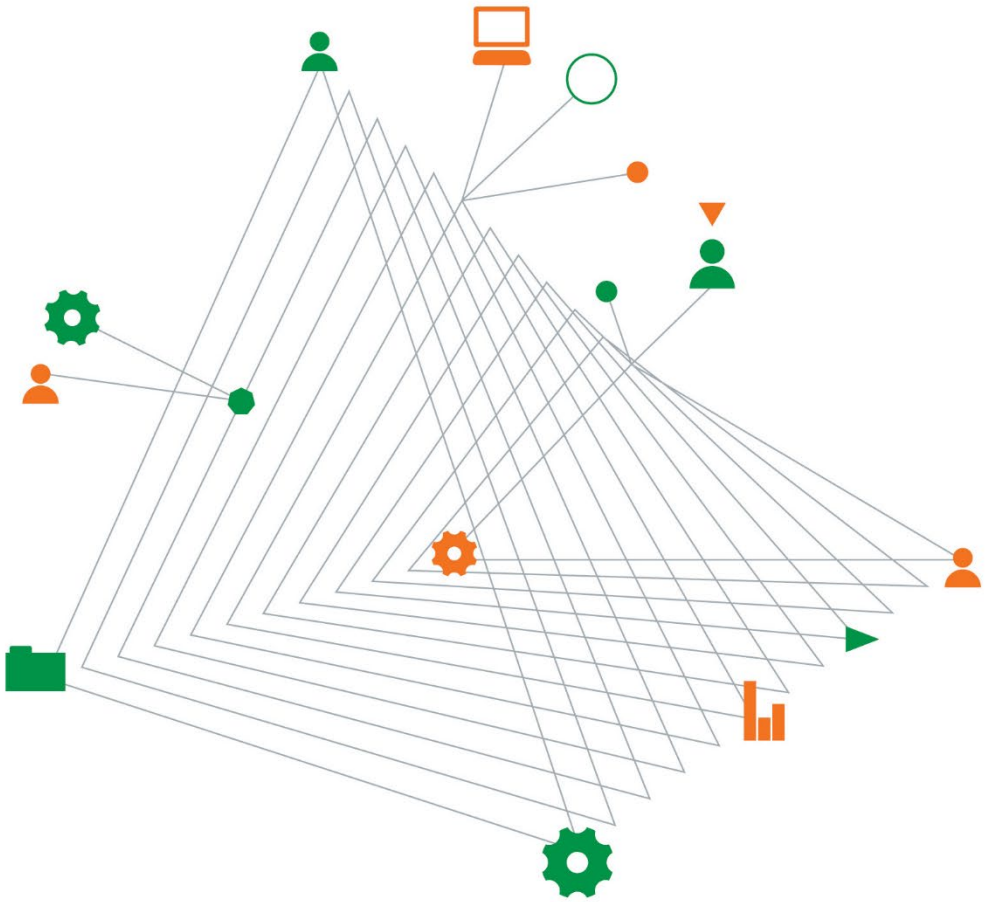
Hornsby Shire Council
Revised Remedial Action Plan for Development of Westleigh Park
62 Quarter Sessions Road, Westleigh, NSW
SYDEN213135-2-R01

3 December 2020



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Revised Remedial Action Plan for Development of Westleigh Park

62 Quarter Sessions Road, Westleigh, NSW

Prepared for
Hornsby Shire Council

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Executive Summary

Coffey Services Australia Pty Ltd (Coffey) was engaged by Hornsby Shire Council (Council) to undertake a revised Remedial Action Plan (RAP) at Westleigh Park, 62 Quarter Sessions Road in Westleigh, NSW (the site). The revised RAP was requested by Hornsby Shire Council (Council) following discussions with the Site Auditor, Lange Jorstad of Geosyntec Consultants Pty Ltd (Geosyntec).

Council purchased 34ha of land from Sydney Water in 2016 and intends to redevelop the site into a regional sports and recreational complex known as Westleigh Park.

A number of investigations were previously carried out at the site.

Extent of Remediation

The following areas have been identified as requiring remediation/management:

- Developable Area (Sports Precinct)
  - Fill across the developable area impacted by asbestos, heavy metals, hydrocarbons (TRH & PAH)
  - Derelict/remnant machine parts, anthropogenic materials left on surfaces from past use, typically superficial and isolated, in various parts of the developable area
  - Tar impact in the southern portion of the developable area
  - PFAS impacted concrete structures
- Environmental Management Zone (EMZ)
  - Asbestos fragments and localised spot dumping, typically superficial and isolated, in various parts of EMZ.

Remediation Strategies

The proposed remediation strategies for the site are summarised as follows.

Developable Area (Sports Precinct):

1. Removal of isolated spot dumping, and isolated derelict/remnant machine parts (subject to heritage management) and anthropogenic materials left on surfaces from past use
2. Demolition and removal of RFS buildings in previous fire-fighting training area.
3. Option A: Excavation of tar impacted soil for off-site disposal (if volume <200 m^3)

   Option B: Excavation of tar impacted soil with onsite burial (>200m^3)
4. Cap and contain to isolate the mixture of contamination in the fill including asbestos
5. Implementation of a long-term management plan

EMZ:

1. Hand picking (i.e. emu-picking) of visible asbestos fragments along mountain bike trails (MTB) Trails, and in bush protection work areas (BP) and revegetation areas (RE), where accessible
2. Removal of isolated spot dumping along mountain bike trails (MTB) Trails, and in bush protection work areas (BP) and revegetation areas (RE), where accessible
3. Passive restriction of public access by utilising landscaping features
4. Implementation of a long-term management plan

Conclusions and Recommendations

Following implementation of the measures outlined in this RAP, it is considered that the site can be made suitable for the proposed recreational land use, subject to site validation and implementation of a long-term EMP.

