ENVIRONMENTAL INVESTIGATION SERVICES

REPORT

TO

CATHOLIC EDUCATION OFFICE SYDNEY

ON

STAGE 1 ENVIRONMENTAL SITE ASSESSMENT

FOR

PROPOSED SHOOOL – DUE DILIGENCE

AT

135,135A,145, 155, 165 TENTH AND 140,160,170 ELEVENTH AVENUE, AUSTRAL, NSW

21 APRIL 2016

REF: E27556KrptRev3

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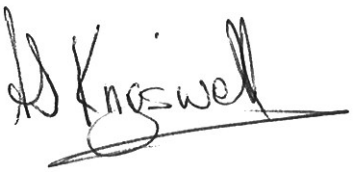


Adrian Kingswell
Principal

EXECUTIVE SUMMARY

The Catholic Education Office Sydney commissioned Environmental Investigation Services (EIS) to undertake a Stage 1 Environmental Site Assessment (ESA) for the proposed school development at 135, 135a, 145, 155, 165 Tenth Avenue and 160, 170 Eleventh Avenue, Austral, NSW ('the site').

The site is identified as Lots 809 to 812, 840 to 843, 843 DP2475. The site location is shown on Figure 1 and the ESA was confined to the site boundaries as shown on Figure 2. The proposed development area is referred to as 'the site' in this report.

The objectives of the ESA were to:

- Assess the potential risk for widespread soil contamination at the site;
- Assess the potential for dam water contamination at 140 Eleventh Avenue, Austral;
- Assess the potential risk to human health and the environment posed by the contaminants;
- Provide a preliminary waste classification for the off-site disposal of soil that may need to be excavated for the development; and
- Comment on the suitability of the site for the proposed landuse.

The scope of work included:

- Preparation of site specific Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs);
- A review of site information and site history documents;
- A site inspection to identify areas of environmental concern (AEC);
- Preparation of a Preliminary Conceptual Site Model (CSM) to outline the AEC, Potential Contaminants of Concern (PCC) and potential receptors;
- Design and implementation of a field sampling and laboratory analysis program;
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC); and
- Preparation of a report presenting the results of the assessment.

Samples for this investigation were obtained from sixty (60) evenly spaced sampling points (testpits) as shown on the attached Figure 2. This density is approximately 55% of the minimum sampling density recommended for a Stage 2 ESA.

An elevated concentration of lead (460mg/kg) was encountered in the fill soil sample TP52 (0.7-1.0m) above the HIL-A SAC of 300mg/kg. Statistical analysis using Pro UCL (version 5.0) indicated that the fill soil lead data set obtained from testpits TP50 to TP60 passed the assessment criteria.

All remaining results were below the SAC adopted for this investigation. However, fibre cement fragments containing asbestos were encountered in the following samples:

- Fill soil sample TP4 (0-0.2m) located in the south-east section of the site adjacent and immediately to the north of the residential building at 145 Tenth Avenue;
- Fill soil sample TP29 (0.1m) located in the north-east section of the site immediately adjacent and to the north-east of the site shed at 160 Eleventh Avenue;
- Surface sample SS1 located adjacent to a small shed at 145 Tenth Avenue;
- Building sample B1, obtained from a building to the east of the residential building at 145 Tenth Avenue;
- Surface sample SS2 located within the northern garden bed at 155 Tenth Avenue;
- Surface sample FJS1 located in the north-east section of the site immediately adjacent and to the north of the site shed at 160 Eleventh Avenue;
- Fill soil sample TP57 (0.15m) located in the north-west section of the site identified as 135 Tenth Avenue; and

- Fill soil sample TP30 (0.2m) located in the south-west section of the site identified as 135 Tenth Avenue.

The site asbestos contamination data is shown in the Tables and on Figure 3 attached.

The asbestos containing materials identified at the site are considered to be non-friable (i.e bound within a cement matrix and unable to be crumbled by hand).

Due to the discrete nature of asbestos containing materials in fill, it is likely that additional asbestos containing materials are located within the fill at the site, particularly in sections of the site where buildings may have been demolished in the past.

The options for addressing the asbestos issues at the site are:

1. Excavation and off-site disposal of all of the topsoil/fill material from across the site (refer to Section 11 and Section 12); or
2. Undertake a detailed soil investigation (DSI) for asbestos in accordance with the Western Australian Asbestos Guidelines 2009 (endorsed in NEPM 2013) to assess if asbestos hot spot areas can be estimated for remediation purposes.

EIS consider that the site can be made suitable for the proposed landuse/development provided that the following recommendations are implemented to address the data gaps and to better characterise the risks:

- A Hazardous Materials Assessment (Hazmat) is undertaken for the existing buildings prior to the commencement of demolition works;
- The issue of asbestos cement fragments in the soil is resolved by either removing all of the topsoil/fill or identifying the extent of the problem and undertaking targeted remediation;
- A Remediation Action Plan (RAP) is prepared. The RAP will include remedial measures to be implemented to render the site suitable for the proposed landuse;
- A Validation Assessment (VA) is prepared. The VA will document the success of the remediation works;
- An Asbestos Management Plan (AMP) is prepared for the site and the proposed construction works; and
- Inspections during demolition and excavation work are undertaken to assess any unexpected conditions or subsurface facilities that may be discovered between investigation locations. This should facilitate appropriate adjustment of the works programme and schedule in relation to the changed site conditions. Inspections should be undertaken by experienced environmental personnel.

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

TABLE OF CONTENTS

TABLE OF CONTENTS

1 INTRODUCTION

The Catholic Education Office Sydney commissioned Environmental Investigation Services (EIS)[1] to undertake a Stage 1 Environmental Site Assessment (ESA) for the proposed school development at 135, 135a, 145, 155, 165 Tenth Avenue and 140, 160, 170 Eleventh Avenue, Austral, NSW ('the site').

The site is identified as Lots 809 to 812 and 840 to 843 DP2475. The site location is shown on Figure 1 and the ESA was confined to the site boundaries as shown on Figure 2. The proposed development area is referred to as 'the site' in this report.

The ESA was undertaken generally in accordance with the following EIS proposals:

- EIS proposal (Ref: EP8129Krev1) of 4 July 2014 and written acceptance from the Catholic Education Office Sydney of 18 August 2014;
- EIS proposal (Ref: EP8129Krev1) of 4 July 2014 (Option for Stage 1 ESA – 160 Eleventh Avenue, Austral) and written acceptance from the Catholic Education Office Sydney of 4 July 2015;
- EIS proposal (Ref: EP8303KD) of 1 September 2015 (Stage 1 ESA – 140 Eleventh Avenue, Austral) and written acceptance from the Catholic Education Office Sydney of 1 September 2015;
- EIS proposal (Ref: EP9831KD) of 24 September 2016 (Stage 1 ESA – 135 and 135a Tenth Avenue, Austral) and written acceptance from the Catholic Education Office Sydney of 31 March 2016.

This report is a revision of the former EIS Stage 1 ESA report (Ref: E27556KrptRev2, dated 22 September 2015) and includes the additional site identified as 135 and 135a Tenth Avenue, Austral, NSW.

1.1 Proposed Development Details

The proposed development includes the demolition of the existing residential buildings and the construction of a new primary or secondary school. Details of the proposed school layout are not available at this preliminary stage.

1.2 Objectives

The objectives of the ESA are to:

- Assess the potential risk for widespread soil contamination at the site;
- Assess the potential for dam water contamination at 140 Eleventh Avenue, Austral;

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

- Assess the potential risk to human health and the environment posed by the contaminants;
- Provide a preliminary waste classification for the off-site disposal of soil that may need to be excavated for the development; and
- Comment on the suitability of the site for the proposed landuse.

1.3 Scope of Work

The scope of work included:

- Preparation of site specific Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs);
- A review of site information and site history documents;
- A site inspection to identify areas of environmental concern (AEC);
- Preparation of a Preliminary Conceptual Site Model (CSM) to outline the AEC, Potential Contaminants of Concern (PCC) and potential receptors;
- Design and implementation of a field sampling and laboratory analysis program;
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC); and
- Preparation of a report presenting the results of the 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 Amendment Act (1997[2])
State Environmental Planning Policy No.55 – Remediation of Land (1998[3])
Guidelines for Consultants Reporting on Contaminated Sites (2011[4])
Guidelines on the Duty to Report Contamination (2015[5])
Guidelines for the NSW Site Auditor Scheme, 2nd Edition (2006[6])

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

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

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

[5] NSW EPA, (2015), *Guidelines on the Duty to Report Contamination.* (referred to as Duty to Report Contamination 2015)

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

Guidelines/Regulations/Documents
National Environmental Protection (Assessment of Site Contamination) Amendment Measure (2013[7])
NSW EPA Contaminated Sites Sampling Design Guidelines (1995[8])
NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2014[9])

[7] National Environment Protection Council (NEPC), (2013), *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1).* (referred to as NEPM 2013)

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

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

2 DATA QUALITY ASSESSMENT

2.1 Data Quality Objectives (DQOs)

The DQOs provide a systematic approach for undertaking the assessment and outlines the criteria against which the data can be assessed.

A methodology for establishing the DQOs is presented in the document *Data Quality Objectives Process for Hazardous Waste Site Investigations* (2000[10]). This methodology has been adopted in the NEPM 2013, AS4482.1-2005[11] and the Site Auditor Guidelines 2006. The main steps involved in preparing the DQOs are summarised in the table below:

Table 2-1: DQOs

Step	Input
State the Problem	The presence of contamination may pose a risk to human health and the environment. An ESA is required to assess the potential risk and to comment on the suitability of the site for the proposed landuse.
Identify the Decisions	The assessment aims to address the objectives outlined in **Section 1.2.**
Identify Inputs into the Decision	The following inputs will be used to address the decisions: • Review of site information including regional geology, topography, setting, acid sulfate soil (ASS) potential, salinity potential, hydrogeology, surface water flow, review of major services and meteorological information (see **Section** 3); • Review of site history information (see **Section** 4**);** • Undertake a site inspection to identify the AEC (see **Section** 3); • Prepare a preliminary CSM (see **Section 5);** • Design and implementation of a field sampling program (see **Section** 7**)**; • Design and implementation of a laboratory analysis program (see **Section** 7); • Assessment of analytical data. The DQIs that will be used to assess the analytical data are outlined in **Section 2.2**; and • Compare the analytical results against the SAC outlined in **Section** 6.
Study Boundary	The investigation was confined to the site boundaries as shown in Figure 2.
Develop a Decision Rule	The analytical results will be assessed against the SAC (see **Section** 6**).**

[10] US EPA, (2000), *Data Quality Objectives Process for Hazardous Waste Site Investigations.* (referred to as US EPA 2000)

[11] Standards Australia, (2005), *Guide to the Investigation and Sampling of sites with Potentially Contaminated Soil.* (referred to as AS 2005)

Step	Input
	The NEPM 2013 recommends using statistical analysis to assess the laboratory data for soil samples against the health based SAC. The data set should be assessed against the following criteria: • 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. Statistical calculations are not required if all results are below the SAC. Statistical calculations are not undertaken on Health Screening Levels (HSLs) as elevated point source contamination associated with petroleum hydrocarbons can pose a vapour risk to receptors.
Specific Limits on Decision Errors	Decision errors are false positive (i.e. stating the site is free of contamination when it is not) or false negative (i.e. stating that the site is contaminated when it is not). The more significant error is the false positive which may result in potential risks to human health and the environment. To account for this, the assessment has assumed that elevated concentrations of contaminants are present in the samples unless demonstrated otherwise.
Optimise the Design for Obtaining Data	The Site Auditor Guidelines 2006 recommend evaluating the data set as a whole to determine any limitations within the data set. The overall data set will be optimised by reviewing the data as the project proceeds. When necessary, adjustments will be made to the sampling or analytical program.

2.2 Data Quality Indicators (DQIs)

The DQIs required to address inputs into the decision include: precision, accuracy, representativeness, completeness and comparability. Reference should be made to the appendices for further information of the DQIs. The DQIs will be addressed as follows:

Table 2-2: DQIs

Indicator	Methods
Completeness	Data and documentation completeness will be achieved by: • Preparation of sampling and analysis plan; • Preparation of chain of custody (COC) records; • Review of the laboratory sample receipt information; • Use of National Association of Testing Authorities (NATA) registered laboratories for all analysis; • Visual, olfactory and PID screening of samples during the investigation; and • Laboratory analysis to target PCC. Any changes to the analytical schedule to be documented.

Indicator	Methods
Comparability	Data comparability will be achieved by: • Maintaining consistency in sampling techniques; • Use of appropriate preservation, storage and transport methods; and • Use of consistent analysis techniques and reporting standards by the laboratories.
Representativeness	Data representativeness will be achieved by: • Appropriate coverage of sample locations across accessible areas of the site; and • Representative coverage of analysis for PCC. Any changes to the analytical schedule to be documented.
Precision	Precision will be achieved by: • Calculating the relative percentage difference (RPD) of duplicate samples; • 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.
Accuracy	Accuracy will be achieved by: • Use of trained and qualified field staff; • Appropriate industry standard sampling equipment and decontamination procedures; • Sampling and screening equipment will be factory calibrated on a regular basis. Calibration will be checked internally prior to use; • Sampling and equipment decontamination; • Collection and analysis of field Quality Assurance (QA) and Quality Control (QC) samples for PCC; • The field QA/QC analysis will include: ➢ 5% of samples as inter-laboratory duplicates; ➢ 10% of samples as intra-laboratory duplicates; ➢ One trip blank (TB) sample per batch; and ➢ One trip spike (TS) sample per batch of volatiles; • Acceptable concentrations in TS and TB samples. Non-compliance to be documented in the report; • Appropriate sample preservation, handling, holding time and COC procedure; • Review of the primary laboratory QA/QC data including: RPDs, surrogate recovery, repeat analysis, blanks, laboratory control samples (LCS) and matrix spikes;

Indicator	Methods
	• The following acceptance criteria will be used to assess the primary laboratory QA/QC results. Non-compliance to be documented: ➢ RPDs: o results that are < 5 times the PQL, any RPD is acceptable; and o results > 5 times the PQL, RPDs between 0-50% are acceptable; ➢ LCS recovery and matrix spikes: o 70-130% recovery acceptable for metals and inorganics; o 60-140% recovery acceptable for organics; and o 10-140% recovery acceptable for VOCs; ➢ Surrogate spike recovery: o 60-140% recovery acceptable for general organics; and o 10-140% recovery acceptable for VOCs; ➢ Blanks: All less than PQL; and • Reporting to industry standards.

