NC
	Nickel	1	17	18	17.5	6
	Zinc	1	83	81	82.0	2
	Naphthalene	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	LPQL	LPQL	NC	NC
	Acenaphthene	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	LPQL	LPQL	NC	NC
	Anthracene	0.1	LPQL	LPQL	NC	NC
	Fluoranthene	0.1	LPQL	LPQL	NC	NC
	Pyrene	0.1	LPQL	LPQL	NC	NC
	Benzo(a)anthracene	0.1	LPQL	LPQL	NC	NC
	Chrysene	0.1	LPQL	LPQL	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	LPQL	LPQL	NC	NC
	Benzo(a)pyrene	0.05	LPQL	LPQL	NC	NC
	Indeno(123-cd)pyrene	0.1	LPQL	LPQL	NC	NC
	Dibenzo(ah)anthracene	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	LPQL	LPQL	NC	NC
	TRH C_6-C_{10} (F1)	25	LPQL	LPQL	NC	NC
	TRH >C_{10}-C_{16} (F2)	50	LPQL	LPQL	NC	NC
	TRH >C_{16}-C_{34} (F3)	100	LPQL	LPQL	NC	NC
	TRH >C_{34}-C_{40} (F4)	100	LPQL	LPQL	NC	NC
	Benzene	0.5	LPQL	LPQL	NC	NC
	Toluene	0.5	LPQL	LPQL	NC	NC
	Ethylbenzene	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	LPQL	LPQL	NC	NC
	o-xylene	1	LPQL	LPQL	NC	NC

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable
Results between 5 & 10 times PQL = RPD value <= 75% are acceptable
Results < 5 times PQL = RPD value <= 100% are acceptable
If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria VALUE

Abbreviations:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
NA: Not Analysed
NC: Not Calculated
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCBs: Polychlorinated Biphenyls
TRH: Total Recoverable Hydrocarbons

TABLE H (b)
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH309 (0.21-0.4m)	Arsenic	4	6	6	6.0	0
Dup Ref = HL2	Cadmium	0.4	LPQL	LPQL	NC	NC
	Chromium	1	11	12	11.5	9
Envirolab Report: 164998	Copper	1	39	40	39.5	3
	Lead	1	20	20	20.0	0
	Mercury	0.1	LPQL	LPQL	NC	NC
	Nickel	1	13	14	13.5	7
	Zinc	1	75	77	76.0	3
	Naphthalene	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	LPQL	LPQL	NC	NC
	Acenaphthene	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	LPQL	LPQL	NC	NC
	Anthracene	0.1	LPQL	LPQL	NC	NC
	Fluoranthene	0.1	LPQL	LPQL	NC	NC
	Pyrene	0.1	LPQL	LPQL	NC	NC
	Benzo(a)anthracene	0.1	LPQL	LPQL	NC	NC
	Chrysene	0.1	LPQL	LPQL	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	LPQL	LPQL	NC	NC
	Benzo(a)pyrene	0.05	LPQL	LPQL	NC	NC
	Indeno(123-cd)pyrene	0.1	LPQL	LPQL	NC	NC
	Dibenzo(ah)anthracene	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	LPQL	LPQL	NC	NC
	TRH C6-C10 (F1)	25	LPQL	LPQL	NC	NC
	TRH >C10-C16 (F2)	50	LPQL	LPQL	NC	NC
	TRH >C16-C34 (F3)	100	LPQL	LPQL	NC	NC
	TRH >C34-C40 (F4)	100	LPQL	LPQL	NC	NC
	Benzene	0.5	LPQL	LPQL	NC	NC
	Toluene	0.5	LPQL	LPQL	NC	NC
	Ethylbenzene	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	LPQL	LPQL	NC	NC
	o-xylene	1	LPQL	LPQL	NC	NC

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable
Results between 5 & 10 times PQL = RPD value <= 75% are acceptable
Results < 5 times PQL = RPD value <= 100% are acceptable
If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria VALUE