The long-term EMP will be required to be recorded on the planning certificate issued under section 10.7 of the EP&A Act 1979 or a covenant registered on the title to land under section 88B of the Conveyancing Act 1919.

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1. Introduction

Coffey Services Australia Pty Ltd (Coffey) was engaged by Hornsby Shire Council (Council) to undertake a revised Remedial Action Plan (RAP) at Westleigh Park, 62 Quarter Sessions Road in Westleigh, NSW (the site). The revised RAP was requested by Hornsby Shire Council (Council) following discussions with the Site Auditor, Lange Jorstad of Geosyntec Consultants Pty Ltd (Geosyntec).

Council purchased 34ha of land from Sydney Water in 2016 and intends to redevelop the site into a regional sports and recreational complex known as Westleigh Park. Westleigh Park is proposed to include:

1. A central developable area known as the “Sports Precinct”
2. A surrounding Environmental Management Zone (EMZ) comprising
    - bush protection work areas (BP)
    - revegetation areas (RE)
    - mountain bike trails (MTB Trails)

The preferred concept plan is presented in Appendix A.

1.1. Background

Part of the site was historically used for night soil disposal, tarring operations, municipal garbage disposal, rock quarrying, timber treatment and firefighting training, resulting in land contamination. Following a number of contamination investigations carried out at the site by JBS&G and Arcadis, a Remedial Action Plan (RAP) was prepared by Arcadis in 2017 which outlined a remedial approach to support the Westleigh Park development. Subsequent investigations were carried out by Senversa to assess impacts associated with the firefighting training in the northern part of the site. Most recently, Coffey has carried out a number of geotechnical, geophysical and contamination investigations across the site to further facilitate the site redevelopment.

Lange Jorstad of Geosyntec has been appointed as the Site Auditor. The RAP (Arcadis, 2017) outlined a capping strategy for the proposed Sports Precinct based on the recommended capping profiles presented in the superseded NSW EPA (1996) Solid Waste Landfills Guidelines. However, investigations indicated that the proposed Sports Precinct does not strictly have apparent characteristics of a putrescible solid waste landfill with respect to leachate and landfill gas. Subsequent to communications with Council and the Site Auditor, it was agreed that a “separation layer” can be utilised, instead of a “landfill-style” cap. As such, Council requested Coffey to prepare this revised RAP, which supersedes Arcadis (2017).

1.2. Objectives

The purpose of this RAP is to provide remediation objectives and document the process to render the site suitable for the proposed Westleigh Park development:

- Document the identified contamination risks to human health and/or environment
- Set remediation objectives for the proposed use
- Define the extent of remediation on the site
- Assess options and remedial technologies to achieve the remediation objectives and select and justify an approach
- Outline the selected remediation approach and procedures
- Establish the environmental safeguards required to complete the remediation
- Address contingencies and unexpected finds

- Outline waste classification, handling and tracking
- Outline validation requirements
- Identify long-term management or monitoring requirements following the completion of remediation.

1.3. Scope of Work

The scope for the RAP was to:

- Review and summarise findings of past investigations
- Outline a remediation/management approach for the development

1.4. Previous Reports

This RAP was prepared based on information and findings from the following reports and have been relied upon in the preparation of this RAP:

- JBS&G (2014) Detailed Site Investigation, Sydney Water Thornleigh Reservoir, Ref: 43386-58717 Rev0, dated 8 December 2014
- Arcadis (2017) Remedial Action Plan, 62 Quarter Sessions Road, Westleigh NSW, Ref: 16163RP01 Rev01, dated 5 April 2017
- Senversa (2018) Detailed Site Investigation – 12 Warrigal Drive, Westleigh NSW, Ref: s13978_rpt_rev1, dated 27 April 2018
- Senversa (2018a) Preliminary Health Risk Assessment (HRA), 12 Warrigal Drive Westleigh NSW Ref: S13978_009_LTR_Rev2_HRA, dated 27 April 2018
- Arcadis (2018) Excavation Report, RFS Training Facility, Westleigh NSW, Ref: 10018854_Westleigh_Excavation, dated 7 September 2018
- Coffey (2018) Westleigh Park Redevelopment: Appraisal of Remedial Approaches, Ref: SYDEN213135-L01c draft, dated 31 October 2018
- Geosyntec (2019) Site Audit of Westleigh Park Redevelopment, Westleigh, NSW – Interim Audit Advice #1 From Review of Appraisal of Remedial Approaches, Ref: GSY0086, dated 5 August 2019
- Coffey (2020) Groundwater and Landfill Gas Investigation, Westleigh Park, Ref: SYDEN213135-1-R03, dated 18 May 2020
- Coffey (2020a) Additional Groundwater Assessment, Westleigh Park, Ref: SYDEN213135-2-R02a, dated 21 September 2020

In addition, Coffey has carried out a number of geotechnical and geophysical investigations (not listed above) to facilitate the site redevelopment.

2. Site Location and Identification

Site identification is summarised in Table 1. The location and boundaries of the site are shown in Figure 1 and Figure 2.

Table 1: Site Identification details

Site Characteristic	Detail
Site Description	Westleigh Park, Westleigh, NSW
Street Address	62 Quarter Sessions Road, Westleigh, NSW
Lot and DP	Lot 101 DP1217395, Lot 7332 DP1167215, Part of Lot 68 DP752053 and part of Warrigal Drive
Local Government Area	Hornsby Shire Council
Land Zoning (LEP 2013)	R2 Low Density Residential (in proposed Sports Precinct) E3 Environmental Management (in bushland) RE1 Public Recreation (in Crown Land bounded by Warrigal Drive and Quarter Sessions Road) RE1 Lot 68 DP 752053 (RFS portion of the site)
Site area and dimensions	Sports Precinct: 11.6ha EMZ: 22.7ha Crown Land and Warrigal Drive: 1.2ha Former RFS training area: approximately 0.7ha Approx Total Land Area: 36ha