3 SITE INFORMATION AND PHYSICAL SETTING

3.1 Site Identification

Table 3-1: Site Identification Information

Site Owner:	Various site owners including 'The Trustees of the Roman Catholic Church for the Archdiocese of Sydney'.
Site Address:	135, 135a, 145,155,165 Tenth Avenue, Austral, NSW and 140, 160, 170 Eleventh Avenue, Austral, NSW
Lot & Deposited Plan:	Lot 809 to 812 and 840 to 843 in DP2475
Current Land Use:	Rural/residential
Proposed Land Use:	School
Local Government Authority:	Liverpool City Council
Site Area (m^2):	96,000
RL (AHD in m) (approx.):	67-78
Geographical Location (lat/long) (approx.):	S: 33˚55'55.04" E: 150˚48'29.56"
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2
Site Contamination Data:	Figure 3

3.2 Site Location and Setting

The site is located on the east side of Fourth Avenue and extends from the south side of Eleventh Avenue to the north side of Tenth Avenue. The site is located in a predominantly rural/residential area of Austral. The site is located approximately 300m to the north-east of Kemps Creek.

3.3 Topography

The regional topography is characterised by a hill slope that generally falls to the south and south-west towards Kemps Creek. The natural site topography has been altered to

accommodate the existing residential building. The overall topography of the site falls to the north at slopes between 3-4°.

3.4 Site Inspection

A walkover inspection of the majority of the site and immediate surrounds was undertaken on 15 and 16 September 2014. Additional walkover inspections were undertaken of additional areas added to the subject site area on the following dates:

- 160 Eleventh Avenue, 30 June 2015;
- 140 Eleventh Avenue, 3 September 2015; and
- 135 and 135a Tenth Avenue, 6 April 2016.

The inspections were limited to accessible areas of the site and did not include an internal inspection of buildings. The sites comprised of six properties divided by metal barbed wire fencing. Selected site photographs obtained during the inspections are attached in the appendices.

145,155 and 165 Tenth Avenue Austral & 170 Eleventh Avenue, Austral - 15 and 16 September 2014

At the time of the inspection a single storey residential building was located in the south-west section of the site (No 145 Tenth Avenue, Austral). The residential building appeared to have been constructed of brick and terracotta roof tiles. A number of additional site sheds were located adjacent to and in the immediate vicinity of the residential buildings. The buildings appeared to be constructed of timber, fibre cement sheeting and corrugated iron. The sheds appeared to have been used for small scale agricultural purposes and storage. A fibre cement fragment (referred to as SS1) was located on the ground surface adjacent to one of the site sheds. A fibre cement sample (referred to as B1) was also obtained from the site shed to the east of the residential premises. The fibre cement sampling locations are shown in Figure 2.

A residential building constructed of brick, timber and corrugated metal roofing was located in the south/central section of the site (No 155 Tenth Avenue, Austral). Two sheds were located to the north of the residential building. The sheds appeared to be constructed of corrugated metal. A number of cars and car parts were located to the north of the residential building. Two circular garden beds were located in the north and central section of the property. Each of the garden beds was approximately 10m in diameter and boarded by masonry brick pavers. The garden beds were grassed, over grown and did not appear to have been maintained for some time. A number of fibre cement fragments (including sample SS2) were located on the ground surface within the garden bed located in the north section of this property. The fibre cement sampling locations are shown in Figure 2.

The property identified as 165 Tenth Avenue, Austral, was located in the south-west section of the site. The property identified as 170 Eleventh Avenue, Austral, was located in the north-west section of the site. These properties appeared to have been used for agricultural purposes (grazing). Access between the two properties appeared to be gained via removal of a metal fencing panel.

Igneous gravel was located on the ground surface in the south-west section of No 165 Tenth Avenue, Austral.

Scattered building rubble including bricks and concrete were located on the surface in the south section of No 170 Eleventh Avenue, Austral.

A number of large trees up to approximately 30m in height were scattered across the site. The remainder of the site area was grassed.

160 Eleventh Avenue, Austral - 30 June 2015

At the time of the inspection a residential building was located in the north-east section of the site. The building appeared to have been constructed of brick, timber, corrugated metal and terracotta tiled roof. Maintained landscaped gardening was evident adjacent to the building.

A number of detached sheds were located immediately to the south, south-west and east of the residential building. The majority of the sheds appeared to be constructed of corrugated metal and timber. A shed was located within the west section of the site and appeared to be constructed of fibre cement sheeting and timber. A fibre cement fragment was located on the grassed surface immediately to the north of this shed (sample FJS1).

A small grassed stockpile (approximately 45m^3) was located in the central section of the site to the west of the residential building. The stockpile contained domestic and building rubble (tiles, concrete and metal fragments).

A number of large trees up to approximately 30m in height were located in the central and south section of the site. The remainder of the site area was grassed.

140 Eleventh Avenue, Austral – 3 September 2015

At the time of the inspection residential buildings were located in the north-west, north/central and north-east section of the site. The buildings appeared to have been constructed of brick, timber, corrugated metal and terracotta tiled roof.

A shed was located in the south-west section of the site. The shed appeared to be constructed of corrugated metal and timber. Vehicles and machinery were stored in the shed and along the south-west boundary fence.

The remainder of the site was grassed and appeared to be used for small scale farming (grazing) purposes.

A small pile of brick and concrete building rubble was located in the south-east section of the site.

No potential asbestos containing materials (ACM) were identified on the surface of the site during the site inspection.

A small dam approximately 15m in diameter was located in the south-east section of the site. The dam walls were approximately 1m higher that the surrounding site area.

135 and 135a Tenth Avenue, Austral – 6 April 2016

At the time of the inspection a single storey residential building was located in the east section of the site adjacent to the east site boundary. The building appeared to have been constructed of brick and terracotta roof tiles. A detached shed was located approximately 10m to the north of the residential building. The shed was also constructed of brick and terracotta roof tiles. The area between the shed and the residential building and the area immediately around the perimeter of the building was paved. A concrete driveway extended from Tenth Avenue to the residential building.

A second single storey residential building was located in the south-west section of the site. The building appeared to have been constructed of fibre cement sheeting, timber and corrugated metal. The building appeared to be in a dilapidated state, with fragments of fibre cement observed on the paved surface adjacent to the southern external wall of the building. Small corrugated metal sheds were located adjacent to the residential building.

The remainder of the site was grassed and appeared to be used for small scale farming (grazing) purposes. A shed was located in the north-east corner section of the site. The Shed appeared to have been utilised as cover for grazing stock. The shed was constructed of timber, metal mesh and fibre cement sheeting. The shed appeared to be in a dilapidated state. Fibre cement fragments were observed on the surface of the site adjacent to the shed.

What appeared to be evidence (furrows) of former small scale market gardening was noted in the north section of the site. The areas was approximately 125m^2.

Two parallel lines of less healthy grass were located immediately to the north of the eastern residential building. The lines extended for approximately 35m to the north. It was unclear if this section of the site was occupied for market gardening.

An area of burnt grass and vegetation was observed in the north-west section of the site. The areas was approximately 75m^2. Metal fragments were observed on the surface in this area. This area of the site appeared to have been used for incineration of waste including vegetation.

What appeared to be a stormwater pipe was located in the south-west section of the site to the rear of the residential building. The pipe was approximately 40cm in diameter. The site surface adjacent to the pipe was saturated and over grown with exotic vegetation. Based on the regional and site topography it appeared that the south-west and south section of the site had been filled.

3.5 Surrounding Land Use

The immediate surrounds included the following landuses:

- North – Craik Park was located to the north of the site beyond Eleventh Avenue, Austral;
- South – Semi rural/residential properties were located to the south of the site beyond Tenth Avenue, Austral;
- East – Semi rural/residential properties were located to the east of the site; and
- West – Semi rural/residential properties were located to the west of the site beyond Fourth Avenue, Austral.

3.6 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the assessment. Major services which could pose a potential migratory pathway were not located at the site.

3.7 Regional Geology

A review of the regional geological map of Penrith (1991[12]) indicates 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.

[12] Department of Mineral Resources, (1991), *1:100,000 Geological Map of Penrith (Series 9030).*

3.8 Salinity Hazard Map

The site is located within the area of Western Sydney included in the Salinity Potential Map 2002. Based upon interpretation from the geological formations and soil groups presented on the map, the site is located in a region of moderate salinity potential.

The moderate classification is attributed to scattered areas of scalding and indicator vegetation, in areas where concentrations have not been mapped. Saline areas may occur in this zone, which have not been identified or may occur if risk factors change adversely.

3.9 Hydrogeology

A review of groundwater bores registered with the NSW DIP Water[13] (DPIW) was undertaken by EIS. The search was limited to registered bores located within approximately 5km of the site. The search did not reveal any registered bores within this radius. A copy of the NOW map is attached in the appendices.

The stratigraphy of the site is expected to consist of residual clayey soils overlying relatively shallow bedrock. Based on these conditions and the results of the groundwater bore search, groundwater is not considered to be a significant resource for abstraction purposes in the immediate vicinity of the site. A perched aquifer located in the shallow subsurface is not considered to be a resource due to high salinity, poor water quality and low yield.

3.10 Surface Water Flows

Based on the site and surrounding topography, surface water flows would be expected to enter the street stormwater system flowing toward the south-west along Tenth Avenue. Kemps Creek is located approximately 300m to the south-west of the site.

A dam was located in the north-east corner of the site (at No. 140 Eleventh Avenue, Austral). Surface water in the immediate vicinity of the dam would be expected to flow towards the dam.

[13] http://www.waterinfo.nsw.gov.au/gw/, visited on 8 October 2014

4 SITE HISTORY ASSESSMENT

4.1 Aerial Photographs

Historical aerial photographs of the site and immediate surrounds were reviewed for the assessment. The aerial photographs were supplied to EIS. The date and year of which a number of the aerial photograph were taken was not indicated. A summary of the relevant information is presented in the following table:

Table 4-1: Summary of Historical Aerial Photos

Year	Details
Presumed 1930	The site appeared to have been occupied for residential and market gardening purposes. What appeared to be a rectangular shaped pitched roofed residential building was located in the south-west section of the site. A number of sheds were located within the immediate vicinity of the building. The north-east section of the site appeared to have been vegetated. What appeared to be a residential pitched roofed building was located in the south section of the site. A shed was located to the west of the building. What appeared to be a residential pitched roofed building was located in the north-west section of the site. A number of small and large rectangular shaped sheds were located to the south of the residential building. What appeared to be a residential pitched roofed building was located in the south-east section of the site. A number of small and large rectangular shaped sheds were located to the north of the residential building along with a market garden area. The remaining site area appeared to be grassed, with market gardens evident. Large trees were visible in the north-west, west and east section of the site. The surrounding areas appeared to have been utilised for market gardens and grazing purposes. A number of large rectangular agricultural sheds were located to the west of the site beyond a road (Fourth Avenue, Austral).
1957-Unknown	The site and immediate surrounds generally appeared similar to the 1930 aerial photograph. However, what appeared to be two pitched roof buildings were located in the west section of the site. Additional pitched roofed buildings were located in the south-west and north-east sections of the site. The sheds in the south-east section of the site appeared to have been demolished. Nine separate green houses were located to the north of the residential building in the south-east section of the site. The green houses appeared to have been demolished in the subsequent aerial photograph and a residential building appeared to have been constructed in the east section of this site area.

Year	Details
2005[14]	The site and immediate surrounds generally appeared similar to the 1957 - aerial photograph. However, what appeared to be a pitched roof building was located in the west section of the site and what appeared to be three separate pitched roofed buildings were located in the north-east section of the site.
January 2014[15]	The site and immediate surrounds generally appeared similar to the 2005 aerial photograph. However, all the buildings in the north-west, west and south-west section of the site appeared to have been demolished. The site did not appear to have been used for market gardens. A number of vehicles (cars and mini buses) were located to the west and north of the residential building located in the south section of the site.

4.2 Land Title Search

Land title records were reviewed for the assessment. The record search was performed by Advance Legal Searchers Pty Ltd. Copies of the title records are attached in the appendices. A summary of the relevant information is presented in the following table:

Table 4-2: Summary of Land Title Information

Date	Proprietor
Lot 840 DP2475 (135 and 135a Tenth Avenue, Austral)	
1920 - 1946	Herbert George Staff, farmer
1946 - 1952	Joe Spolarich, market gardener
1963 - 1970	Marius Pirrone, farmer
Lot 841 DP2475 (145 Tenth Avenue, Austral)	
1956 - 1957	Colin Craik, poultry farmer
1892 - 1956	John Jones, farmer
Lot 842 DP2475 (155 Tenth Avenue, Austral)	
1966 - 1984	Biacio Cimellaro, market gardener
1956 - 1957	Colin Craik, poultry farmer
1892 - 1956	John Jones, farmer
Lot 843 DP2475 (165 Tenth Avenue, Austral)	
1966 - 1984	Biacio Cimellaro, market gardener
1956 - 1957	Colin Craik, poultry farmer
1892 - 1956	John Jones, farmer
Lot 811 & 812 DP2475 (140 Eleventh Avenue, Austral)	
1963 – 1979	Natali Costa, market gardener
1954 - 1960	Colin Craik, poultry farmer
1931 - 1938	Heinrich Patroklus Schutte, farmer
1921-1929	Joseph Charles Gill, farmer

[14] Google Earth Pro, visited on 19 April 2016

[15] https://six.maps.nsw.gov.au/wps/portal/SIXViewer, visited on 19 April 2016

Lot 810 DP2475 (160 Eleventh Avenue, Austral)	
1946 - 1956	William Nicholas Star, farmer
1940 - 1946	William Milne, poultry farmer
1934 - 1940	Robert Milne, farmer
1921 - 1934	Isabella Gill, wife of farmer
Lot 809 DP2475 (170 Eleventh Avenue, Austral)	
1946 - 1956	William Nicholas Star, farmer
1940 - 1946	William Milne, poultry farmer
1934 - 1940	Robert Milne, farmer

4.3 Council Records

4.3.1 Development Applications (DA), Building Approvals (BA) and Property Files

Council DA, BA and property files were reviewed for the assessment. A summary of the relevant information is provided in the following table:

Table 4-3: Summary of Council Records

Record Number	Application Details
Lot 840 D P2475 (135 and 135a Tenth Avenue, Austral)	
1748/01	Council approval for erection of a shed and front entry gate.
1317/00	Council approval for erection of a second residential dwelling.
284/97	Council approval for landfilling within the south section of the site over a watercourse. The DA approval required that: • All fill imported onto the site was to undergo a contaminated site assessment; • Records of the source, nature and quantity of all incoming loads were to be maintained by the applicant/operator and supplied to Council on a monthly basis along with any results of chemical testing of material accepted for placement; and • No fires were lit or waste materials be burnt at the site. No further records including contamination assessment information was provided by council.
153/71	Council approval for the erection of a poultry shed. No further details provided.
492/68	Council approval for the erection of a patio with awning at the rear of the existing dwelling.
250/56	Council approval for the erection of a dwelling. No further details provided.
Lot 841 DP2475 (145 Tenth Avenue, Austral)	
DA 636/1979	Council approval for the demolition of a building and the construction of a new building. No further details provided

BA 925/1979	Council approval for the construction of a new three bedroom residential building adjacent to the original residential dwelling. Construction material listed included, concrete, timber and brick.
Lot 842 DP2475 (155 Tenth Avenue, Austral)	
BA 642/1975	Council approval for minor additions to the existing residential dwelling. No further details provided.
DA/BA 427/1979	Council approval for the additions to the residential dwelling. Construction materials listed included, timber and corrugated metal.
Lot 843 DP2475 (165 Tenth Avenue, Austral)	
DA 57/1986	Council approval for the construction of a residential dwelling. Construction materials listed included brick and fibre cement sheeting.
Pollution complaint dated 31 May 1995	Documentation relating to a potential pollution complaint regarding the burning of plastic and wiring for scrap metal retrieval. No further details or correspondence regarding the complaint.
DA 1805/2005	Council approval for the demolition of a residential dwelling and a number of sheds. Building materials included fibre cement sheeting. A safe work method statement was prepared by Bassett Demolitions detailing the works associated with the removal of fibre cement sheeting (containing asbestos).
Lot 809 DP2475 (170 Eleventh Avenue, Austral)	
DA 48/1957	Council approval for the construction of a residential dwelling. No further details provided
DA 528/2007	Council approval for the demolition of a residential dwelling and out houses. Building materials included fibre cement sheeting.
Lot 810 DP2475 (160 Eleventh Avenue, Austral)	
DA 492/1967	Council approval for the construction of a country dwelling. No further details provided.
DA 313/1970	Council approval for the construction of a farm tool shed. No further details provided.
BA 341-1970	Council approval for the construction of an AC (presumed asbestos cement) tool/storage shed.