Abbreviations:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
NA: Not Analysed
NC: Not Calculated
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCBs: Polychlorinated Biphenyls
TRH: Total Recoverable Hydrocarbons

TABLE I
SOIL INTER-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	Envirolab VIC PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = BH301 (0.26-0.4)	Arsenic	4	4	LPQL	LPQL	NC	NC
Dup Ref = JDC1	Cadmium	0.4	0.4	LPQL	LPQL	NC	NC
	Chromium	1	1	27	210	118.5	154
Envirolab Report: 164998	Copper	1	1	74	70	72.0	6
Envirolab VIC Report: 10552	Lead	1	1	10	10	10.0	0
	Mercury	0.1	0.1	LPQL	LPQL	NC	NC
	Nickel	1	1	24	19	21.5	23
	Zinc	1	1	39	34	36.5	14
	Naphthalene	0.1	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	0.1	LPQL	0.2	0.1	120
	Acenaphthene	0.1	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	0.1	1	1	1.0	0
	Anthracene	0.1	0.1	0.3	0.3	0.3	0
	Fluoranthene	0.1	0.1	2.5	2.6	2.6	4
	Pyrene	0.1	0.1	2.7	2.8	2.8	4
	Benzo(a)anthracene	0.1	0.1	1.1	1.1	1.1	0
	Chrysene	0.1	0.1	0.9	1.3	1.1	36
	Benzo(b,j+k)fluoranthene	0.2	0.2	1	1.9	1.5	62
	Benzo(a)pyrene	0.05	0.05	0.88	1.1	1.0	22
	Indeno(123-cd)pyrene	0.1	0.1	0.6	0.6	0.6	0
	Dibenzo(ah)anthracene	0.1	0.1	LPQL	0.2	0.1	120
	Benzo(ghi)perylene	0.1	0.1	0.8	0.8	0.8	0
	Benzo(a)pyrene TEQ	0.5	0.5	1.2	1.7	1.5	34
	TRH C6-C10 (F1)	25	25	LPQL	LPQL	NC	NC
	TRH >C10-C16 (F2)	50	50	LPQL	LPQL	NC	NC
	TRH >C16-C34 (F3)	100	100	700	390	545.0	57
	TRH >C34-C40 (F4)	100	100	920	560	740.0	49
	Benzene	0.5	0.5	LPQL	LPQL	NC	NC
	Toluene	0.5	0.5	LPQL	LPQL	NC	NC
	Ethylbenzene	1	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	2	LPQL	LPQL	NC	NC
	o-xylene	1	1	LPQL	LPQL	NC	NC

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable
Results between 5 & 10 times PQL = RPD value <= 75% are acceptable
Results < 5 times PQL = RPD value <= 100% are acceptable
If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria VALUE

Abbreviations:

PQL: Practical Quantitation Limit
LPQL: Less than PQL
NA: Not Analysed
NC: Not Calculated
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCBs: Polychlorinated Biphenyls
TRH: Total Recoverable Hydrocarbons