3. Site History

3.1. Lot 101 DP 1217395

A site history review was presented in JBS&G (2014) that covered Lot 101 DP 1217395 (ie. the main lot covering the developable area and the EMZ). JBS&G (2014) included a review of Sydney Water records, aerial photographs, title records, EPA records and other sources. Based on the above,

- Site history of the eastern portion (broadly the proposed EMZ area) is summarised below:
  - The eastern half of the site has predominately been undeveloped bushland
- Site history of the western portion (broadly the developable Sports Precinct) is summarised below:
  - Prior to mid 1940s – The area was generally undeveloped and predominately owned by private individuals
  - Late 1940s to early 1950s – The Metropolitan Water Sewerage and Drainage Board (now Sydney Water) took ownership of the wider site

- Early 1950s to early 1960s – A night soil depot, a municipal landfill and a tarring plant were in operation; and it was reported that night soil material was subsequently used to cover the landfill area
- Late 1960s to late 1970s – A power pole and timber treatment company and a quarry were in operation
- Since 1980s – Rural Fire Services (RFS) have been established and firefighting training have been reported in the northern portion
- Since 1990s – The area has been grassed, generally similar to its current form

Approximate locations of the above historical operations and features were presented in Figure 3 of JBS&G (2014), reproduced in Appendix B.

Council purchased Lot 101 DP 1217395 from Sydney Water in 2016. Council then incorporated the adjoining Crown Land, Lot 7332 DP1167215 and Warrigal Drive, to form the subject site for the Westleigh Park development.

3.2. Crown Land

Site history review for the subject Crown Land, Lot 7332 DP1167215 and Warrigal Drive, were outside the scope of JBS&G (2014). As part of this RAP, Coffey carried out a review of available historical aerial photographs to assess historical land use and features at the subject Crown Land. Findings from our historical aerial photograph review are summarised below:

- 1930 – The subject area appears undeveloped, covered with scattered to dense bushland. Warrigal Drive was visible.
- 1943, 1951, 1961, 1970 – No substantial change apparent.
- 1986 – The southern portion of the subject area appears to have been partially cleared and grassed. Quarter Sessions Road has been constructed.
- 1994 – No substantial change apparent.
- 2003 – Trees have been re-established in the southern portion of the subject area.
- 2014 – The subject area appears similar to its current form.

Based on the aerial photograph review, the southern portion of the subject area may have been disturbed. Given that Quarter Sessions Road was constructed around the same time, it is considered likely that the southern portion of the subject area may have been used as a temporary depot for road construction. From this review, the potential for contamination in this area is considered to be low, and likely to be from disturbance in the southern portion of this area. Potential contamination, if present, would likely be superficial or localised spot dumping, although it is noted that this area is heavily vegetated and difficult to access.

For the purposes of this report, the Crown Land area will be included and managed as part of the EMZ.

3.3. Part Lot 68 DP752053

As part of this RAP, Coffey carried out a review of available historical aerial photographs to assess historical land use and features at the subject area (part of Lot 68 DP752053). Findings from our historical aerial photograph review are summarised below:

- 1930 to the mid-1940s – The subject area is vegetated and undeveloped
- 1951 to 1970 – It appears the landfilling and the timber/pole treatment operations have encroached into the subject lot
- 1986 – The RFS building facing Warrigal Drive is now present (which is to the west of the subject lot) and a small building in the location of the training facility is present. The subject area is cleared with exposed ground.

- 1994 – The majority of the cleared ground has been grassed. A bitumen road leading to the training facility is visible. The training facility has a bitumen paved area to the rear.
- 2003 – The RFS building is surrounded by white paving and some small structures. There is some ground disturbance to the east of the building, which extends into the adjoining developable area. The remainder of the site is generally grassed.
- 2014 – No substantial change apparent.

Approximate locations of the above historical operations and features were presented in Figure 3 of JBS&G (2014), reproduced in Appendix B.

Based on the aerial photograph review, the landfilling and timber/pole treatment operations have encroached into the subject area prior to 1970s. The RFS building was constructed between 1970 and 1986. In addition to the presence of landfill waste, the subject area is expected to have been impacted by firefighting training activities.

For the purposes of this report, the subject area impacted by the landfilling activities will be included and managed as part of the Sports Precinct.

4. Site Condition and Surrounding Environment

Site condition and surrounding environment have previously been reported in JBS&G (2014), Arcadis (2017) and Coffey (2020).

A summary is presented below:

- The site is located in a residential and bushland setting.
- The western portion of the site (the developable area) comprises open undulating grounds, overgrown with grass and weeds. An east-west depression/gully is present in the centre. A number of derelict/remnant machine parts and/or metal components are present in the southern half. Some timber and wood logs are present in the northern half. RFS buildings are located along the northern boundary.
- The eastern portion of the site (the EMZ) is generally undeveloped bushland with areas of ecological and/or heritage significance. Mountain bike trails are evident. Some localised/spot dumping has been reported.
- The Crown Land is densely vegetated with no access for a walkover.

4.1. Topography

Surveyed elevations at borehole locations (Coffey 2020) and review of the regional topographic data indicate that the site is situated along an approximately northeast-trending ridgeline. The ridgeline within the site peaks between 185m and 188m AHD in the south-eastern portion and gradually declines to 175m AHD at the northern boundary. The topography of the cleared ground (the developable area) is highly irregular as a result of various mounds from past landfill activity, but overall these areas slope down gently to the west and northwest. A wide shallow gully runs east to west through the middle of the developable area, flattening out upon reaching dense vegetation. The northern areas of the site slope to the northwest, northeast and north towards gullies and local creek lines. Irregular topography is present on the site surface due to mounds, stockpiles and depressions and various lengths of grasses and vegetation cover.