4.3.2 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 presented below:

- The site does not include critical habitat and is not located in a Conservation Area;
- The land is identified as biodiversity certified land within the meaning of *Part 7AA of the Threatened Species Conservation Act 1955*;
- The land is subject to a tree preservation provision;
- No item of Environmental Heritage is situated on the land;

- 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); and
- The site is not located within an Acid Sulfate Soil risk area.

4.4 WorkCover Records

WorkCover records were reviewed for the assessment. Copies of relevant documents are attached in the appendices. The search did not indicate any licences to store dangerous goods including underground fuel storage tanks (USTs) or above ground storage tanks (ASTs) at the site.

4.5 NSW EPA Records

The NSW EPA records available online were reviewed for the assessment. A summary of the relevant information is provided in the following table:

Table 4-4: Summary of NSW EPA Online Records

Source	Details
CLM Act 1997[16]	There were no notices for the site under Section 58 of the Act.
NSW EPA List of Contaminated Sites[17]	The site is not listed on the NSW EPA register.
POEO Register[18]	There were no notices for the site on the POEO register.

4.6 Summary of Site History

A summary of the site history information is presented below:

- The aerial photographs and land title records indicated that the site has been used for agricultural purposes including market gardens from at least 1908 to 1984; and
- Council records and the aerial photos indicate that a number of buildings have been demolished at the site, particularly in the north-west, west and south-west section of the site (No 165 Tenth Avenue, Austral and 170 Eleventh Avenue, Austral). Council records have indicated that the buildings were constructed with fibre cement sheeting; and

[16] http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx, visited on 19 April 2016
[17] http://www.epa.nsw.gov.au/clm/publiclist.htm, visited on 19 April 2016
[18] http://www.epa.nsw.gov.au/prpoeoapp/, visited on 19 April 2016

- Council records indicate that a DA was approved for the importation of fill material onto the south section of the property identified as 135 and 135a Tenth Avenue, Austral.

4.7 Integrity of Site History Information

The majority of the site history information has been obtained from government organisations as outlined above. 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 age of the development; gap between aerial photographs; and lack of detailed information prior to the 1900's.

5 PRELIMINARY CONCEPTUAL SITE MODEL (PCSM)

5.1 Areas of Environmental Concern (AEC) & Potential Contaminants of Concern (PCC)

The AEC identified in the table below are based on a review of the background information, site history information and site inspection. The AEC are sections of the site that have potentially been impacted by activities, site conditions and/or specific features that could present an environmental concern with regards to potential contamination.

Table 5-1: AEC and PCC

AEC	PCC
Fill Material: Fill material on site may have been historically imported from various sources and can contain elevated concentrations of contaminants. The walls of the dam located in the south-east section of No. 140 Eleventh Avenue, are likely to have been constructed with fill material sourced from the dam excavation. Council records indicate that a DA was approved for the importation of fill material onto the south-east section of the property identified as 135 and 135a Tenth Avenue, Austral.	HM, TPH, BTEX, VOCs, PAHs, OCPs, OPPs, PCBs and asbestos
Use of Pesticides for agricultural activities: The aerial photographs and land title records have indicated that the site was used for agricultural purposes including market gardens from at least 1908 to 1984. The use of pesticides could have resulted in soil contamination associated with application or accidental spills.	HM, OCPs, OPPs and PCBs
Hazardous Building Materials: A number of dilapidated site sheds were located at the site. Former buildings and sheds constructed of fibre cement were demolished at No165 Tenth Ave and 170 Eleventh Avenue, Austral. Fragments of fibre cement were observed on the ground surface of the site during the site inspections, as shown in Figure 2.	Asbestos

Note:
HM – Heavy metals including arsenic, cadmium, chromium, copper, lead, mercury, nickel & zinc
TPH – Total petroleum hydrocarbons including light, mid and heavy fractions
BTEX – Monocyclic aromatic hydrocarbons
VOCs - Volatile organic compounds includes BTEX compounds

PAHs - Polycyclic aromatic hydrocarbons
OCPs - Organochlorine pesticides
OPPs - Organophosphorus pesticides
PCBs - Polychlorinated Biphenyls

As the AEC identified at the site are generally associated with surface based contamination sources (i.e. fill, use of pesticides for agricultural activity), the potential for the contaminants to impact the groundwater is considered to be low. Therefore no specific assessment of groundwater contamination has been undertaken for the assessment.

5.2 Contamination Fate and Transport

The fate and transport of PCC identified at the site is summarised in the following table:

Table 5-2: Fate and Transport of PCC

PCC	Fate and Transport
Non-volatile contaminants including: metals, heavy fraction PAHs, OCPs, OPPs, PCBs and asbestos	With the exception of asbestos, non-volatile contaminants are predominantly confined to the soil and groundwater medium. The mobility of these contaminants varies depending on: the nature and type of contaminant present (e.g. leachability, viscosity etc.); soil type/porosity; surface water infiltration; groundwater levels; and the rate of groundwater movement. ***Presence of Ash and Slag:*** Non-volatile contaminants associated with ash and slag waste (some heavy metals, heavy fraction PAHs, and sometimes heavy fraction TPHs) are bound within a relatively insoluble matrix. Slag and ash is usually formed as a by-product of combustion at high temperatures which 'locks in' the contaminants within the matrix. ***Presence of Asbestos:*** The potential transport of asbestos fibres is associated with the disturbance of asbestos contaminated soils and release of fibres into the atmosphere. This is likely to occur during excavation works. A number of studies have found that soils effectively filter out asbestos fibres and retain them within the soil matrix. The studies concluded that there is no significant migration of asbestos fibres, either through soil or groundwater. ***Site Conditions:*** Surface water has the potential to infiltrate into the subsurface at the subject site via garden beds, grassed areas, unlined water retention facilities etc. Surface water infiltration could increase the migration potential of certain contaminants. Excess surface water has the

PCC	Fate and Transport
	potential to run-off into the stormwater and towards Kemps Creek located approximately 300m to the south-west of the site and into the dam located in south-east section of No. 140 Eleventh Avenue, Austral.
Volatile contaminants including: TPH, BTEX, VOCs and light fraction PAHs	Volatile contaminants are usually more mobile when compared to the non-volatile compounds. The potential for migration of volatile contaminants such as light fraction PAHs and TPH is relatively high in sandy soil with a high water table. These contaminants break down rapidly as a result of microbial activity and availability of nutrients including nitrogen, oxygen etc. The mobile contaminants would be expected to move down to the rock surface or groundwater table and migrate down gradient from the source. The mobility would depend on a range of factors such as: soil type/porosity; surface water infiltration; groundwater levels; confining layers within the aquifer; solubility in groundwater etc. ***Site Conditions:*** The potential for migration of volatile contaminants at the subject site is considered to be relatively low. No potential point sources of volatile contaminants (eg. USTs) were identified. The potential contamination issues associated with volatile contaminants would be expected to be associated with localised spills to the site surface and/or the importation of contaminated fill material.

5.3 Sensitive Receptors and Exposure Pathways

The potential receptors and exposure pathways identified at the site are presented in the following table:

Table 5-3: Potential Receptors and Exposure Pathways

Receptor	Pathway
Human Receptors: • Site occupants; • Site visitors; • Contractors and workers; • Future site occupants; and • Off-site occupants.	• Dermal contact, ingestion and inhalation; and • Inhalation of airborne asbestos fibres.
Environmental Receptors: • Dam located in the south-east section of No. 140 Eleventh Ave, Austral; and	• Exposure by direct contact with plants and animals; and

Receptor	Pathway
• Kemps Creek located approximately 300m to the south-west of the site.	• Extraction and use of contaminated water for agriculture and/or landscaping.

6 SITE ASSESSMENT CRITERIA (SAC)

The SAC adopted for this ESA is outlined in the table below. The SAC has been derived from NEPM 2013 and other guidelines as outlined in **Section 1.3**. Explanatory notes are included in the attached appendices.

The guideline values for individual contaminants outlined in Schedule B1 of the NEPM 2013 are reproduced in the appendices. The criterion for the individual contaminants analysed for this assessment are presented in the attached report tables.

Table 6-1: SAC Adopted for this Investigation

Guideline	Applicability
Health Investigation Levels (HILs)	The proposed land use is a school. The HIL-A (residential with accessible soils, including primary schools) criteria has been adopted for this ESA.
Health Screening Levels (HSLs)	The HSL-A criteria 'residential with accessible soils' have been adopted for this ESA. An assessment of soil vapour is outside the scope of this ESA. Further consideration of vapour risks would be required in the event that particular contaminants are identified during the ESA.
Ecological Assessment Criteria	A detailed assessment of ecological risk has not been undertaken for this ESA. A preliminary assessment of ecological risk, based on the limited information available at this stage, has been included in the report. The Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for 'Urban Residential and Public Open Space (UR&POS)' have been adopted for the preliminary assessment. The EILs for selected metals have been derived as follows: • The Ambient Background Concentrations (ABCs) values for low traffic (25th percentiles) areas for old suburbs of NSW published in Olszowy et. al. (1995[19]) has been adopted for this assessment; and • We have adopted the most conservative guideline concentrations as a preliminary screening for pH, CEC and clay content.
Management Limits for TPH	The site history assessment has not identified any USTs or other fuel storage facilities at the site. These limits are not considered necessary for this ESA.

[19] 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.

Guideline	Applicability
	These guidelines have only been used after considering the relevant HSLs and ESLs for adverse effects of TPH contamination where necessary.
Asbestos in Soil	The 'presence/absence' of asbestos in soil has been adopted as the assessment criterion for the Preliminary Site Investigation (PSI).
Waste Classification (WC) Criteria	The proposed development includes excavation for a basement level. A WC will be required for the off-site disposal of material excavated for the development. The criteria outlined in the Waste Classification Guidelines 2014 have been adopted for this investigation.
Dam Water Investigation Levels (DWILs)	The NSW Department of Environment and Conservation (now EPA) Guidelines for the Assessment and Management of Groundwater Contamination (2007[20]) require an assessment of environmental values including: **1. <u>Aquatic Ecosystems:</u>** The dam located in the south-east section of No 140 Eleventh Ave, Austral and could potentially sustain a freshwater ecosystem. Hence the freshwater water trigger values presented in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000[21]) have been adopted for the assessment (referred to as GIL-ANZECC-Fresh) of dam water quality. 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 ANZECC 2000 Recreational Water Quality guidelines are designed to protect the health of both primary contact (e.g. swimming) and secondary contact (e.g. boating) water users. EIS consider it unlikely that the dam would be utilised as a recreational water body, due to the dam's small size and algal growth on the surface. These guidelines have not been adopted for the assessment of dam water quality.

[20] NSW DEC (2007), *Guidelines for the Assessment and Management of Groundwater Contamination* (referred to as Groundwater Guidelines 2007)
[21] ANZECC, (2000), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* (referred to as ANZECC 2000)

Guideline	Applicability
	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. It is unlikely that the dam water would be utilised as a drinking water. The site is also connected to the mains water supply. Based on this, the Australian Drinking Water Guidelines (2011[22]) have not been adopted for this assessment. **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. The NEPM 2013 HSL-A for 'residential with accessible soil' have been adopted for the dam water investigation.

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

7 INVESTIGATION PROCEDURE

7.1 Soil Sampling Plan

The NSW EPA Sampling Design Guidelines 1995 recommend a sampling density for a contamination assessment based on a systematic sampling pattern. Based on the size of the investigation area, the guidelines provide a minimum number of sampling points required for the investigation.

The guidelines recommend sampling from a minimum of one hundred and eight (108) evenly spaced sampling points for a site of this size (approximately 96,000m^2) for a Stage 2 ESA.

Samples for this investigation were obtained from sixty (60) evenly spaced sampling points as shown on the attached Figure 2. This density is approximately 55% of the minimum sampling density recommended for a Stage 2 ESA.

The sampling locations were placed on a systematic plan with a grid spacing of approximately 25m to 35m between sampling locations. A systematic plan was considered suitable to address potential contaminants associated with the fill material.

The NEPM 2013 guidelines recommend stockpile sampling densities for a contamination assessment based on the size of the stockpiled material.

Sampling of the stockpile in the north-east section of the site (see Figure 2) was undertaken from three sampling locations (A, B and C) which meets the NEPM 2013 stockpile sampling density for a stockpile approximately 45m^3 in size.

7.2 Soil Sampling Methodology

Fieldwork for this investigation was undertaken on 15-16 September 2014, 30 June 2015, 3 September 2015 and 6 April 2016. Sampling locations were set out using a hand held GPS unit. Locations were marked using spray paint. The sampling locations were cleared for underground services prior to excavation.

The testpit sample locations were excavated using a 5 tonne excavator. Soil samples were obtained from the walls of the excavation/testpit using hand equipment.

Soil samples were collected from the fill and natural profiles encountered during the investigation. Samples were also obtained when there was a distinct change in lithology or based on the observations made during the investigation. All samples were recorded on the testpit logs attached in the appendices.

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.

7.2.1 Dam Water Sampling

One dam water sample (DW1) was obtained from the dam located in the south-east section of No. 140 Eleventh Avenue, Austral. The water sample was obtained by EIS field staff by direct filling of the sampling containers. Dam water parameters were measured including pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter.

7.2.2 VOC Screening

A portable Photoionisation Detector (PID) was used to screen the samples for the presence of VOCs and to assist with selection of samples for BTEX 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 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. The PID headspace data is presented on the COC documents and testpit logs attached in the appendices.

7.2.3 Decontamination and Sample Preservation

Details of the decontamination procedure adopted during sampling are presented in the appendices. Where applicable, the sampling equipment was decontaminated using a scrubbing brush and potable water and Decon 90 solution (phosphate free detergent) followed by rinsing with potable water.

Soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with AS4482.1-2005 and AS4482.2-1999[23] as summarised in the following table:

Table 7-1: Soil Sample Preservation and Storage

Analyte	Preservation	Storage
Heavy metals	Unpreserved glass jar with Teflon lined lid	Store at <4°, analysis within 28 days (mercury and Cr[VI]) and 180 days (other metals).
VOCs (TPH/BTEX)	As above	Store at <4°, analysis within 14 days
PAHs, OCP, OPP & PCBs	As above	Store at <4°, analysis within 14 days
Asbestos	Sealed plastic bag	None

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. Field sampling protocols adopted for this assessment are summarised in the attached appendices.

7.3 Analytical Schedule

The analytical schedule is outlined in the following table:

Table 7-2: Analytical Schedule

CoPC	Stockpile Samples	Fill Samples	Natural Soil Samples	Dam water Samples
Heavy Metals	3	69	27	1
TRH/BTEXN	3	69	27	1
PAHs	3	69	27	1
OCPs/OPPs	3	69	27	1
PCBs	3	69	27	1
Asbestos	3	69	Na	Na

[23] *Guide to the Sampling and Investigation of Potentially Contaminated Soil Part2: Volatile Substances,* Standards Australia, 1999 (referred to as AS 1999)

CoPC	Stockpile Samples	Fill Samples	Natural Soil Samples	Dam water Samples
pH/EC/hardness	Na	Na	Na	1
TCLP Metals	Na	2	Na	Na
Asbestos in Fibre Cement Fragments (FCF)	Na	8	Na	Na

7.4 Laboratory Analysis

The samples were analysed by the following laboratories:

Table 7-3: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples, intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples	Envirolab Services Pty Ltd, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	116323, 116323-A, 130374, 133837, 133830, 144438 and 144438-A.
Inter-laboratory duplicates	Envirolab Services Pty Ltd (VIC), NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	4761, 6565, 6988 and 6989.
Inter-laboratory duplicates	Envirolab Services Pty Ltd (WA), NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	179262

Samples were analysed by the laboratories 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.

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 test pit logs attached in the appendices for further details.

Table 8-1: Summary of Subsurface Conditions

Profile	Description[1]
Fill	Fill/topsoil and fill was encountered at the surface in all testpits. The fill generally ranged in depths from approximately 0.15m to 0.7m (TP33). Fill material encountered at testpits TP50, extended to approximately 1.4m. The fill/topsoil typically comprised of silty sandy clay, silty sand and sandy clay. The fill/topsoil contained inclusions of ironstone gravel, ash and root fibres. The fill contained inclusions of ironstone, igneous and quartz gravels, ash, brick, concrete, plastic and tile fragments. The fill contained inclusions of fibre cement fragments at testpit sampling locations TP4, TP29, TP57 and TP60.
Natural Soil	Natural soils were encountered beneath the fill/topsoil and fill in all testpits. The natural soils comprised silty clay and contained inclusions of ironstone gravel and root fibres.
Groundwater	Water seepage was encountered in testpit TP33 at a depth of approximately 0.6m. The seepage is considered likely to be associated with the onsite sewer seepage pit. Water seepage was encountered in testpit TP38 and TP45 at depths of 1.1m and 0.9m respectively. All remaining testpits remained dry on completion of drilling and a short time after.

Note:
1 – Depths described in metres below ground level

8.1.1 VOC Screening

PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. All results were 0 ppm equivalent isobutylene which indicates a lack of PID detectable VOCs.

8.2 Soil Laboratory Results

The soil laboratory results are compared to the relevant SAC in the attached report tables. A summary of the results assessed against the SAC is presented below.

Table 8-2: Summary of Soil Laboratory Results

<table>
<tr><th>Analyte</th><th>Results Compared to SAC</th></tr>
<tr><td>Heavy Metals</td><td>
<u>HILs:</u>
An elevated concentration of lead (460mg/kg) was encountered in the fill soil sample TP52 (0.7-1.0m) above the HIL-A criteria of 300mg/kg.

All remaining heavy metal results were below the HIL-A criteria.

<u>Summary of Statistical Calculation:</u>
The lead TP52 (0.7-1.0m) fill soil result was below 250% of the SAC. The 95% UCL was calculated using the lead fill soil data from the fill soil samples obtained from testpits TP50 to TP60. The 95% UCL for lead was 180mg/kg which was below the HIL-A criterion of 300mg/kg. The Standard Deviation (SD) was below the 50% of the SAC.

<u>EILs:</u>
Elevated concentrations of individual metals were encountered above the UR&POS criteria as outlined below:

<table>
<tr><th>Analyte</th><th>Description</th><th>EIL</th><th>Sample/Depth and Concentration</th></tr>
<tr><td>Copper</td><td>Fill</td><td>78mg/kg</td><td>TP52 (0.7-1.0m) - 150mg/kg</td></tr>
<tr><td>Zinc</td><td>Fill</td><td>147mg/kg</td><td>TP10 (0-0.15m) - 288mg/kg
TP12 (0-0.25m) - 538mg/kg
TP52 (0.7-1.0m) - 720mg/kg
TP57 (0-0.05m) - 160mg/kg</td></tr>
</table>
<u>WC:</u>
The lead results from the fill soil samples TP12 (0-0.25m) and TP52 (0.7-1.0m) were greater than the CT1 but less than the SCC1 criteria.

TCLP leachates were prepared from the samples TP12 (0-0.25m), TP52 (0.7-1.0m) and analysed for lead. The results were less than the TCLP1 criteria.
</td></tr>
<tr><td>TPH</td><td>
<u>HSLs:</u>
All TPH results were below the HSL-A criteria.

<u>ESLs:</u>
All TPH results were below the ESL-UR&POS criteria.

<u>WC:</u>
</td></tr>
</table>

Analyte	Results Compared to SAC
	All TPH results were less than the CT1 criteria.
BTEX	**HSLs:** All BTEX results were below the HSL-A criteria. **ESLs:** All BTEX results were below the ESL-UR&POS criteria. **WC:** All BTEX results were less than the relevant CT1 criteria.
PAHs	**HILs:** All PAH results were below the HIL-A criteria. **HSLs:** All naphthalene results were below the HSL-A criteria. **ESLs:** All benzo(a)pyrene results were below the ESL-UR&POS criteria, **EILs:** All naphthalene results were below the EIL-UR&POS criteria. **WC:** All PAH results were less than the CT1 criteria.
OCPs & OPPs	**HILs:** All OCP and OPP results were below the HIL-A criteria. **EILs:** All DDT results were below the EIL-UR&POS criteria. **WC:** All OCP and OPP results were less than the CT1 criteria.
PCBs	**HILs:** All PCB results were below the HIL-A criterion. **WC:** All PCB results were less than the CT1 criterion.
Asbestos	**PSI:** Asbestos was detected in fibre cement fragments TP4 (0-0.2m), TP29 (0.1m), TP57 (0.15m) and TP60 (0.2m) within the fill material.

Analyte	Results Compared to SAC
	Asbestos was detected in fibre cement fragments obtained from the surface of the site SS1, SS2 and FJS1. Asbestos was detected in fibre cement fragments obtained from the building in the south-west section of the site B1.

8.3 Dam Water Laboratory Results

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

Table 8-3: Summary of Dam Water Laboratory Results

Analyte	Results Compared to SAC
Heavy Metals	**DWIL-ANZECC-Fresh:** An elevated concentration of 2μg/L of copper was encountered in the dam water sample DW1 above the DWIL of 1.4μ/L. All remaining heavy metal results were below the DWIL-ANZECC criteria.
TRH & BTEXN	**DWIL-ANZECC-Fresh:** All BTEXN results were below the DWIL-ANZECC criteria. **HSLs:** All TRH results were below the laboratory detection limit.
PAHs	**DWIL-ANZECC-Fresh:** All PAH results were below the DWIL-ANZECC criteria. **HSLs:** All naphthalene results were below the DWIL-HSL criteria.
OCPs, OPPs and PCBs	**DWIL-ANZECC-Fresh:** All results were below the DWIL-ANZECC criteria.
Other Parameters	The results for pH, EC and hardness are summarised below: • pH of 7; • EC of 440μS/cm; and • Hardness of 86mg$CaCO_3$/L

9 QA/QC ASSESSMENT

The QA/QC assessment includes a review of the DQIs established for the investigation (see **Section 2.2**). A summary of the field QA/QC samples are outlined below:

Table 9-1: Field QA/QC Samples

Field QA/QC	Frequency	Sample Details
Intra-laboratory duplicates	7% of Primary Samples	Soil Samples: • Dup A is a soil duplicate of sample TP1 (0-0.3m); • Dup B is a soil duplicate of sample TP10 (0-0.15m); • Dup C is a soil duplicate of sample TP11 (0-0.25m); • Dup D is a soil duplicate of sample TP27 (0-0.3m); • DUP JDC1 is a soil duplicate of sample TP28 (0-0.2m); • DUPHLS1 is a soil duplicate of sample TP49 (0-0.2m); and • DUPZ1 is a soil duplicate of sample TP51 (0-0.3m).
Inter-laboratory duplicates	5% of Primary Samples	Soil Samples: • Dup E is a soil duplicate of sample TP26 (0-0.2m); • Dup F is a soil duplicate of sample TP22 (0-0.2m); • DUP JDC2 is a soil duplicate of sample TP29 (0-0.2m); and • DUPHLS2 is a soil duplicate of sample TP35 (0-0.2m); • DUPZ2 is a soil duplicate of sample TP54 (0-0.2m).
TB	1 per batch	• TB1 (sand blank) (15 and 16 September 2014); • TB1 (sand blank) (30 June 2015); • TBS1 (sand blank) (3 September 2015); and • TB2A (sand blank) (6 April 2016).
TS	1 per batch of volatiles	• TS1 (sand) is a BTEX spike (15 and 16 September 2014); • TS1 (sand) is a BTEX spike (30 June 2015); • TS1 (sand) is a BTEX spike (3 September 2015); and • TSA1 (sand) is a BTEX spike (6 April 2016).

An assessment of the DQIs is summarised in the following table.

Table 9-2: Assessment of DQIs

Completeness
Data and documentation completeness was achieved through the following measures: • A sampling and analysis plan was prepared for the investigation; • COC records were prepared for each batch of samples sent to the labs (refer to appendices);

- Laboratory sample receipt information was reviewed for each batch (refer to appendices);
- NATA registered laboratories were used for all analysis;
- Visual observations and PID screening of samples was undertaken during the investigation as noted on the testpit logs and COC documents (refer to appendices); and
- All soil samples were analysed for the PCC identified in **Section 5.1**, except for VOCs which were screened using a PID.

Comparability

Data comparability was achieved through the following measures:

- Similar sampling techniques were used during the investigation;
- Appropriate preservation, storage and transport methods were adopted for all samples; and
- Consistent analysis techniques and reporting standards were adopted by the laboratories.

Representativeness

Data representativeness was achieved through the following measures:

- The sampling plan was optimised to obtain adequate coverage of sample locations; and
- The assessment included a representative coverage of analysis for PCC.

Precision

Intra-laboratory RPD Results:

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

The RPD value for zinc was outside the acceptance criteria (TP27 (0-0.3m/Dup D). The RPD value for mercury was outside the acceptance criteria (TP51 (0-0.3m/DupZ1). These values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogenous matrices. As both the primary and duplicate sample results were less than the SAC, the exceedances were not considered to have had an adverse impact on the data set as a whole.

Inter-laboratory RPD Results:

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

The RPD value for lead was outside the acceptance criteria (TP35 (0-0.2m/DupHLS2). The exceedances was not considered to have had an adverse impact on the data set as a whole for the reasons outlined above.

Accuracy

Accuracy was achieved through the following measures:

- Trained and qualified field staff were used for the investigation;
- Appropriate industry standard sampling equipment and decontamination procedures were adopted for the investigation as outlined in the attached appendices;
- Sampling and screening equipment are routinely factory calibrated. An in-house calibration check was undertaken prior to using onsite;

- Appropriate sample preservation, handling, holding time and COC procedures were adopted for the investigation.
- The report was prepared generally in accordance with Reporting Guidelines 2011;
- Accuracy of field sampling was assessed as follows:
  - TS Results: The trip spike results are presented in the attached report tables. The BTEX results for the trip spikes ranged from 100% to 102% and indicated that field preservation methods were appropriate;
  - TB Results: The trip blank results are presented in the attached report tables and were all less than the PQLs.
- The Practical Quantitation Limit (PQL) of the analysis of PCBs in soil sample TP2 (0-0.3m) was raised due to interference from analytes other than those being tested in the sample (Envirolab report No:116323 report comments, Pg66). EIS note that the PQL is below the SAC;
- Review of laboratory QA/QC data is summarised below:
  - Laboratory Duplicate RPD Results: Laboratory duplicate RPD results for the soil analysis were generally within the acceptance criteria adopted by the laboratories;
  - Matrix Spike Recovery: Matrix spike recovery concentrations were within the acceptable limits;
  - Surrogate Spike Recovery: Surrogate spike recovery concentrations were within the acceptable limits; and
  - LCS recovery: LCS recovery concentrations were within the acceptable limits.

The DQIs adopted for this investigation (see **Section 2.2**) have been addressed.

10 DISCUSSION

An elevated concentration of lead (460mg/kg) was encountered in the fill soil sample TP52 (0.7-1.0m) above the HIL-A SAC of 300mg/kg. Statistical analysis using Pro UCL (version 5.0) indicated that the fill soil lead data set obtained from testpits TP50 to TP60 passed the assessment criteria.

All remaining results were below the SAC adopted for this investigation. However, fibre cement fragments containing asbestos were encountered in the following samples:

- Fill soil sample TP4 (0-0.2m) located in the south-east section of the site adjacent and immediately to the north of the residential building at 145 Tenth Avenue;
- Fill soil sample TP29 (0.1m) located in the north-east section of the site immediately adjacent and to the north-east of the site shed at 160 Eleventh Avenue;
- Surface sample SS1 located adjacent to a small shed at 145 Tenth Avenue;
- Building sample B1, obtained from a building to the east of the residential building at 145 Tenth Avenue;
- Surface sample SS2 located within the northern garden bed at 155 Tenth Avenue;
- Surface sample FJS1 located in the north-east section of the site immediately adjacent and to the north of the site shed at 160 Eleventh Avenue;
- Fill soil sample TP57 (0.15m) located in the north-west section of the site identified as 135 Tenth Avenue; and
- Fill soil sample TP30 (0.2m) located in the south-west section of the site identified as 135 Tenth Avenue.

The site asbestos contamination data is shown in the Tables and on Figure 3 attached.

The asbestos containing materials identified at the site are considered to be non-friable (i.e bound within a cement matrix and unable to be crumbled by hand).

10.1 Summary of Ecological Assessment

Four individual fill soil samples, TP10 (0-0.5m), TP12 (0-0.25m), TP52 (0.7-1.0m) and TP60 (0-0.05m) contained zinc concentrations above the ecological assessment criteria. The fill soil sample TP52 (0.7-1.0m) contained a mercury concentration above the ecological assessment criteria. These results are considered to be localised anomalies and are not considered to be indicative of a wide spread ecological issue that could affect the site. Elevated zinc concentrations can be associated with run-off from galvanised steel products (such as roofing). Furthermore, there were no obvious signs of plant stress at the site. Therefore these results are not considered to pose a significant ecological risk.