TABLE J

GROUNDWATER INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS

All results in µg/L unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = MW301	Arsenic	1	LPQL	LPQL	NC	NC
Dup Ref = JDCW	Cadmium	0.1	LPQL	LPQL	NC	NC
	Chromium	1	LPQL	LPQL	NC	NC
Envirolab Report: 165176	Copper	1	6	8	7	29
	Lead	1	LPQL	LPQL	NC	NC
	Mercury	0.05	LPQL	LPQL	NC	NC
	Nickel	1	33	35	34	6
	Zinc	1	38	36	37	5
	Naphthalene	0.1	LPQL	LPQL	NC	NC
	Acenaphthylene	0.1	LPQL	LPQL	NC	NC
	Acenaphthene	0.1	LPQL	LPQL	NC	NC
	Fluorene	0.1	LPQL	LPQL	NC	NC
	Phenanthrene	0.1	LPQL	LPQL	NC	NC
	Anthracene	0.1	LPQL	LPQL	NC	NC
	Fluoranthene	0.1	LPQL	LPQL	NC	NC
	Pyrene	0.1	LPQL	LPQL	NC	NC
	Benzo(a)anthracene	0.1	LPQL	LPQL	NC	NC
	Chrysene	0.1	LPQL	LPQL	NC	NC
	Benzo(b,j+k)fluoranthene	0.2	LPQL	LPQL	NC	NC
	Benzo(a)pyrene	0.1	LPQL	LPQL	NC	NC
	Indeno(123-cd)pyrene	0.1	LPQL	LPQL	NC	NC
	Dibenzo(ah)anthracene	0.1	LPQL	LPQL	NC	NC
	Benzo(ghi)perylene	0.1	LPQL	LPQL	NC	NC
	TRH C6-C10 (F1)	10	LPQL	LPQL	NC	NC
	TRH >C10-C16 (F2)	50	69	88	79	24
	TRH >C16-C34 (F3)	100	350	470	410	29
	TRH >C34-C40 (F4)	100	LPQL	LPQL	NC	NC
	Benzene	1	LPQL	LPQL	NC	NC
	Toluene	1	LPQL	LPQL	NC	NC
	Ethylbenzene	1	LPQL	LPQL	NC	NC
	m+p-xylene	2	LPQL	LPQL	NC	NC
	o-xylene	1	LPQL	LPQL	NC	NC

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable

Results between 5 & 10 times PQL = RPD value <= 75% are acceptable

Results < 5 times PQL = RPD value <= 100% are acceptable

If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria VALUE

Abbreviations:

PQL: Practical Quantitation Limit

LPQL: Less than PQL

NA: Not Analysed

NC: Not Calculated

OCP: Organochlorine Pesticides

OPP: Organophosphorus Pesticides

PCBs: Polychlorinated Biphenyls

TRH: Total Recoverable Hydrocarbons

TABLE K

SUMMARY OF FIELD QA/QC RESULTS

ANALYSIS	Envirolab PQL		TB1[S]	TS1[S]
			6/04/2017	12/04/2017
	mg/kg	µg/L	mg/kg	% Recovery
Benzene	1	1	LPQL	93
Toluene	1	1	LPQL	94
Ethylbenzene	1	1	LPQL	100
m+p-xylene	2	2	LPQL	101
o-xylene	1	1	LPQL	100

Explanation:

[W] Sample type (water)

[S] Sample type (sand)

BTEX concentrations in trip spikes are presented as % recovery

Values above PQLs/Acceptance criteria **VALUE**

Abbreviations:

PQL: Practical Quantitation Limit

LPQL: Less than PQL

NA: Not Analysed

NC: Not Calculated

TB: Trip Blank

TS: Trip Spike

RS: Rinsate Sample

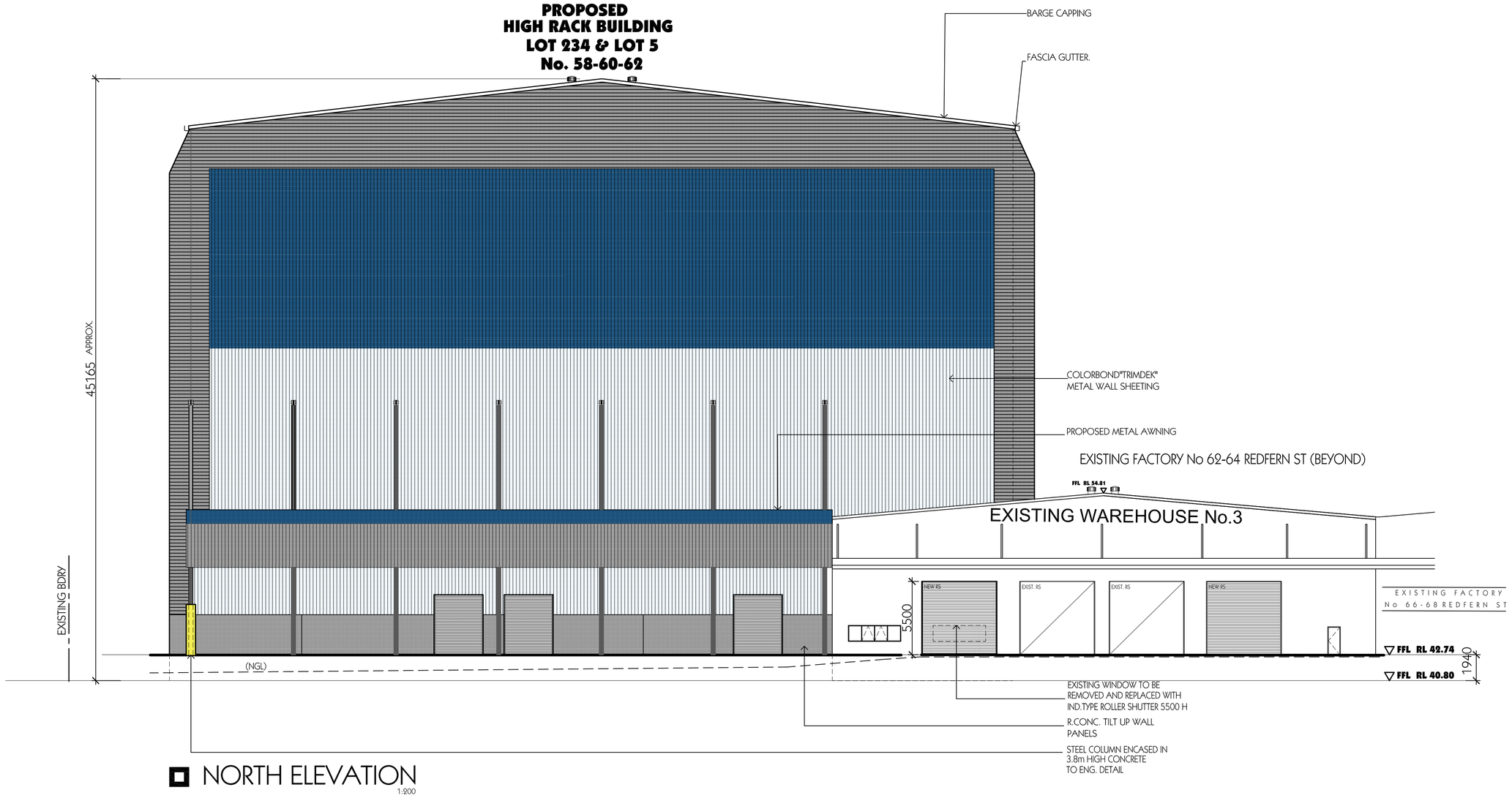
TRH: Total Recoverable Hydrocarbons

REPORT APPENDICES

Appendix A: Site Information

Proposed Development Plans

PROPOSED
HIGH RACK BUILDING
LOT 234 & LOT 5
No. 58-60-62



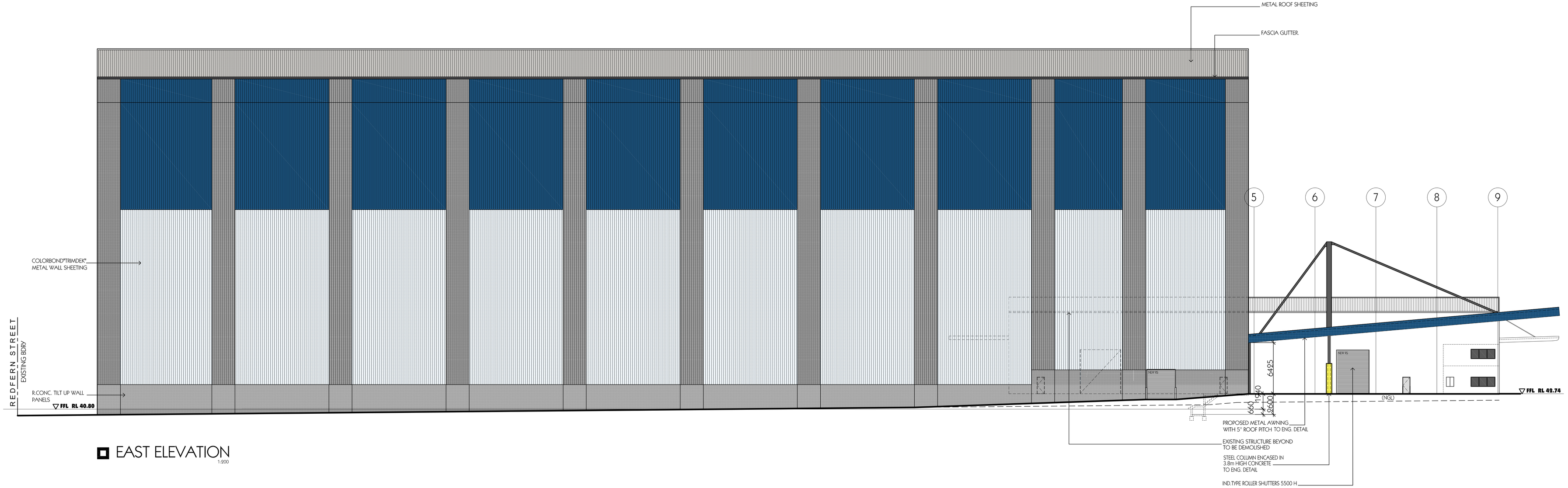
NORTH ELEVATION
1:200

PROPOSED COLOUR SCHEDULE

- COLORBOND WINDSPRAY — METAL ROOF SHEETING
- COLORBOND IRONSTONE — COLORBOND METAL ROOF GUTTERS
- DULUX FLOODED GUM — FEATURE WALL
- DULUX MONDRIAN BLUE — METAL AWNING
- DULUX CURRENCY CREEK — METAL AWNING COLUMN
- DULUX MONDRIAN BLUE — FEATURE WALL
- DULUX BLUE ICE QUARTER — FEATURE WALL
- DULUX FLOODED GUM — R.CONC. TILT UP WALL PANELS

"ZINCALUME TRIMDEK"
METAL ROOF SHEETING

FASCIA GUTTER



EAST ELEVATION
1:200

Issue	Description	Date	Drawn	Issued
A	FOR DA	10-08-2016	MC	CZ

General Notes

1) All dimensions and floor areas are to be verified by the Builder prior to the commencement of any building work. Any discrepancies are to be brought to the attention of the designer.
2) Levels shown are approximate unless accompanied by reduced levels.
3) Figured dimensions must be taken in preference to scaling.
4) All boundary clearances must be verified by the surveyor prior to the commencement of any building works.
5) Where engineering drawings are required such must take preference to this drawing.
6) Stormwater to be discharged to Councils' requirements and AS 3500.3-1990.
7) All services to be located and verified by the Builder with relevant authorities before any building work commences.