4.2. Geology

The Sydney 1:100,000 Geological Sheet 9130 indicates the site is underlain by two geological units: Hawkesbury Sandstone and Ashfield Shale. Hawkesbury Sandstone, characterised by medium to coarse-grained quartz sandstone with very minor shale and laminite lenses, is present along the eastern and western edges of the site as well as the northeast corner. The southern and central

portion of the site (tapering to the north) is underlain by Ashfield shale of the Wianamatta Group, which comprises black to dark grey shale and laminite. During our borehole drilling (Coffey 2020), shallow sandstone was encountered at many of our borehole locations. Ashfield Shale was not evident.

JBS&G (2014) carried out 100 test pits and 15 test trenches across the developable area. Inferred fill thickness and selected cross-sections were presented in Figure 7 and Figures 9 to 12 in JBS&G (2014), which are reproduced in Appendix B. Based on JBS&G (2014)'s findings:

- The developable area is generally underlain with silty clay fill, typically less than 1m to 2m in depth. Localised deeper fill to 4m has been reported in some areas.
- The fill is underlain with a thin layer of residual clay, then shallow sandstone/shale bedrock.
- Significant volume of putrescible waste was not encountered in the fill.

4.3. Hydrogeology

Coffey (2020a) undertook a groundwater monitoring event, and the installation and monitoring of an additional groundwater monitoring well to the western boundary. The observed standing water levels ranged from 181mAHD (BH15) in the south to 147mAHD in the north (BH12W).

Inferred groundwater contours were presented in Figure 3 of Coffey (2020a) which is reproduced in Appendix D. The overall groundwater flow was inferred to be in a northerly direction towards the RFS area, with the following localised flow features identified:

- In the northern part of the site, groundwater appears to flow from the northeast to the northwest towards the hydraulic low point of the site in the vicinity of the RFS area.
- There appears to be a slight groundwater mound underneath the centre of the southern half of the developable area, allowing groundwater to potentially flow radially towards the southern and western site boundaries.

Shallow groundwater is likely to follow local topographical features and fractures with the bedrocks and discharge to local creeks to the north of the site.

4.4. Surface Water

Permanent surface water bodies have not been reported on site by JBS&G (2014) and Arcadis (2017). A regional surface water body, Larool Creek (a tributary off Waitara Creek) runs along the north and north-east beyond the site. Waitara Creek runs to the north and northeast of the site.

5. Assessment and Remediation Criteria

The applicable guidelines are:

- ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality
- CRC Care (2011) Technical Report No. 10, Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater
- NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM), amended 2013
- NSW EPA (2019) Assessment and Management of Hazardous Ground Gases
- NSW EPA (2016) Environmental Guidelines: Solid Waste Landfills
- PFAS National Environmental Management Plan (PFAS NEMP), version 2.0 January 2020, National Chemicals Working Group of the Heads of EPA (HEPA) Australia and New Zealand.

5.1. Soil

Based on the proposed recreational land use, the adopted assessment, remediation and acceptance criteria for soil are summarised in Table 2.

Table 2: Soil Criteria

Criteria	Source	Relevance/Receptor	Pathway
HILs for soil contaminants	Amended ASC NEPM 2013 PFAS NEMP (2020)	Recreational receptors (HIL C)	Dermal contact and ingestion
HSLs for vapour intrusion	Amended ASC NEPM 2013	Recreational receptors (HSL C)	Not applicable given non-limiting criteria
HSLs for direct contact	CRC CARE 2011 Table B4	Recreational receptors (HSL C)	Dermal contact and inhalation
HSL for vapour intrusion	CRC CARE 2011 Table B3	Intrusive maintenance worker (shallow trench) and depth 0-<2m depth	Inhalation
Management limits	Amended ASC NEPM 2013	Parkland and open space	Formation of LNAPL, fire and explosion and property damage
EILs & ESLs for soil contaminants	Amended ASC NEPM 2013 PFAS NEMP (2020)	Plants and terrestrial organisms, top 2m of soil, or direct exposure (for PFAS)	Leaching, absorption, intake or direct exposure
HSL for asbestos	Amended ASC NEPM 2013 (based on WA DoH)	Recreational receptors (HSL C)	Inhalation

5.2. Groundwater

Given groundwater is likely to discharge to local freshwater creeks to the north that support freshwater aquatic ecosystem, the adopted assessment, remediation and acceptance criteria for groundwater are summarised in Table 3.

Table 3: Groundwater Criteria

Criteria	Source	Relevance/Receptor	Pathway
DGVs for slightly to moderately disturbed systems	ANZG 2018 (supersedes ANZECC 2000) PFAS NEMP (2020)	Freshwater aquatic ecosystem, generally 95% species protection, or 99% for low reliability DGVs	Migration to creeks for uptake by aquatic species

HSLs for vapour intrusion	Amended ASC NEPM 2013	Recreational receptors (HSL C)	Not applicable given non-limiting criteria

5.3. Landfill Gas

Given the proposed open space land use with limited enclosed structures (other than services pits), the adopted assessment, remediation and acceptance criteria for landfill gases are summarised in Table 4.

Table 4: Landfill Gas Criteria

Criteria	Source	Relevance/Receptor	Pathway
Threshold level (1%) for subsurface methane	NSW EPA (2016)	Recreational receptors and maintenance workers	Accumulation and explosion
Threshold level (1.5%) for subsurface carbon dioxide	NSW EPA (2016)	Human health exposure in enclosed subsurface structures	Not applicable to human exposure, given no basement proposed for CO_2 accumulation
Gas screening value (GSV) and characteristic situation (CS)	NSW EPA (2019)	Accumulation and explosive risks in enclosed structures (if positive flow of methane is detected)	Accumulation and explosion – limited application given no enclosed structures proposed

6. Results

6.1. JBS&G (2014)

JBS&G (2014) undertook a Detailed Site Investigation (DSI) at the site owned by Sydney Water at the time, for divestment purposes.