10.2 Potential Source of Asbestos Contamination

The source of the asbestos contamination is considered to be either associated with demolition of former buildings at the site or the dilapidated state of the existing buildings in the south-east, north-east and south-east sections of the site.

10.3 Nature and Extent of Asbestos Soil Contamination

Due to the discrete nature of asbestos containing materials in fill, it is likely that additional asbestos containing materials are located within the fill at the site, particularly in sections of the site where buildings may have been demolished in the past or where current dilapidated fibre cement buildings are located.

The options for addressing the asbestos issues at the site are:

1. Excavation and off-site disposal of all of the topsoil/fill material from across the site (refer to **Section 11** and **Section 12**); and/ or
2. Undertake a detailed soil investigation (DSI) for asbestos in accordance with the Western Australian Asbestos Guidelines 2009 (endorsed in NEPM 2013) to assess if asbestos hot spot areas can be estimated for remediation purposes.

A detailed soil investigation for asbestos would include the following:

- Sampling of fill soil from over two hundred and sixteen (216) test pits evenly spread cross the site (the full asbestos sampling density is twice the normal density specified in the NSW EPA Sampling Design Guidelines 1995);
- Spreading of excavated soil, raking and sieving of soil through a 7mm x 7mm sieve; and
- Obtaining bulk soil samples (500ml) for asbestos analysis at the laboratory.

The Western Australian Asbestos Guidelines 2009 guideline does make allowance for asbestos containing materials to remain on site. However, the guideline levels are very stringent and difficult to achieve. If asbestos contamination was to remain on site it would need to be managed under an Environmental Management Plan (EMP) prepared for the site to reduce the risk of exposure during future excavation and maintenance activities. The EMP and asbestos contamination would need to be recorded on the Section 149 Planning Certificate.

The presence of asbestos in the soils may not be a desirable management option given that the proposed landuse is a School.

10.4 Summary of Dam Water Assessment

All dam water results were either below the DWIL or below the laboratory detection limits.

Should the dam be backfilled appropriate dewatering disposal approvals should be sought from the relevant authorities.

10.5 Data Gaps

Due to the preliminary nature of the investigation the following data gaps remain:

- Inaccessible areas (beneath the building in the south-east section of the site) have not been investigated; and
- The extent of asbestos contamination across the site has not been fully characterised at this stage.

11 WASTE CLASSIFICATION (WC)

11.1 Classification of Fill Soil for Off-Site Disposal

The waste classification for the fill material is summarised in the following table:

Table 11-1: Waste Classification of Fill

Extent	Classification	Disposal Option
Fill material at the site	General Solid Waste (non-putrescible) (GSW) containing asbestos	A licensed NSW EPA landfill capable of receiving the waste stream. The landfill should be contacted to obtain the required approvals prior to commencement of excavation.
Stockpile fill material at 160 Eleventh Avenue, Austral (shown in Figure 2).	General Solid Waste (non-putrescible) (GSW)	A licensed NSW EPA landfill capable of receiving the waste stream. The landfill should be contacted to obtain the required approvals prior to commencement of excavation.

Note:
1. Waste Classification Guidelines 2014

The above waste streams must not be mixed together. Contaminated fill material should not be re-used on site. The fill material must be disposed of to a NSW EPA licensed facility. It is the responsibility of the receiving facility to ensure that the material meets their EPA license conditions. EIS accepts no liability whatsoever for illegal or inappropriate disposal of excavated material.

11.2 Preliminary Classification of Natural Soil for Off-Site Disposal

The preliminary waste classification for the natural material is summarised in the following table:

Table 11-2: Preliminary Waste Classification of Natural Material

Extent	Classification	Disposal Option
Natural silty clay soil at the site	Virgin excavated natural material (VENM). *Conditional on some additional analysis (see below).*	VENM is considered suitable for re-use on the 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.

The VENM classification must be confirmed by some additional sampling for OP pesticides in the vicinity of testpit TP2. A trace of the OP pesticide Chlordane was encountered in the fill soil at this location. The additional sampling is required to confirm that the Chlordane has not had any impact on the natural soil in this area.

Following the excavation of fill material from asbestos impacted areas the surface of the excavation should be inspected and cleared by a NSW WorkCover licensed asbestos assessor. This is required to confirm the VENM classification of the underlying natural soil.

Material classed as VENM must not be mixed with any fill material (including building rubble) as this will invalidate the VENM classification. Where doubt exists about the difference between fill and VENM material an environmental/geotechnical engineer should be contacted.

12 TIER 1 RISK ASSESSMENT AND REVIEW OF CSM

A review of the CSM in light of the results of the Stage 1 ESA is outlined in the table below:

Table 12-1: Review of CSM and Tier 1 Risk Assessment

AEC	Risk Category	Discussion
Fill Material	Moderate/High	Fibre cement fragments containing asbestos were encountered in the fill soil samples TP4 (0-0.2m), TP29 (0.1m), TP57 (0.15m) and TP60 (0.2m). The asbestos containing material was considered non-friable. The issue of fibre cement fragments in the fill/topsoil would need to be managed by removing all of the fill/topsoil from the site, or undertaking a detailed asbestos investigation to assess the extent of the asbestos cement fragments. The detailed asbestos investigation may enable a more targeted remediation program to be developed and implemented. This may reduce the costs associated with off-site disposal of soils to landfill. Disturbance of asbestos containing materials is considered to pose a moderate/high risk to the identified receptors. This risk will need to be managed. An asbestos management plan (AMP) should be prepared for the site. EIS note that number of data gaps have been identified in **Section 10.4.** The data gaps will need to be addressed prior to on site works.
Agricultural Activity	Very Low	The soil samples analysed for this investigation did not encounter any pesticide concentrations above the SAC. EIS consider the risked posed to potential site users by the very low concentrations of pesticides that were encountered to be very low.
Presence of Hazardous Building Materials	Low/Moderate	Fibre cement fragments (sample SS1, SS2 and FJS1) containing asbestos were picked up from the surface of the site. A fibre cement fragment (sample B1) was obtained from a dilapidated building in the south-west section of the site

AEC	Risk Category	Discussion
		located at the property identified as 145 Tenth Avenue, Austral. A number of additional buildings at the site were constructed with fibre cement sheeting. EIS understand that all the building are to be demolished at the site. A Hazardous Material building assessment should be undertaken prior to the proposed demolition works. The demolition works should be undertaken in a controlled manner to prevent asbestos contamination of the soils in this area.

12.1 Groundwater

The groundwater bore search indicates that groundwater is not considered to be a significant resource for abstraction purposes in the immediate vicinity of the site. Based on EIS experience within the surrounding area a perched groundwater table is likely to be encountered within the shale bedrock beneath the natural soils. A perched aquifer located in the shallow subsurface is not considered to be a resource due to high salinity, poor water quality and low yield.

Based on the above and the soil laboratory results obtained for the site by EIS, we consider that the potential for adverse human-health or environmental impacts in relation to the groundwater at the site is relatively low.

13 CONCLUSIONS

EIS consider that the report objectives (see **Sections 1.2** and **Section** 2) have been addressed. Based on the scope of works undertaken, EIS are of the opinion that the contamination encountered at the site poses a risk to the receptors.

EIS consider that the site can be made suitable for the proposed landuse/development provided that the following recommendations are implemented to address the data gaps and to better characterise the risks:

- A Hazardous Materials Assessment (Hazmat) is undertaken for the existing buildings prior to the commencement of demolition works;
- The issue of asbestos cement fragments in the soil is resolved by either removing all of the topsoil/fill or identifying the extent of the problem and undertaking targeted remediation (see **Section 10.3**);
- A Remediation Action Plan (RAP) is prepared. The RAP will include remedial measures to be implemented to render the site suitable for the proposed landuse;
- A Validation Assessment (VA) is prepared. The VA will document the success of the remediation works;
- An Asbestos Management Plan (AMP) is prepared for the site and the proposed construction works; and
- Inspections during demolition and excavation work are undertaken to assess any unexpected conditions or subsurface facilities that may be discovered between investigation locations. This should facilitate appropriate adjustment of the works programme and schedule in relation to the changed site conditions. Inspections should be undertaken by experienced environmental personnel.

13.1 Regulatory Requirement

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

Table 13-1: Regulatory Requirement

Guideline	Applicability
Duty to Report Contamination 2015[24]	The requirement to notify the NSW EPA regarding site contamination should be assessed once the results of the additional investigation work have been reviewed and a remedial strategy (if necessary) has been selected.
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.

[24] NSW Government Legislation, (2015), *Guidelines on the Duty to Report Contamination.* (referred to as Duty to Report Contamination 2015)

Guideline	Applicability
Work Health and Safety Code of Practice 2011[25]	Sites contaminated with asbestos become a 'workplace' when work is carried out there and require a register and asbestos management plan.

[25] WorkCover NSW, (2011), *WHS Regulation: Code of Practice – How to Manage and Control Asbestos in the Workplace.*

14 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.

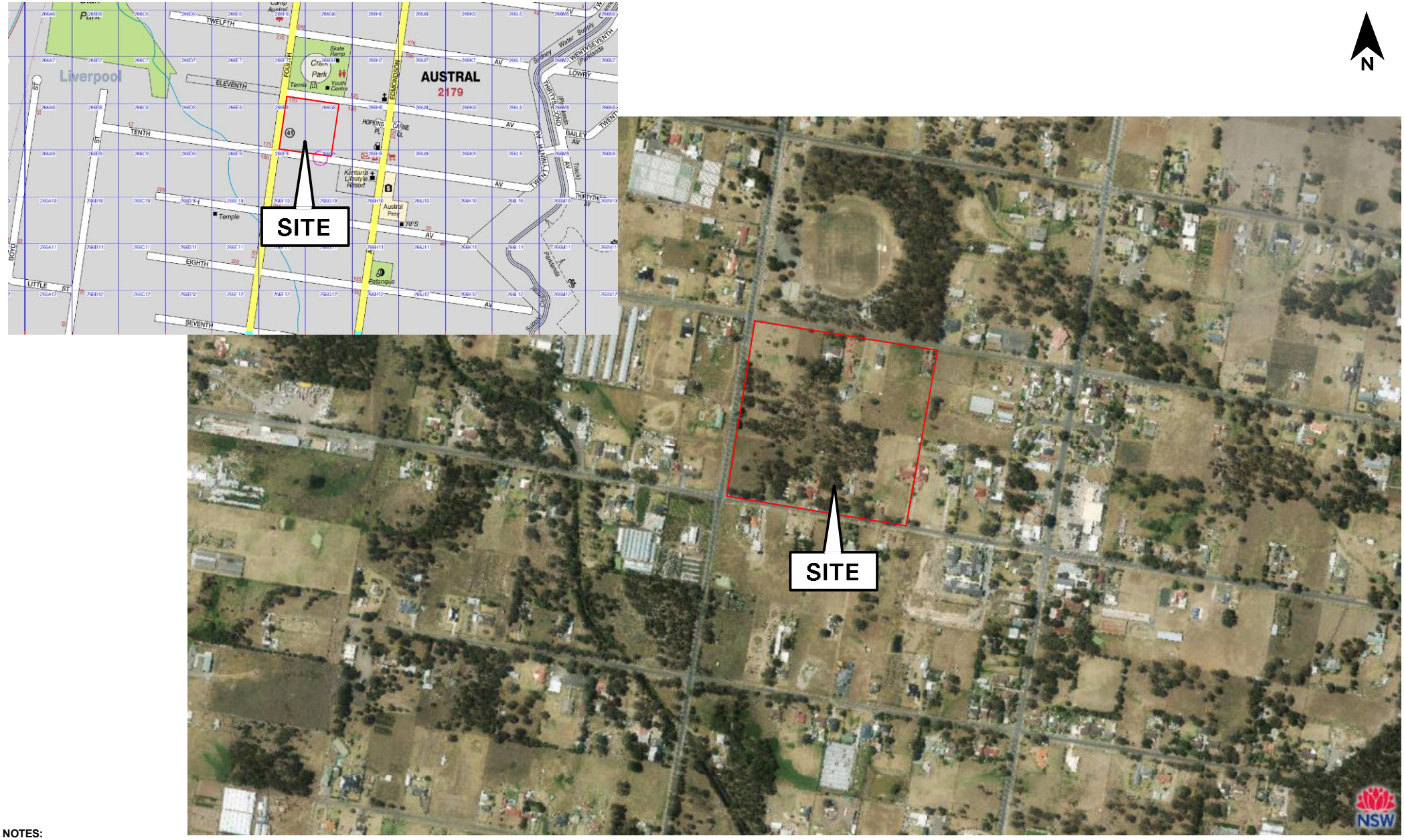
Misinterpretation of Site Assessments by Design Professionals
Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with 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



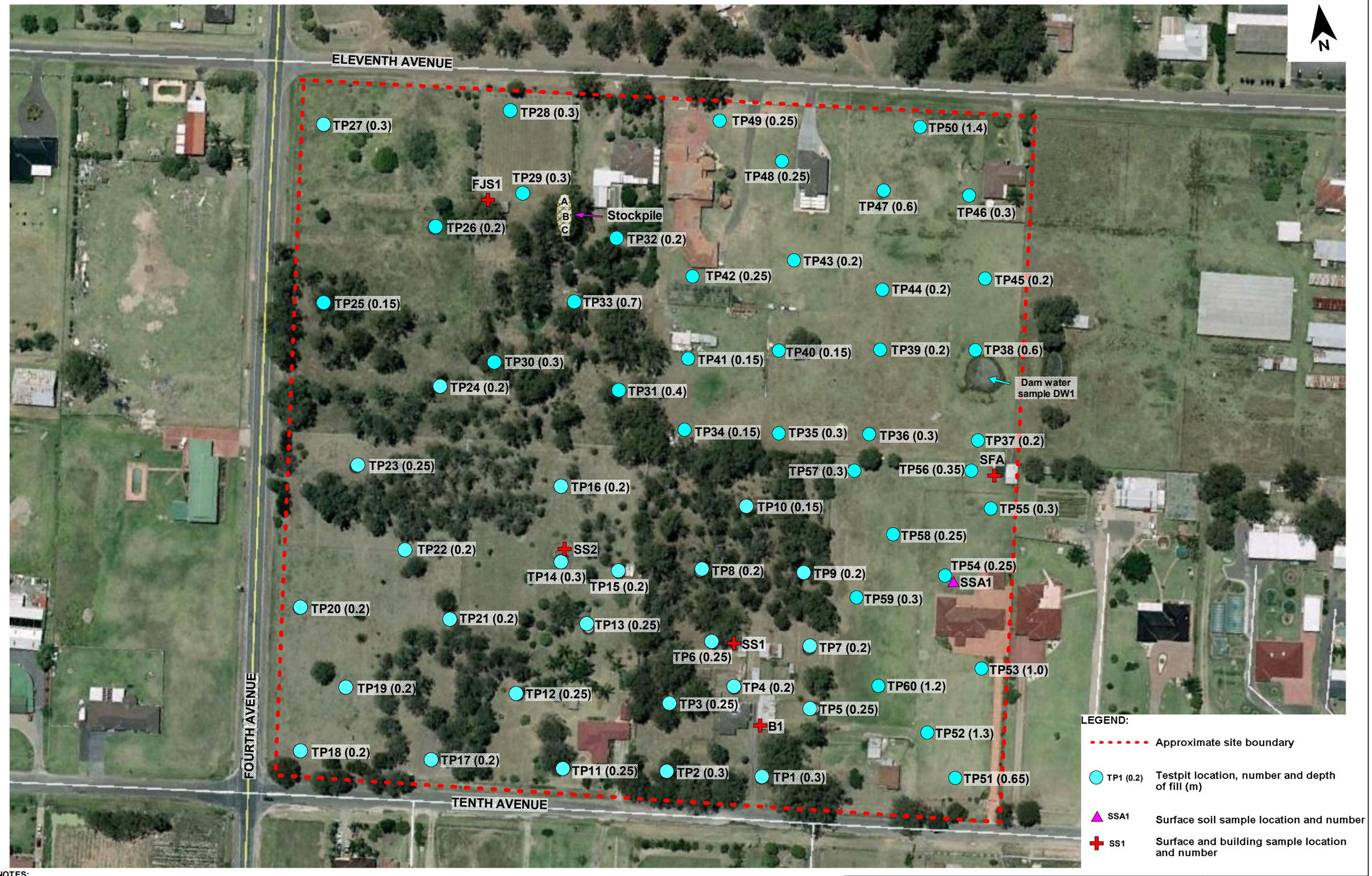
NOTES:
Figure 1 has been recreated from UBD on disc (version 5.0) & http://maps.six.nsw.gov.au/

Figure is not to scale.