North Point

Consultants

ALGORRY ZAPPIA & ASSOCIATES PTY.LTD.
Building Designers & Consulting Civil & Structural Engineers

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Project
PROPOSED EXPANSION TO EXIST. INDUST. DEVEL.
AT LOT 234 DP 1037039, LOT 5 DP 3082 No 58-72 REDFERN STREET, WETHERILL PARK

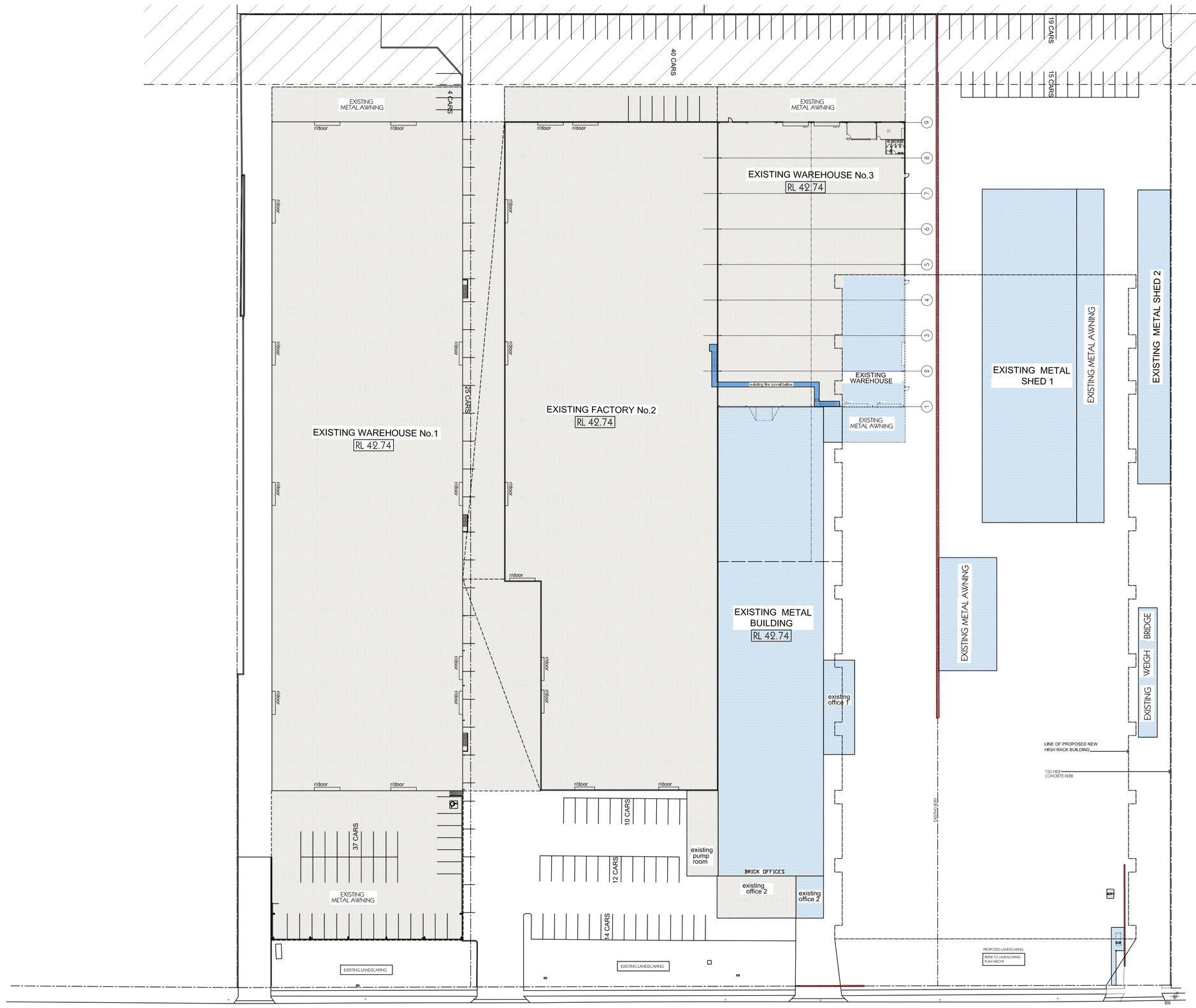
Client
ABC Tissue Products

Title
ELEVATIONS

Drawn	Checked	Date
MC	CZ	JUNE 2016

Activity Type:	Job #	Scale @ B1
DA	1129-16	1:200

Project #	Sheet No.:	Issue
P3808	A05	A



DEMOLITION PLAN 1:500

LEGEND

EXISTING STRUCTURE TO BE DEMOLISHED OR REMOVED

EXISTING RETAINING WALL TO BE DEMOLISHED AND MAKE GOOD

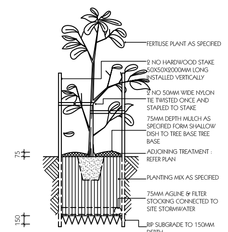
EXISTING BUILDING / AWNING TO REMAIN

LANDSCAPING LEGEND

Turf
Excavate / grade all areas to be turfed to 120mm below required finished levels.
Do not excavate within 1500mm of the trunk of any existing tree to be retained.
Ensure that all surface water runoff is directed towards the steel pits, kerbs etc., and away from buildings. Ensure that no pooling or ponding will occur. Rip the subgrade to 150mm.
Install 100mm depth of imported topsoil. Just prior to spreading the turf, spread "Sidney's No.17 lawn fertiliser" over the topsoil at the recommended rate. Lay "Kikuyu" turf rolls closely butted. Fill any small gaps with topsoil. Water thoroughly.