The DSI comprised an extensive soil investigation program and was undertaken to assess suitability of the developable area for low-density residential use. Groundwater and landfill gas investigations were outside the scope.

Extracts of summary results tables from JBS&G (2014) are reproduced in Appendix B. JBS&G (2014) summarised exceedances in Figure 8, which is also reproduced in Appendix B.

Key findings are summarised below:

- With the exceptions of asbestos, hydrocarbons (coal tar) and heavy metals, other chemicals of concern were not reported to exceed the respective site criteria for recreational land use.
- Asbestos (typically bonded fragments) was identified in the fill and on the surface of the developable area, as well as isolated surface deposits in the EMZ.

- Coal tar like impacts (characterised by elevated TRH and PAH exceeding health/ecological criteria) were identified in the fill material in a small number of test pits and trenches (TP11, TP16, TP21 and T12) in the southern portion of the developable area.
- Heavy metals (mostly nickel and zinc) exceeding ecological criteria were identified across different parts of the developable area.

A Remedial Action Plan (RAP) was recommended to be prepared to evaluate appropriate remediation or management actions.

6.2. Arcadis (2017)

Arcadis was engaged by Council to develop a Remedial Action Plan (RAP) for the site. It was understood that Council wished to develop the developable portion of the site as potential open space and playing fields while retaining the trail network and vegetation communities already established at the remainder of the site. Arcadis (2017) stated that the RAP does not address remediation of contamination associated with the RFS activities at the northern part of the site. A cap and contain strategy were outlined by Arcadis in the RAP, whereby contaminated fill material is would be managed on site in conjunction with the proposed development comprising open space and playing fields.

As part of the RAP, an additional environmental investigation was undertaken in August 2016 to address data gaps identified from previous investigations. Three groundwater monitoring wells and eight landfill gas monitoring wells were installed.

Extracts of figures, and groundwater and landfill gas results from Arcadis (2017) are reproduced in Appendix C.

Highlights of the groundwater monitoring results are:

- Several heavy metals were detected in groundwater but at concentrations typical of background conditions in an urban environment.
- Ammonia exceeding the adopted criteria of 0.9 mg/L was detected in the up-gradient groundwater monitoring well (MW3) at 2.2 mg/L.

Highlights of the landfill gas monitoring results are:

- Methane was not detected in any of the eight landfill gas monitoring wells.
- Carbon dioxide was detected from 0.6%v/v to 14.2%v/v in the eight landfill gas monitoring wells.
- No positive flow was encountered in any of the eight landfill gas monitoring wells.

Arcadis further concluded that the carbon dioxide concentrations were likely attributed to plant root respiration rather than landfill gas, and no further action or building protection was recommended by Arcadis.

6.3. Senversa (2018) and Senversa (2018a)

A DSI was undertaken by Senversa with a focus on PFAS impacts associated with historical firefighting training at the RFS facility in the northern part of the site.

Information provided to Senversa as part of the DSI carried out (Senversa, 2018) indicated that PFAS containing ‘Aqueous Fire Fighting Foams’ (AFFF) were stored and used by the RFS within two portions of the site (the training compound and former AFFF training area).

The DSI comprised PFAS testing of 89 soil samples, 3 concrete samples, 3 sediment samples, 9 groundwater samples onsite (at the RFS facility and the firefighting training paddock) as well as 8 sediment samples and 4 surface water samples offsite (down-gradient).

Extracts of Senversa (2018) results are reproduced in Appendix E.

Subsequent to the DSI, Senversa (2018a) prepared a Preliminary Health Risk Assessment (HRA) that also addressed ecological risks, to supplement the DSI results.

The DSI, supplemented with the HRA, provided the following findings with respect to PFAS contamination.

Soil:

- No unacceptable risks to recreational open space site users.
- No unacceptable risks to ecological direct exposure on terrestrial biota.
- Exceedance of screening criteria indicated potential pathways may exist for ecological indirect exposure on higher order biota through the food chain. However, subsequent HRA concluded that such risk is low and acceptable.

Groundwater:

- No unacceptable risks to recreational open space site users via direct contact or drinking water consumption.
- No unacceptable risks to offsite residential users via drinking water consumption.

Surface water:

- Exceedance of recreational and commercial/industrial screening levels indicated potential pathways may exist for direct contact with surface water impacted by PFAS leaching from concrete and from drain sediments within RFS building structures. However, the subsequent HRA concluded that such risk is low and acceptable, but recommended precautions to be considered.
- A potential pathway was identified for consumption of fish from the nearby creeks by recreational users. However, no screening criteria was available. The subsequent HRA did not identify if fish is actually present locally that could migrate to areas where recreational fishing occurs. The HRA concluded that this pathway is not worthy of further assessment.
- PFOS was detected in surface water adjacent to the site at trace concentrations exceeding the 99% protection value for protection of freshwater aquatic ecosystems. Subsequently, the HRA recommended the use of 95% protection level accepted by NSW EPA. There were no unacceptable risks to freshwater aquatic ecosystems based on 95% protection.

Tank water:

- No unacceptable risks to recreational open space site users via direct contact or drinking water consumption.
- PFOS was detected in a tank water sample at trace concentrations exceeding the 99% protection value for protection of freshwater aquatic ecosystems. Senversa recommended reassessment or disposal of the water to a licensed facility. However, Coffey further noted that there is no unacceptable risk to freshwater aquatic ecosystems based on 95% protection.

In summary, no unacceptable risks were identified by Senversa in relation to PFAS in the vicinity of the RFS area. However, precautionary measures were recommended by Senversa for future management of the concrete structures and the water tanks.

6.4. Arcadis (2018)

Arcadis (2018) carried out remedial excavation of the PFAS impacts in the vicinity of the RFS facility. The purpose of the assessment was to remove soil from two areas where PFAS impacts were identified during the DSI (Senversa, 2018). It is noted that PFAS concentrations in soil were below the human health criteria and thus the works were considered to further reduce the PFAS load in the soil in these areas. The report concluded that the PFAS soil impacts were removed and disposed of at a licensed facility. Subsequently, a letter from NSW EPA confirmed that no further management, monitoring or remediation actions are required in relation to legacy PFAS contamination.