UBD Map ref: 266 F7,8,9 & G7,8,9.

Reference should be made to the report text for a full understanding of this plan.

ENVIRONMENTAL INVESTIGATION SERVICES	Project Number: **E27556KDrpt3**	Title: **SITE LOCATION PLAN**
	Figure: **1**	Address: **135, 135a, 145, 155 TENTH AVENUE & 140,160, 170 ELEVENTH AVEENUE AUSTRAL, NSW**



LEGEND:

- Approximate site boundary
- TP1 (0.2) — Testpit location, number and depth of fill (m)
- SSA1 — Surface soil sample location and number
- SS1 — Surface and building sample location and number

NOTES:
Figure 2 has been recreated from Google Earth Pro.

The borehole locations presented on this plan have been established from site measurements only and should not be construed as survey points.Reference should be made to the report text for a full understanding of this plan.

Approximate Scale (m) @ A3: 0 15 30 45 60 75

ENVIRONMENTAL INVESTIGATION SERVICES

Project Number:	Title:
E27556KDrpt3	SAMPLE LOCATION PLAN
Figure: 2	Address: 135, 135a, 145, 155 TENTH AVENUE & 140,160, 170 ELEVENTH AVEENUE AUSTRAL, NSW

NOTES:
Figure 2 has been recreated from Google Earth Pro.

The borehole locations presented on this plan have been established from site measurements only and should not be construed as survey points.Reference should be made to the report text for a full understanding of this plan.

Approximate Scale (m) @ A3:
0 15 30 45 60 75

ENVIRONMENTAL INVESTIGATION SERVICES

Project Number: E27556KDrpt3	Title: CONTAMINATION DATA PLAN
Figure: 3	Address: 135, 135a, 145, 155 TENTH AVENUE & 140,160, 170 ELEVENTH AVEENUE AUSTRAL, NSW

REPORT 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]			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
TP1	0-0.3	Fill	7	LPQL	16	14	24	LPQL	9	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP1	0.4-0.6	Silty Clay	LPQL	LPQL	14	15	12	LPQL	8	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP2	0-0.3	Fill	LPQL	LPQL	15	25	19	LPQL	12	63	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	14.2	LPQL	LPQL	LPQL	<1*	No asbestos detected
TP3	0-0.25	Fill	LPQL	LPQL	17	21	24	LPQL	16	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP4	0-0.2	Fill	6	1	17	56	65	LPQL	13	104	0.06	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	**Asbestos detected**
TP4	0.3-0.5	Silty Clay	LPQL	LPQL	11	36	13	LPQL	8	52	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP5	0-0.25	Fill	7	LPQL	15	17	21	LPQL	11	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP6	0-0.25	Fill	8	LPQL	23	16	24	LPQL	10	77	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP7	0-0.2	Fill	6	LPQL	17	16	20	LPQL	9	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP8	0-0.2	Fill	8	LPQL	19	16	21	LPQL	11	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP9	0-0.2	Fill	7	LPQL	18	15	23	LPQL	8	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP9	0.3-0.5	Silty Clay	6	LPQL	15	25	12	LPQL	9	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP10	0-0.15	Fill	10	LPQL	18	16	33	LPQL	11	228	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP11	0-0.25	Fill	6	LPQL	17	18	28	LPQL	9	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP11	0.3-0.5	Silty Clay	6	LPQL	17	22	16	LPQL	10	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP12	0-0.25	Fill	8	1	20	49	104	LPQL	8	538	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP13	0-0.2	Fill	7	LPQL	21	27	22	LPQL	10	62	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP14	0-0.3	Fill	18	LPQL	38	51	23	LPQL	13	114	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP14	0.4-0.6	Silty Clay	4	LPQL	13	23	14	LPQL	10	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP15	0-0.2	Fill	5	LPQL	16	23	21	LPQL	10	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP15	0.3-0.5	Silty Clay	LPQL	LPQL	16	23	16	LPQL	9	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP16	0-0.2	Fill	11	LPQL	29	19	23	LPQL	13	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP17	0-0.25	Fill	6	LPQL	13	28	41	LPQL	12	63	0.27	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP17	0.3-0.5	Silty Clay	24	LPQL	10	24	12	LPQL	6	27	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP18	0-0.2	Fill	6	LPQL	18	12	22	LPQL	7	19	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP19	0-0.2	Fill	8	LPQL	17	13	22	LPQL	10	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP20	0-0.2	Fill	22	LPQL	14	21	22	LPQL	11	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP21	0-0.2	Fill	9	LPQL	18	17	30	LPQL	11	73	0.48	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP21	0.3-0.5	Silty Clay	8	LPQL	16	15	12	LPQL	7	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP22	0-0.2	Fill	9	LPQL	15	12	18	LPQL	9	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP23	0-0.2	Fill	9	LPQL	13	11	24	LPQL	8	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP23	0.3-0.5	Silty Clay	12	LPQL	15	28	11	LPQL	8	36	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP24	0-0.2	Fill	9	LPQL	17	15	24	LPQL	9	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP25	0-0.15	Fill	10	LPQL	19	18	36	LPQL	12	54	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP26	0-0.2	Fill	8	LPQL	15	20	27	LPQL	11	71	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP27	0-0.3	Fill	8	LPQL	19	18	30	LPQL	10	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP27	0.3-0.5	Silty Clay	7	LPQL	17	18	16	LPQL	5	21	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP28	0-0.2	Fill	12	LPQL	25	22	28	LPQL	19	91	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP28	0.3-0.5	Silty Clay	11	LPQL	17	26	14	LPQL	11	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP29	0-0.2	Fill	7	LPQL	22	26	35	LPQL	20	94	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP30	0-0.2	Fill	7	LPQL	19	26	22	LPQL	14	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP30	0.3-0.5	Silty Clay	5	LPQL	16	32	13	LPQL	11	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP31	0-0.2	Fill	12	LPQL	28	21	23	LPQL	18	41	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP32	0-0.1	Fill	10	LPQL	24	18	20	LPQL	13	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP33	0-0.2	Fill	9	LPQL	16	23	19	LPQL	12	51	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP33	0.7-0.9	Silty Clay	9	LPQL	16	33	12	LPQL	14	53	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
A	-	Fill	7	LPQL	15	42	27	LPQL	15	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
B	-	Fill	6	LPQL	16	19	22	LPQL	14	55	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
C	-	Fill	8	LPQL	25	20	26	LPQL	17	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
FJS1	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
TP29	0.1	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
SS1	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
SS2	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
B1	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
Total Number of Samples			49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	40
Maximum Value			24	1	38	56	104	LPQL	20	538	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	14	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013, HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

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

* PQL raised by the laboratory due to interference from analytes other than those being tested in the sample

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 A-1
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]			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
TP34	0-0.15	Fill: Silty clay	13	0.6	29	21	29	LPQL	18	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP34	0.3-0.5	Silty clay	10	0.6	22	36	20	LPQL	19	78	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP35	0-0.2	Fill: Silty clay	10	LPQL	26	18	29	LPQL	13	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP35	0.3-0.5	Silty clay	10	LPQL	26	31	19	LPQL	15	63	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP36	0-0.2	Fill: Silty clay	11	0.6	40	12	26	LPQL	10	23	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP37	0-0.2	Fill: Silty clay	13	0.8	44	9	25	LPQL	8	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP38	0-0.2	Fill: Silty clay	7	LPQL	19	23	15	LPQL	9	45	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP38	0.3-0.5	Fill: Silty clay	12	0.6	34	15	26	LPQL	10	18	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP38	0.6-0.8	Silty clay	9	0.5	25	24	18	LPQL	6	34	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP39	0-0.2	Fill: Silty clay	10	0.5	35	9	24	LPQL	7	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP39	0.3-0.5	Silty clay	10	0.5	30	13	21	LPQL	4	12	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP40	0-0.15	Fill: Silty clay	11	0.4	26	23	27	LPQL	19	44	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP40	0.3-0.5	Silty clay	21	LPQL	15	20	17	LPQL	6	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP41	0-0.2	Fill: Silty clay	10	0.4	25	19	23	LPQL	18	44	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP41	0.4-0.6	Silty clay	12	LPQL	28	26	18	LPQL	17	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP42	0-0.2	Fill: Silty clay	12	0.9	35	14	34	LPQL	18	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP43	0-0.2	Fill: Silty clay	17	0.7	31	19	30	LPQL	13	57	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP44	0-0.2	Fill: Silty clay	9	0.4	29	13	25	LPQL	9	17	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP44	0.3-0.5	Silty clay	6	LPQL	13	14	15	LPQL	3	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP45	0-0.2	Fill: Silty clay	13	0.5	27	17	37	LPQL	12	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP46	0-0.2	Fill: Silty clay	12	0.5	29	17	31	LPQL	12	29	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP47	0-0.2	Fill: Silty clay	LPQL	LPQL	11	21	10	LPQL	10	59	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP47	0.4-0.6	Fill: Silty clay	12	0.6	29	19	31	LPQL	14	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP47	0.8-1.0	Silty clay	10	0.5	32	19	23	LPQL	8	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP48	0-0.2	Fill: Silty clay	14	0.7	29	10	24	LPQL	6	13	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP48	0.3-0.5	Silty clay	13	0.5	29	19	23	LPQL	7	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP49	0-0.2	Fill: Silty clay	10	0.6	26	19	38	LPQL	19	75	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	0-0.2	Fill: Silty clay	8	LPQL	19	18	16	LPQL	8	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	0.6-0.8	Fill: Silty clay	13	0.7	41	13	26	LPQL	9	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	1.0-1.2	Fill: Silty clay	9	0.5	20	24	20	LPQL	7	37	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	1.4-1.6	Silty clay	5	LPQL	10	13	14	LPQL	2	19	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
Total Number of Samples			31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	20
Maximum Value			21	0.9	44	36	38	LPQL	19	100	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013, HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

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.

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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 A-2
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]			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
TP51	0-0.3	Fill: Silty clay	7	LPQL	19	27	50	1.3	10	99	1.3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.1	LPQL	LPQL	LPQL	No asbestos detected
TP52	0-0.3	Fill: Silty clay	10	LPQL	15	26	26	LPQL	11	72	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP52	0.7-1.0	Fill: Silty clay	19	0.5	9	150	**460**	0.2	9	720	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP52	1.3-1.6	Fill: Silty clay	10	LPQL	23	24	17	LPQL	7	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP53	0-0.3	Fill: Silty clay	6	LPQL	13	25	56	0.3	8	73	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP53	1.0-1.2	Silty Clay	9	LPQL	21	31	20	LPQL	12	50	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP54	0-0.2	Fill: Silty clay	13	LPQL	25	23	22	LPQL	4	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP55	0-0.3	Fill: Silty clay	10	LPQL	26	18	16	LPQL	5	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP55	0.4-0.6	Silty Clay	10	LPQL	27	23	15	LPQL	5	18	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP56	0-0.3	Fill: Silty clay	10	LPQL	28	18	23	LPQL	6	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP57	0-0.05	Fill: Silty clay	6	LPQL	10	43	12	LPQL	8	160	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP57	0.05-0.2	Fill: Silty clay	8	LPQL	23	33	18	LPQL	7	41	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP58	0-0.25	Fill: Silty clay	10	LPQL	29	18	20	LPQL	6	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP58	0.3-0.5	Silty Clay	6	LPQL	16	15	11	LPQL	3	11	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP59	0-0.25	Fill: Silty clay	6	LPQL	18	32	18	LPQL	11	51	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP60	0-0.3	Fill: Silty clay	8	LPQL	25	29	20	LPQL	16	76	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP60	0.6-0.9	Fill: Silty clay	7	LPQL	13	24	22	LPQL	12	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP60	1.2-1.4	Silty Clay	5	LPQL	14	18	13	LPQL	6	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
SSA1	-	Fill: Silty clay	9	LPQL	24	26	25	LPQL	8	59	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP57	0.15	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
TP60	0.2	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
SFA	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No asbestos detected
Total Number of Samples			19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	14
Maximum Value			19	0.5	29	150	460	1.3	16	720	1.3	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.1	LPQL	LPQL	LPQL	NC
Statistical Analysis on Fill Samples																						
Number of Fill Samples [4]			NC	NC	NC	NC	15	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mean Value [4]			NC	NC	NC	NC	54	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Standard Deviation [4]			NC	NC	NC	NC	113.1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
% UCL [4]			NC	NC	NC	NC	Chebychev	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
UCL Value [4]			NC	NC	NC	NC	180.9	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Explanation:

1 - Site Assessment Criteria (SAC): NEPM 2013, HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

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

4 - Statistical calculation undertaken using ProUCL version 5.0 (USEPA). Statistical calculation has only been undertaken using data from fill samples

Concentration above the SAC **VALUE**

Standard deviation exceeds data assessment criteria 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]				RESIDENTIAL WITH ACCESSIBLE SOIL							
Sample Reference	**Sample Depth**	**Depth Category**	**Soil Category**								
TP1	0-0.3	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP1	0.4-0.6	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP2	0-0.3	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP3	0-0.25	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP4	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP4	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP5	0-0.25	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP6	0-0.25	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP7	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP8	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP9	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP9	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP10	0-0.15	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP11	0-0.25	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP11	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP12	0-0.25	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP13	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP14	0-0.3	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP14	0.4-0.6	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP15	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP15	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP16	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP17	0-0.25	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP17	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP18	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP19	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP20	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP21	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP21	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP22	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP23	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP23	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP24	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP25	0-0.15	0m to < 1m	Clay	LPQL	78	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP26	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP27	0-0.3	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP27	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP28	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP28	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP29	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP30	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP30	0.3-0.5	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP31	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP32	0-0.1	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP33	0-0.2	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP33	0.7-0.9	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
A	-	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
B	-	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
C	-	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples				49	49	49	49	49	49	49	49
Maximum Value				LPQL	78	LPQL	LPQL	LPQL	LPQL	LPQL	0