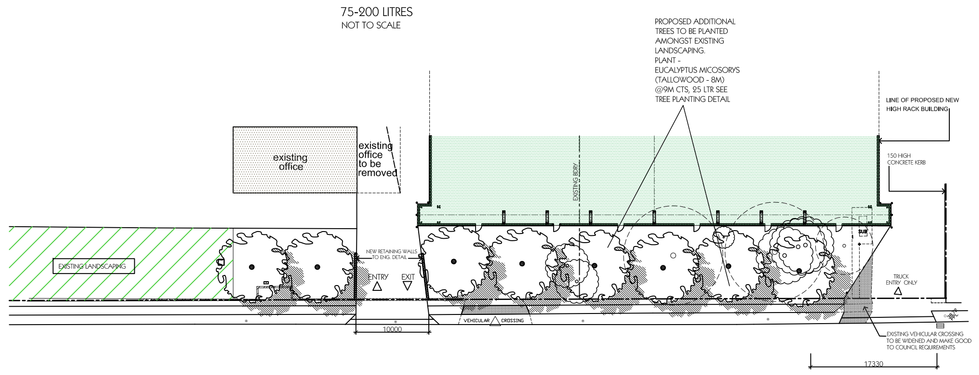
Existing trees to be retained

Existing trees to be removed



TREE PLANTING DETAIL

75-200 LITRES
NOT TO SCALE



LANDSCAPING PLAN 1:500

Issue	Description	Date	Drawn	Issued
A	FOR DA	10-08-2016	MC	CZ

General Notes

1) All dimensions and floor areas are to be verified by the Builder prior to the commencement of any building work. Any discrepancies are to be brought to the attention of the designer.
2) Levels shown are approximate unless accompanied by reduced levels.
3) Figured dimensions must be taken in preference to scaling.
4) All boundary clearances must be verified by the surveyor prior to the commencement of any building works.
5) Where engineering drawings are required such must take preference to this drawing.
6) Stormwater to be discharged to Councils' requirements and AS 3500.3-1990.
7) All services to be located and verified by the Builder with relevant authorities before any building work commences.

North Point

Consultants

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Project
PROPOSED EXPANSION TO EXIST. INDUST. DEVEL.
AT LOT 234 DP 1037039, LOT 5 DP 3082 No 58-72 REDFERN STREET, WETHERILL PARK

Client
ABC Tissue Products

Title
DEMOLITION AND LANDSCAPING PLAN

Drawn	Checked	Date
MC	CZ	JUNE 2016
Activity Type: DA	Job # 1129-16	Scale @ B1 1:500
Project # P3808	Sheet No.: A06	Issue A