Extracts of Arcadis (2018) along with the letter from NSW EPA are reproduced in Appendix E.

6.5. Coffey (2018)

An appraisal letter was prepared by Coffey outlining how the cap and contain strategy can be applied and incorporated into the proposed open space and playing field site features. Alternative options for the cap design were also suggested. No additional testing was carried out as part of Coffey (2018).

6.6. Coffey (2020)

Subsequently to Site Auditor's Interim Audit Advice #1 (Geosyntec, 2019), Coffey carried out an additional groundwater and landfill gas investigation to address the data gaps raised by the Site Auditor. This comprised installation of additional monitoring wells, groundwater monitoring from 16 wells and landfill gas monitoring from 12 wells.

Extracts of figures and groundwater and landfill gas results from Coffey (2020) are reproduced in Appendix D.

Findings from Coffey (2020) are summarised below:

- Tar - There is a low likelihood that the tar impact in fill in the southern portion of the developable area has leached and impacted the groundwater down-gradient of the tar area.
- Groundwater - With the exceptions of (a) heavy metals at BH17 and BH18; and (b) ammonia at BH14 and BH15, groundwater has not been significantly impacted by the contamination in the fill and does not present unacceptable risks to the receptors.
- Landfill Gas - No methane or positive gas flow was detected in any of the wells monitored. site does not have the characteristics of a typical putrescible solid waste landfill. Coffey considers that no landfill gas management would be required for the proposed Westleigh Park development.

Coffey (2020) provided the following recommendations:

- Additional round of groundwater monitoring to provide another snapshot of seasonal variation (given the investigation was undertaken following a period of prolonged dry weather), and specifically to:
  - Further assess groundwater to the west and southwest of the tar area.
  - To further address ammonia exceedances and the potentials to impact offsite receptors in the southern portion of the site.
  - To further address the heavy metal anomalies, specifically to assess the potentials for heavy metals to impact offsite receptors to the north.
- The long-term EMP should consider and outline on-going groundwater monitoring and management requirements.

6.7. Coffey (2020a)

To address the recommendations of Coffey (2020) as above, a further round of groundwater monitoring was undertaken. An additional groundwater monitoring well (BH19) to the west of the tar area on the verge of Quarter Sessions Road was also installed.

The additional works were undertaken to provide supplementary information about groundwater to inform this RAP.

A subsequent groundwater sampling and laboratory program including 13 existing wells and the one newly installed groundwater well (BH19).

Based on the findings of the report, Coffey considered that the groundwater had not been significantly impacted and would not represent an unacceptable risk to the proposed redevelopment.

Although groundwater/leachate was not considered to be a remedial requirement, it was recommended that to be prudent, a groundwater and surface water monitoring program be developed and incorporated within a long term environmental management plan (EMP). The EMP would be developed to monitor the site conditions following redevelopment to confirm that site conditions remain suitable for ongoing use.

7. Site Characterisation

Based on the above findings, site characterisation is summarised below.

- Subsurface profiles:
  - Developable area – Fill (typically 1m to 2m depth) over minor residual soil and shallow bedrock (predominantly sandstone)
  - Other area – Minor residual soil over shallow bedrock (predominantly sandstone) expected
- Groundwater flows:
  - The overall groundwater flow was inferred to be in a northerly direction towards the RFS area, with a localised groundwater mound near the centre of the southern half of the developable area
- Fill soil in developable area:
  - With the exceptions of asbestos, hydrocarbons (coal tar) and heavy metals, other chemicals of concern were not reported to exceed the respective site criteria for recreational land use
  - Asbestos (typically bonded fragments) distributed across the developable area
  - Coal tar like impacts (characterised by elevated TRH and PAH exceeding health/ecological criteria) in the southern portion of the developable area
  - Heavy metals (mostly nickel and zinc) exceeding ecological criteria, distributed across the developable area.
- Ground surfaces in developable area and EMZ:
  - Asbestos fragments and localised spot dumping
  - Derelict/remnant machine parts, metal components and/or other anthropogenic materials left from past activities
- Groundwater:
  - Groundwater has not been significantly impacted by the contamination in the fill and does not present unacceptable risks to the receptors
- Landfill gas:
  - No methane or positive gas flow was detected in any of the wells monitored
  - Site does not have the characteristics of a typical putrescible solid waste landfill
- PFAS:
  - No unacceptable risks were identified, and NSW EPA is satisfied with the investigation and removal excavation work undertaken on site
  - Building structures and the water tanks to be removed as part of the redevelopment may contain trace levels of PFAS

8. Conceptual Site Model

Potential complete source-pathway-receptor linkages are summarised in Table 5.

Table 5: Conceptual Site Model

Source & Media	Receptor	Pathway	Likelihood of exposure
Asbestos in fill and across site surfaces in developable area and EMZ	Recreational site users Subsurface maintenance workers	Inhalation via release of airbourne fibres when disturbed	Moderate likelihood – pathway potentially complete if asbestos is disturbed
Tar impact (PAH & TRH) in fill near centre of southern portion of developable area	Recreational site users Subsurface maintenance workers	Dermal contact Ingestion	Moderate likelihood – pathway potentially complete if tar impact is exposed
Tar impact (PAH & TRH) on groundwater if leached	Offsite freshwater ecosystem	Migration and intake by aquatic ecosystem	Low likelihood – pathway potentially possible if leached and in unfavourable scenario, but tar impact not detected in groundwater
Heavy metal, TRH & PAH impacts in fill across developable area (predominately southern portion)	Ecological receptors	Intake by plants and terrestrial organisms in root zones	Moderate likelihood – pathway potentially complete given landscaping features are proposed across different parts of the developable area
Derelict/remnant machine parts, anthropogenic materials & spot dumping in developable area & EMZ	Recreational site users	Aesthetic	Low likelihood – pathway potentially possible but impact likely insignificant given the minor and isolated nature
Localised heavy metal and ammonia features/anomalies in groundwater	Offsite freshwater ecosystem	Migration and intake by aquatic ecosystem	Low likelihood – it is considered that heavy metal and ammonia impacts are likely to be naturally attenuated via plant uptake prior to reaching the receiving waters.
PFAS impacted structures	N/A	N/A	No unacceptable risks identified by Senversa but precautions recommended to manage building structures and the water tanks