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
HSLs: Health Screening Levels
NA: Not Analysed
PQL: Practical Quantitation Limit
LPQL: Less than PQL
SAC: Site Assessment Criteria
NC: Not Calculated
NL: Not Limiting
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]				RESIDENTIAL WITH ACCESSIBLE SOIL						
Sample Reference	**Sample Depth**	**Depth Category**	**Soil Category**							
TP1	0-0.3	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP1	0.4-0.6	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP2	0-0.3	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP3	0-0.25	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP4	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP4	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP5	0-0.25	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP6	0-0.25	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP7	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP8	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP9	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP9	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP10	0-0.15	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP11	0-0.25	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP11	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP12	0-0.25	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP13	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP14	0-0.3	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP14	0.4-0.6	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP15	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP15	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP16	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP17	0-0.25	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP17	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP18	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP19	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP20	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP21	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP21	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP22	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP23	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP23	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP24	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP25	0-0.15	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP26	0-0.2	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP27	0-0.3	0m to < 1m	Silt	40	230	0.6	390	NL	95	4
TP27	0.3-0.5	0m to < 1m	Silt	40	230	0.6	390	NL	95	4

TABLE B-1
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]					**RESIDENTIAL WITH ACCESSIBLE SOIL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
TP34	0-0.15	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP34	0.3-0.5	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP35	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP35	0.3-0.5	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP36	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP37	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP38	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP38	0.3-0.5	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP38	0.6-0.8	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP39	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP39	0.3-0.5	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP40	0-0.15	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP40	0.3-0.5	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP41	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP41	0.4-0.6	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP42	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP43	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP44	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP44	0.3-0.5	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP45	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP46	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP47	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP47	0.4-0.6	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP47	0.8-1.0	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP48	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP48	0.3-0.5	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP49	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP50	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP50	0.6-0.8	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP50	1.0-1.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP50	1.4-1.6	Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples					31	31	31	31	31	31	31	31
Maximum Value					LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0

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]					**RESIDENTIAL WITH ACCESSIBLE SOIL**						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
TP34	0-0.15	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP34	0.3-0.5	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP35	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP35	0.3-0.5	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP36	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP37	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP38	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP38	0.3-0.5	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP38	0.6-0.8	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP39	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP39	0.3-0.5	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP40	0-0.15	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP40	0.3-0.5	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP41	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP41	0.4-0.6	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP42	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP43	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP44	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP44	0.3-0.5	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP45	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP46	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP47	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP47	0.4-0.6	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP47	0.8-1.0	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP48	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP48	0.3-0.5	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP49	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP50	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP50	0.6-0.8	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP50	1.0-1.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP50	1.4-1.6	Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5

TABLE B-2
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]					**RESIDENTIAL WITH ACCESSIBLE SOIL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
TP51	0-0.3	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP52	0-0.3	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP52	0.7-1.0	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP52	1.3-1.6	Fill: Silty clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP53	0-0.3	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP53	1.0-1.2	Silty Clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP54	0-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP55	0-0.3	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP55	0.4-0.6	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP56	0-0.3	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP57	0-0.05	Fill: Silty clay	0m to < 1m	Clay	LPQL	120	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP57	0.05-0.2	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP58	0-0.25	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP58	0.3-0.5	Silty Clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP59	0-0.25	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP60	0-0.3	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP60	0.6-0.9	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP60	1.2-1.4	Silty Clay	1m to <2m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
SSA1	-	Fill: Silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples					19	19	19	19	19	19	19	19
Maximum Value					LPQL	120	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL

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]					**RESIDENTIAL WITH ACCESSIBLE SOIL**						
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**							
TP51	0-0.3	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP52	0-0.3	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP52	0.7-1.0	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP52	1.3-1.6	Fill: Silty clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
TP53	0-0.3	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP53	1.0-1.2	Silty Clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
TP54	0-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP55	0-0.3	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP55	0.4-0.6	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP56	0-0.3	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP57	0-0.05	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP57	0.05-0.2	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP58	0-0.25	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP58	0.3-0.5	Silty Clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP59	0-0.25	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP60	0-0.3	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP60	0.6-0.9	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP60	1.2-1.4	Silty Clay	1m to <2m	Clay	90	NL	1	NL	NL	310	NL
SSA1	-	Fill: Silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5

TABLE C
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES (2009)
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OCPs				TOTAL OPPs	Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor			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	0.1	25	50	100	100	250	0.2	0.5	1	3	not detected/detected
General Solid Waste CT1 [1]			100	20	100	NSL	100	4	40	NSL	NSL	0.8	NSL	NSL	NSL	NSL	detect[2]	NSL	NSL		NSL		NSL	10	288	600	1000	-
General Solid Waste SCC1 [1]			500	100	1900	NSL	1500	50	1050	NSL	200	10	Scheduled Chemicals < 50					50	650		NSL		10000	18	518	1080	1800	-
Restricted Solid Waste CT2 [1]			400	80	400	NSL	400	16	160	NSL	NSL	3.2	NSL	NSL	NSL	NSL	detect[2]	NSL	NSL		NSL		NSL	40	1152	2400	4000	-
Restricted Solid Waste SCC2 [1]			2000	400	7600	NSL	6000	200	4200	NSL	800	23	Scheduled Chemicals < 50					50	2600		NSL		40000	72	2073	4320	7200	-
Sample Reference	**Sample Depth**	**Sample Description**																										
TP1	0-0.3	Fill	7	LPQL	16	14	24	LPQL	9	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP1	0.4-0.6	Silty Clay	LPQL	LPQL	14	15	12	LPQL	8	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP2	0-0.3	Fill	LPQL	LPQL	15	25	19	LPQL	12	63	LPQL	LPQL	LPQL	14.2	LPQL	LPQL	LPQL	< 1*	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP3	0-0.25	Fill	LPQL	LPQL	17	21	24	LPQL	16	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP4	0-0.2	Fill	6	1	17	56	65	LPQL	13	104	0.06	0.06	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	**Asbestos detected**
TP4	0.3-0.5	Silty Clay	LPQL	LPQL	11	36	13	LPQL	8	52	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP5	0-0.25	Fill	7	LPQL	15	17	21	LPQL	11	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP6	0-0.25	Fill	8	LPQL	23	16	24	LPQL	10	77	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP7	0-0.2	Fill	6	LPQL	17	16	20	LPQL	9	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP8	0-0.2	Fill	8	LPQL	19	16	21	LPQL	11	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP9	0-0.2	Fill	7	LPQL	18	15	23	LPQL	8	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP9	0.3-0.5	Silty Clay	6	LPQL	15	25	12	LPQL	9	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP10	0-0.15	Fill	10	LPQL	18	16	33	LPQL	11	228	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP11	0-0.25	Fill	6	LPQL	17	18	28	LPQL	9	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP11	0.3-0.5	Silty Clay	6	LPQL	17	22	16	LPQL	10	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP12	0-0.25	Fill	8	1	20	49	**104**	LPQL	8	538	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP13	0-0.2	Fill	7	LPQL	21	27	22	LPQL	10	62	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP14	0-0.3	Fill	18	LPQL	38	51	23	LPQL	13	114	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP14	0.4-0.6	Silty Clay	4	LPQL	13	23	14	LPQL	10	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP15	0-0.2	Fill	5	LPQL	16	23	21	LPQL	10	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP15	0.3-0.5	Silty Clay	LPQL	LPQL	16	23	16	LPQL	9	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP16	0-0.2	Fill	11	LPQL	29	19	23	LPQL	13	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP17	0-0.25	Fill	6	LPQL	13	28	41	LPQL	12	63	0.27	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP17	0.3-0.5	Silty Clay	24	LPQL	10	24	12	LPQL	6	27	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP18	0-0.2	Fill	6	LPQL	18	12	22	LPQL	7	19	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP19	0-0.2	Fill	8	LPQL	17	13	22	LPQL	10	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP20	0-0.2	Fill	22	LPQL	14	21	22	LPQL	11	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP21	0-0.2	Fill	9	LPQL	18	17	30	LPQL	11	73	0.48	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	335	637	972	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP21	0.3-0.5	Silty Clay	8	LPQL	16	15	12	LPQL	7	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP22	0-0.2	Fill	9	LPQL	15	12	18	LPQL	9	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP23	0-0.2	Fill	9	LPQL	13	11	24	LPQL	8	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP23	0.3-0.5	Silty Clay	12	LPQL	15	28	11	LPQL	8	36	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP24	0-0.2	Fill	9	LPQL	17	15	24	LPQL	9	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP25	0-0.15	Fill	10	LPQL	19	18	36	LPQL	12	54	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	72	123	204	399	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP26	0-0.2	Fill	8	LPQL	15	20	27	LPQL	11	71	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP27	0-0.3	Fill	8	LPQL	19	18	30	LPQL	10	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP27	0.3-0.5	Silty Clay	7	LPQL	17	18	16	LPQL	5	21	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP28	0-0.2	Fill	12	LPQL	25	22	28	LPQL	19	91	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP28	0.3-0.5	Silty Clay	11	LPQL	17	26	14	LPQL	11	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP29	0-0.2	Fill	7	LPQL	22	26	35	LPQL	20	94	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP30	0-0.2	Fill	7	LPQL	19	26	22	LPQL	14	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP30	0.3-0.5	Silty Clay	5	LPQL	16	32	13	LPQL	11	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP31	0-0.2	Fill	12	LPQL	28	21	23	LPQL	18	41	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP32	0-0.1	Fill	10	LPQL	24	18	20	LPQL	13	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP33	0-0.2	Fill	9	LPQL	16	23	19	LPQL	12	51	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP33	0.7-0.9	Silty Clay	9	LPQL	16	33	12	LPQL	14	53	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
A	-	Fill	7	LPQL	15	42	27	LPQL	15	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
B	-	Fill	6	LPQL	16	19	22	LPQL	14	55	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
C	-	Fill	8	LPQL	25	20	26	LPQL	17	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
FJS1	-	Material	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	**Asbestos Detected**
TP29	0.1	Material	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	**Asbestos Detected**
SS1	-	Material	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	**Asbestos Detected**
SS2	-	Material	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	**Asbestos Detected**
B1	-	Material	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	**Asbestos Detected**
Total Number of samples			49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	49	49	49	49	49	49	49	40
Maximum Value			24	1	38	56	104	LPQL	20	538	0	LPQL	LPQL	14.2	LPQL	LPQL	LPQL	LPQL	LPQL	72	335	637	972	LPQL	LPQL	LPQL	LPQL	NC

Explanation:
1 - NSW DECCW Waste Classification Guidelines (2009)
2 - Some Individual OPPs have CT1 & CT2 values. RefereNCe should be made to the Waste Classification Guidelines in the event of any detections
* PQL raised by the laboratory due to interference from analytes other than those being tested in the sample

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
OPP: Organophosphorus Pesticides
PID: Photoionisation Detector
PCBs: Polychlorinated Biphenyls
UCL: Upper Level Confidence Limit on Mean Value
ALPQL: All values less than PQL
NA: Not Analysed
NC: Not Calculated
NSL: No Set Limit
SAC: Site Assessment Criteria
TRH: Total Recoverable Hydrocarbons
BTEX: Monocyclic Aromatic Hydrocarbons
OCP: Organochlorine Pesticides
CT: Contaminant Threshold
SCC: Specific Contaminant Concentration
HILs: Health Investigation Levels
NEPM: National Environmental Protection Measure

TABLE C-1
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES (2014)
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**																									
TP34	0-0.15	Fill: Silty clay	13	0.6	29	21	29	LPQL	18	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP34	0.3-0.5	Silty clay	10	0.6	22	36	20	LPQL	19	78	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP35	0-0.2	Fill: Silty clay	10	LPQL	26	18	29	LPQL	13	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP35	0.3-0.5	Silty clay	10	LPQL	26	31	19	LPQL	15	63	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP36	0-0.2	Fill: Silty clay	11	0.6	40	12	26	LPQL	10	23	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP37	0-0.2	Fill: Silty clay	13	0.8	44	9	25	LPQL	8	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP38	0-0.2	Fill: Silty clay	7	LPQL	19	23	15	LPQL	9	45	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP38	0.3-0.5	Fill: Silty clay	12	0.6	34	15	26	LPQL	10	18	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP38	0.6-0.8	Silty clay	9	0.5	25	24	18	LPQL	6	34	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP39	0-0.2	Fill: Silty clay	10	0.5	35	9	24	LPQL	7	10	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP39	0.3-0.5	Silty clay	10	0.5	30	13	21	LPQL	4	12	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP40	0-0.15	Fill: Silty clay	11	0.4	26	23	27	LPQL	19	44	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP40	0.3-0.5	Silty clay	21	LPQL	15	20	17	LPQL	6	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP41	0-0.2	Fill: Silty clay	10	0.4	25	19	23	LPQL	18	44	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP41	0.4-0.6	Silty clay	12	LPQL	28	26	18	LPQL	17	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP42	0-0.2	Fill: Silty clay	12	0.9	35	14	34	LPQL	18	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP43	0-0.2	Fill: Silty clay	17	0.7	31	19	30	LPQL	13	57	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP44	0-0.2	Fill: Silty clay	9	0.4	29	13	25	LPQL	9	17	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP44	0.3-0.5	Silty clay	6	LPQL	13	14	15	LPQL	3	15	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP45	0-0.2	Fill: Silty clay	13	0.5	27	17	37	LPQL	12	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP46	0-0.2	Fill: Silty clay	12	0.5	29	17	31	LPQL	12	29	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP47	0-0.2	Fill: Silty clay	LPQL	LPQL	11	21	10	LPQL	10	59	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP47	0.4-0.6	Fill: Silty clay	12	0.6	29	19	31	LPQL	14	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP47	0.8-1.0	Silty clay	10	0.5	32	19	23	LPQL	8	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP48	0-0.2	Fill: Silty clay	14	0.7	29	10	24	LPQL	6	13	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP48	0.3-0.5	Silty clay	13	0.5	29	19	23	LPQL	7	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP49	0-0.2	Fill: Silty clay	10	0.6	26	19	38	LPQL	19	75	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	0-0.2	Fill: Silty clay	8	LPQL	19	18	16	LPQL	8	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	0.6-0.8	Fill: Silty clay	13	0.7	41	13	26	LPQL	9	22	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	1.0-1.2	Fill: Silty clay	9	0.5	20	24	20	LPQL	7	37	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP50	1.4-1.6	Silty clay	5	LPQL	10	13	14	LPQL	2	19	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
Total Number of samples			31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	20
Maximum Value			21	0.9	44	36	38	LPQL	19	100	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