9. Remediation Options Assessment and Remediation Strategy

The proposed development includes different uses of the site, namely; both the Developable Area and Environmental Management Zones (incorporating mountain bike trails (MTB), revegetation areas (RE) and bush protection works areas (BP). Several remedial options or a combination of options may be implemented to remediate the various areas of the site.

9.1. Remediation Objectives

The remediation objectives are outlined as follows:

- Remediate the site to a level which is suitable for proposed recreational land use; and
- Limit migration of contaminants from source material (identified impacted soils).

9.2. Extent of Remediation

The following areas have been identified as requiring remediation/management:

- Developable Area (Sports Precinct including the RFS Area)
  - The RFS building and infrastructures potentially impacted by PFAS
  - Fill across the developable area impacted by asbestos, heavy metals, hydrocarbons (TRH & PAH)
  - Derelict/remnant machine parts, anthropogenic materials left on surfaces from past use, typically superficial and isolated, in various parts of the developable area
  - Tar impact in the southern portion of the developable area
- EMZ
  - Asbestos fragments and localised spot dumping, typically superficial and isolated, in various parts of EMZ

9.3. Assessment of Remedial Options

The amended ASC NEPM (NEPC, 2013) provides a preferred hierarchy of options for site clean-up and/or management, which is outlined as follows:

- If practicable, on-site treatment of the contamination so that it is destroyed, and the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated soil, so that the contamination is destroyed, or the associated risk is reduced to an acceptable level.

If the above is not practicable,

- Consolidation and isolation of the soil on site by containment, with a properly designed barrier; or
- Removal of contaminated material to an approved facility, followed - where necessary - by replacement with appropriate material; or
- Where the assessment indicates, remediation would have no net environmental benefit, or would have a net adverse environmental effect, implementation of an appropriate management strategy.

Remediation options will depend on a number of considerations/factors:

- Effectiveness of remediation
- Side effects and undesirable consequences

- Sustainability
- Acceptable timeframes
- Cost effectiveness.
- Long term liabilities and ongoing management requirements.

An overview of available remediation and management options are presented in Table 6.

Table 6: Remediation and Management Options

Issues	Remediation and Management Options
Fill impacted by low levels of heavy metals and hydrocarbons exceeding EIL/ESL in developable area	Treatment – no single technology due to chemical mixture and concentrations too low to be viable Containment – cap and contain is viable but would require on-going management Offsite disposal – viable but undesirable due to large truck movements, poor sustainability and excessive costs
Localised tar impact in southern portion of developable area	Treatment – volumes too low to be viable Containment – cap and contain is viable but would require on-going management Offsite disposal – viable but excessive costs
Asbestos impact in fill and on surfaces across developable area	Treatment – no viable treatment to destroy asbestos; stabilisation is not effective with no commercial product available in NSW Containment – cap and contain is viable but would require on-going management Offsite disposal – viable but undesirable due to asbestos disturbance during excavation, large truck movements, poor sustainability and excessive costs
Superficial asbestos impact on site surfaces in EMZ	Treatment – no viable treatment to destroy asbestos; stabilisation is not effective with no commercial product available in NSW Containment – cap and contain would damage bushland Offsite disposal – hand-picking is viable in accessible area Other control – passive access restriction is viable and cost effective but would require on-going management
Isolated spot dumping, and isolated derelict/remnant machine parts and anthropogenic materials left on surfaces from past use	Treatment – no single technology due to possible chemical mixture and concentrations/volumes too low to be viable Containment – placement in burial pit may be viable but not desirable due to poor engineering/geotechnical properties Offsite disposal – removal for offsite disposal is viable in accessible area

9.4. Rationale for the Selection of Recommended Remedial Option

Given relatively low contaminant concentrations and the mixture of contamination comprising hydrocarbons, heavy metals and asbestos in the developable area, no single treatment technology (eg. land farming, thermal destruction or chemical stabilisation alone) would be applicable to treat the mixture of contamination suitable for the proposed recreational land use. Instead, Coffey considers that a cap and contain strategy, accompanied with administrative controls utilising a long-term environmental management plan (EMP), would be more practicable for the proposed Sports Precinct.

In the EMZ, given the sensitive environmental settings, the cap and contain or consolidation and isolation strategies would significantly disturb/destroy the vegetation communities. Therefore, the cap and contain or consolidation and isolation strategies would not be applicable. Instead, Coffey considers utilising a combination of (i) localised removal of superficial dumped waste and asbestos in accessible areas; (ii) passive access restrictions to isolate asbestos exposure, accompanied with administrative controls utilising a long term EMP, would be more practicable for the EMZ.

9.5. Description of Proposed Remediation Works

The proposed remediation strategies for the site are summarised as follows.