[1] - NSW EPA Waste Classification Guidelines (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 C-2
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES (2014)
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**																									
TP51	0-0.3	Fill: Silty clay	7	LPQL	19	27	50	1.3	10	99	1.3	0.2	LPQL	LPQL	LPQL	0.1	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP52	0-0.3	Fill: Silty clay	10	LPQL	15	26	26	LPQL	11	72	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP52	0.7-1.0	Fill: Silty clay	19	0.5	9	150	**460**	0.2	9	720	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP52	1.3-1.6	Fill: Silty clay	10	LPQL	23	24	17	LPQL	7	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP53	0-0.3	Fill: Silty clay	6	LPQL	13	25	56	0.3	8	73	0.2	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP53	1.0-1.2	Silty Clay	9	LPQL	21	31	20	LPQL	12	50	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP54	0-0.2	Fill: Silty clay	13	LPQL	25	23	22	LPQL	4	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP55	0-0.3	Fill: Silty clay	10	LPQL	26	18	16	LPQL	5	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP55	0.4-0.6	Silty Clay	10	LPQL	27	23	15	LPQL	5	18	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP56	0-0.3	Fill: Silty clay	10	LPQL	28	18	23	LPQL	6	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP57	0-0.05	Fill: Silty clay	6	LPQL	10	43	12	LPQL	8	160	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	75	710	300	1085	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP57	0.05-0.2	Fill: Silty clay	8	LPQL	23	33	18	LPQL	7	41	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP58	0-0.25	Fill: Silty clay	10	LPQL	29	18	20	LPQL	6	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP58	0.3-0.5	Silty Clay	6	LPQL	16	15	11	LPQL	3	11	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP59	0-0.25	Fill: Silty clay	6	LPQL	18	32	18	LPQL	11	51	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP60	0-0.3	Fill: Silty clay	8	LPQL	25	29	20	LPQL	16	76	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	No asbestos detected
TP60	0.6-0.9	Fill: Silty clay	7	LPQL	13	24	22	LPQL	12	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP60	1.2-1.4	Silty Clay	5	LPQL	14	18	13	LPQL	6	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
SSA1	-	Fill: Silty clay	9	LPQL	24	26	25	LPQL	8	59	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	NA
TP57	0.15	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
TP60	0.2	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**Asbestos detected**
SFA	-	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No asbestos detected
Total Number of samples			19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	14
Maximum Value			19	0.5	29	150	460	1.3	16	720	1.3	0.2	LPQL	LPQL	LPQL	0.1	LPQL	LPQL	75	710	300	1085	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

[1] - NSW EPA Waste Classification Guidelines (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 D

SOIL LABORATORY TCLP RESULTS

All data in mg/L unless stated otherwise

			Lead
PQL - Envirolab Services			0.03
TCLP1 - General Solid Waste [1]			5
TCLP2 - Restricted Solid Waste [1]			20
TCLP3 - Hazardous Waste [1]			>20
Sample Reference	**Sample Depth**	**Sample Description**	
TP12	0-0.25	Fill: Silty clay	0.55
TP52	0.7-1.0	Fill: Silty clay	LPQL
Total Number of samples			2
Maximum Value			0.55

Explanation:

1 - NSW EPA Waste Classification Guidelines (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 E

SUMMARY OF DAM WATER LABORATORY RESULTS COMPARED TO GILs

All results in µg/L unless stated otherwise.

	PQL Envirolab Services	GIL - ANZECC 2000 [1] Fresh Waters	DW1
Field Measurements [5]			
Dissolved oxygen (ppm)	-	NSL	2
Redox potential (mV)	-	NSL	172.2
pH	-	6.5 - 8.5[i]	6.4
Electrical Conductivity (µS/cm)	-	NSL	420
Temperature °C	-	NSL	14.5
Inorganic Compounds and Parameters			
pH	0.1	6.5 - 8.5[i]	7
Electrical Conductivity (µS/cm)	1	NSL	440
Hardness (mgCaCo3/L)	3	NSL	86
Metals and Metalloids			
Arsenic (As III)	1	24	LPQL
Cadmium	0.1	0.2	LPQL
Chromium (total)	2	1[a^]	LPQL
Copper	1	1.4	2
Lead	1	3.4	LPQL
Total Mercury (inorganic)	0.05	0.06	LPQL
Nickel	1	11	LPQL
Zinc	1	8	4
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)			
Benzene	1	950	LPQL
Toluene	1	180[a]	LPQL
Ethylbenzene	1	80[a]	LPQL
m+p-xylene	2	75[m]	LPQL
o-xylene	1	350[a]	LPQL
Total xylenes	2	NSL	LPQL
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	0.1	16[a]	LPQL
Acenaphthylene	0.1	NSL	LPQL
Acenaphthene	0.1	NSL	LPQL
Fluorene	0.1	NSL	LPQL
Phenanthrene	0.1	0.6[c]	LPQL
Anthracene	0.1	0.01[c]	LPQL
Fluoranthene	0.1	1[c]	LPQL
Pyrene	0.1	NSL	LPQL
Benzo(a)anthracene	0.1	NSL	LPQL
Chrysene	0.1	NSL	LPQL
Benzo(b,j+k)fluoranthene	0.2	NSL	LPQL
Benzo(a)pyrene	0.1	0.1[c]	LPQL
Indeno(1,2,3-c,d)pyrene	0.1	NSL	LPQL
Dibenzo(a,h)anthracene	0.1	NSL	LPQL
Benzo(g,h,i)perylene	0.1	NSL	LPQL
Total PAHs	-	NSL	LPQL
Organochlorine Pesticides (OCPs)			
Aldrin	0.001	0.001[a]	LPQL
Chlordane	0.001	0.03[c]	LPQL
DDE	0.001	0.03[a]	LPQL
DDT	0.001	0.006[c]	LPQL
Dieldrin	0.001	0.01[a]	LPQL
Endosulfan	0.001	0.03[c]	LPQL
Endrin	0.001	0.01[c]	LPQL
Heptachlor	0.001	0.01[c]	LPQL
Methoxychlor	0.001	0.005[c]	LPQL
Organophosphate Pesticides (OPPs)			
Dichlorovos	0.01	NSL	LPQL
Demeton-S-methyl	0.01	NSL	LPQL
Dimethoate	0.01	0.15[a]	LPQL
Diazinon	0.01	0.01[a]	LPQL
Dichlorvous	0.01	NSL	LPQL
Parathion-methyl	0.01	0.004	LPQL
Fenitrothion	0.01	0.2[a]	LPQL
Fenthoin	0.01	NSL	LPQL
Malathion	0.01	0.05[a]	LPQL
Chlorpyriphos	0.01	0.01	LPQL
Chlorpyriphos-methyl	0.01	NSL	LPQL
Primiphos	0.01	NSL	LPQL
Ethion	0.01	NSL	LPQL
Azinphos-methyl	0.01	0.01[c]	LPQL
Chlorfenvinphous (E)	0.01	NSL	LPQL
Total OPPs	-	NSL	LPQL
Polychlorinated Biphenyls (PCBs)			
Aroclor 1016	0.01	0.001[a]	LPQL
Aroclor 1221	0.01	1[a]	LPQL
Aroclor 1232	0.01	0.3[a]	LPQL
Aroclor 1242	0.01	0.3[a]	LPQL
Aroclor 1248	0.01	0.03[a]	LPQL
Aroclor 1254	0.01	0.01[a]	LPQL
Aroclor 1260	0.01	NSL	LPQL
Total PCBs	0.01	NSL	LPQL

Explanation:

1 - ANZECC Australian Water Quality Guidelines for Fresh Waters (ANZECC 2000) - Trigger Values for protection of 95% of species

5 - Field Measurements obtained during sampling on 3 September 2015

a - In the absence of a high reliability guideline concentration, the moderate or low reliability guideline concentration has been quoted

c - 99% trigger values adopted due to the potential for bioaccumulation effects

i - ANZECC 2000 - Level for NSW Lowland Rivers.

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

a^ - The GIL for Cr VI has been adopted as a conservative measure

Concentration above the GIL — VALUE

Abbreviations:

NA: Not Analysed

NSL: No Set Limit

GIL - Groundwater Investigation Levels

PQL: Practical Quantitation Limit

LPQL: Less than Practical Quantitation Limit

(-) : Not Applicable

TABLE F
DAM WATER 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	
PQL - Envirolab Services				10	50	1	1	1	3	1	PID [2]
Land Use Category [1]				**LOW DENSITY RESIDENTIAL**							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
DW1	Na	0m to <2m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Na
Total Number of Samples				1	1	1	1	1	1	1	Na
Maximum Value				LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Na

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

Concentration above the SAC — VALUE
Site specific assesment 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
HSLs: Health Screening Levels
NA: Not Analysed
NC: Not Calculated
NL: Not Limiting
PQL: Practical Quantitation Limit
LPQL: Less than PQL
SAC: Site Assessment Criteria
NEPM: National Environmental Protection Measure
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]				**LOW DENSITY RESIDENTIAL**						
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**							
DW1	Na	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA

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

Land Use Category [1]			AREA OF ECOLOGICAL SIGNIFICANCE																		
			pH	CEC ($cmol_c/kg$)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs							
						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	NSL	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Soil Texture**																			
TP1	0-0.3	Fine	NA	NA	NA	7	16	14	24	9	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP1	0.4-0.6	Fine	NA	NA	NA	LPQL	14	15	12	8	25	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP2	0-0.3	Fine	NA	NA	NA	LPQL	15	25	19	12	63	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP3	0-0.25	Fine	NA	NA	NA	LPQL	17	21	24	16	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP4	0-0.2	Fine	NA	NA	NA	6	17	56	65	13	104	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.06
TP4	0.3-0.5	Fine	NA	NA	NA	LPQL	11	36	13	8	52	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP5	0-0.25	Fine	NA	NA	NA	7	15	17	21	11	47	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP6	0-0.25	Fine	NA	NA	NA	8	23	16	24	10	77	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP7	0-0.2	Fine	NA	NA	NA	6	17	16	20	9	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP8	0-0.2	Fine	NA	NA	NA	8	19	16	21	11	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP9	0-0.2	Fine	NA	NA	NA	7	18	15	23	8	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP9	0.3-0.5	Fine	NA	NA	NA	6	15	25	12	9	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP10	0-0.15	Fine	NA	NA	NA	10	18	16	33	11	228	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP11	0-0.25	Fine	NA	NA	NA	6	17	18	28	9	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP11	0.3-0.5	Fine	NA	NA	NA	6	17	22	16	10	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP12	0-0.25	Fine	NA	NA	NA	8	20	49	104	8	538	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP13	0-0.2	Fine	NA	NA	NA	7	21	27	22	10	62	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP14	0-0.3	Fine	NA	NA	NA	18	38	51	23	13	114	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP14	0.4-0.6	Fine	NA	NA	NA	4	13	23	14	10	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP15	0-0.2	Fine	NA	NA	NA	5	16	23	21	10	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP15	0.3-0.5	Fine	NA	NA	NA	LPQL	16	23	16	9	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP16	0-0.2	Fine	NA	NA	NA	11	29	19	23	13	33	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP17	0-0.25	Fine	NA	NA	NA	6	13	28	41	12	63	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP17	0.3-0.5	Fine	NA	NA	NA	24	10	24	12	6	27	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP18	0-0.2	Fine	NA	NA	NA	6	18	12	22	7	19	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP19	0-0.2	Fine	NA	NA	NA	8	17	13	22	10	26	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP20	0-0.2	Fine	NA	NA	NA	22	14	21	22	11	32	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP21	0-0.2	Fine	NA	NA	NA	9	18	17	30	11	73	LPQL	LPQL	LPQL	LPQL	808	378	LPQL	LPQL	LPQL	LPQL	LPQL
TP21	0.3-0.5	Fine	NA	NA	NA	8	16	15	12	7	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP22	0-0.2	Fine	NA	NA	NA	9	15	12	18	9	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP23	0-0.2	Fine	NA	NA	NA	9	13	11	24	8	35	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP23	0.3-0.5	Fine	NA	NA	NA	12	15	28	11	8	36	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP24	0-0.2	Fine	NA	NA	NA	9	17	15	24	9	39	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP25	0-0.15	Fine	NA	NA	NA	10	19	18	36	12	54	LPQL	LPQL	LPQL	78	255	108	LPQL	LPQL	LPQL	LPQL	LPQL
TP26	0-0.2	Fine	NA	NA	NA	8	15	20	27	11	71	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP27	0-0.3	Fine	NA	NA	NA	8	19	18	30	10	60	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP27	0.3-0.5	Fine	NA	NA	NA	7	17	18	16	5	21	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP28	0-0.2	Fine	NA	NA	NA	12	25	22	28	19	91	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP28	0.3-0.5	Fine	NA	NA	NA	11	17	26	14	11	42	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP29	0-0.2	Fine	NA	NA	NA	7	22	26	35	20	94	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP30	0-0.2	Fine	NA	NA	NA	7	19	26	22	14	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP30	0.3-0.5	Fine	NA	NA	NA	5	16	32	13	11	43	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP31	0-0.2	Fine	NA	NA	NA	12	28	21	23	18	41	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP32	0-0.1	Fine	NA	NA	NA	10	24	18	20	13	38	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP33	0-0.2	Fine	NA	NA	NA	9	16	23	19	12	51	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
TP33	0.7-0.9	Fine	NA	NA	NA	9	16	33	12	14	53	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
A	-	Fine	NA	NA	NA	7	15	42	27	15	100	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
B	-	Fine	NA	NA	NA	6	16	19	22	14	55	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
C	-	Fine	NA	NA	NA	8	25	20	26	17	64	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
Total Number of Samples			NA	NA	NA	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Maximum Value			NA	NA	NA	24	38	56	104	20	538	LPQL	LPQL	LPQL	78	808	378	LPQL	LPQL	LPQL	LPQL	0.06

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

EIL AND ESL ASSESSMENT CRITERIA

Land Use Category [1]			URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																		
						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	NSL	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Soil Texture**																			
TP1	0-0.3	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP1	0.4-0.6	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP2	0-0.3	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP1	0-0.3	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP1	0.4-0.6	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP2	0-0.3	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP3	0-0.25	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP4	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP4	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP5	0-0.25	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP6	0-0.25	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP7	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP8	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP9	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP9	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP10	0-0.15	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP11	0-0.25	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP11	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP12	0-0.25	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP13	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP14	0-0.3	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP14	0.4-0.6	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP15	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP15	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP16	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP17	0-0.25	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP17	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP18	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP19	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP20	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP21	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP21	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP22	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP23	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP23	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP24	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP25	0-0.15	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP26	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP27	0-0.3	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP27	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP28	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP28	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP29	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP30	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP30	0.3-0.5	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP31	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP32	0-0.1	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP33	0-0.2	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
TP33	0.7-0.9	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
A	-	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
B	-	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7
C	-	Fine	NA	NA	NA	100	408	78	1100	35	147	710	180	180	120	1300	5600	60	105	125	45	0.7