Developable Area (Sports Precinct)

1. Removal of isolated spot dumping, and isolated derelict/remnant machine parts (subject to heritage management) and anthropogenic materials left on surfaces from past use:
    - These wastes/items potentially presenting unacceptable health and aesthetic impacts will be removed by a licensed waste contractor, guided by the Environmental Consultant.
    - These materials will be assessed by the Environmental Consultant and be disposed of at a licensed facility in accordance with the relevant waste/recycling classification (Section 10).
    - Any asbestos containing material will be managed in accordance with Section 9.5.1.
    - Following removal, validation will be carried out by the Environmental Consultant based on a visual inspection of the footprint.
2. Removal of RFS building and infrastructures
    - A hazardous building materials assessment will be carried out by a Licensed Asbestos Assessor to identify asbestos, lead paint or any additional contaminating materials within the structures to be demolished.
    - Prior to demolition, a removal control plan (or demolition plan) will be prepared by a Licensed Asbestos Assessor for the safe removal and disposal of structures and waste materials generated from the demolition process.
    - In addition, a site specific management plan will be prepared by a Licensed Asbestos Removalist to ensure reasonable precautions and management measures (including standard hygiene practices) are undertaken to minimise potential exposure to asbestos and PFAS during intrusive works or when workers may be exposed to leachate or run-off within the RFS compound.
    - Demolition and removal of the structures will be carried out in accordance with the above plans by the Licensed Asbestos Removalist under the guidance from a Licensed Asbestos Assessor and the Environmental Consultant. All structures (including drains and water tanks) and associated waste (sediment on drains) will be removed and disposed of at a licensed facility in accordance with the relevant waste/recycling classification (Section 10). The PFAS impacted concrete cannot be recycled but will be disposed of at a licensed facility. The tank water will be disposed of at a licensed liquid waste treatment facility and cannot be reused or discharged onsite.
    - Following removal of the structures, the site area will be managed as per Step 4 below as part of the wider site capping.

3. Option A: Excavation of tar impacted soil for off-site disposal (if volume <200 m^3)
   - The area of tar impacted soil is located within an area of proposed cut. The tar impacted material[1] will therefore be required to be excavated.
   - The excavation will be guided by the Environmental Consultant based on visual and olfactory evidence to determine the extent of the tar impacted soil requiring removal.
   - The excavated materials will be loaded and placed directly into trucks or secured skip bins or similar to avoid the need for stockpiling and doubling handling of the materials.
   - Following removal, validation will be carried out by the Environmental Consultant based on visual and olfactory evidence (with photographic records).
   - The excavated material contained within the trucks and/or skip bins will be transported to a licensed treatment facility for stabilisation and subsequent disposal. The trucks should be lined and appropriately licensed.

   Option B: Excavation of tar impacted soil with onsite burial (>200m^3)
   - The tar impacted soil will be excavated and placed in a consolidated area for burial.
   - The excavation will be guided by the Environmental Consultant based on visual and olfactory evidence to determine the extent of the tar impacted soil requiring removal.
     - Free flowing (mobile) tar, if identified, will be placed in suitable skip bins or drums for offsite treatment and disposal as per Option A. Free flowing tar must not be placed in the burial area.
   - The excavated materials will be loaded, transported and placed directly at the predetermined burial area to avoid the need for stockpiling and doubling handling of the materials.
     - The excavated tar impacted soil will be placed in a designated burial area at least 1m above the known groundwater table, not in a proposed cut area, and not in an area with structures proposed (eg. amenities building or underground services). The preferred locations of the burial area may include the proposed asphalt paved carpark to the east (subject to approval by the Site Auditor). The ground of the placement area will be prepared and compacted prior to placement of the tar impacted soil as per engineer's specifications.
     - Following tar placement, a low permeability material (clay cap) with a minimum thickness of 400mm will be placed above the tar burial area to reduce opportunity for the tar to leach.
     - Prior to the clay cap being lain, the ground will be prepared in accordance with relevant Australian Standards and/or engineer's specifications to provide a suitable bearing platform for the clay cap.
     - The clay cap will comprise clay, crushed shale and/or crushed sandstone (with sufficient clay contents) (importation as per Section 9.7), compacted and proof-rolled in accordance with relevant Australian Standards and/or engineer's specifications, to achieve a typical permeability of 10^{-9}m/s (or better). Alternatively, the clay cap may be replaced with a geosynthetic clay liner (GCL), installed to engineer's specifications.
     - Following installation, validation will be carried out by the Environmental Consultant based on field observation records, surveyor's data and engineer's certifications.
   - Following removal of the tar impacted soil, the excavation will be managed as per Step 4 below as part of the wider site capping.
4. Cap and contain to isolate the mixture of contamination in the fill including asbestos:
   - Following regrading of the landform to the required levels, the entire Sports Precinct will be covered with a non-woven geofabric marker layer, then overlain by an isolation layer of 400mm in thickness.

[1] Tar impacted material may be defined as >10% tar in soil

- The 400mm isolation layer can comprise different material combinations of sub-layers, depending on the type of land uses and surfaces (Section 9.5.2).
- With the exceptions of pavements, importation of soil and aggregates will be virgin excavated natural material (VENM), or approved materials under a Resource Recovery Order/Exemption (Section 9.7).
- Placement and compaction of materials for the isolation layer will be in accordance with relevant Australian Standards and/or engineer's specifications.
- Following installation, validation will be carried out by the Environmental Consultant based on field observation records, surveyor's data and engineer's certifications.

5. Implementation of a long-term management plan:
   - A long-term environmental management plan (EMP) will be prepared by the Environmental Consultant (Section 9.10).

<u>EMZ (including the Crown Land portion)</u>

1. Hand picking (ie. emu-picking) of visible asbestos fragments along mountain bike trails (MTB) Trails, and in bush protection work areas (BP) and revegetation areas (RE), where accessible:
   - Visible asbestos fragments on ground surfaces will be collected by a Licensed Asbestos Removalist (Section 9.5.1) and removed from the site as asbestos waste (Section 10).
   - If fill is evident, the top 100mm of fill will be raked (using a rake with teeth <7mm spaced apart, and 100mm long) with at least 2 passes, to identify asbestos fragments for removal as per above.
   - Following asbestos removal, the subject area will be visually validated by the Licensed Asbestos Assessor and an asbestos clearance certificate will be provided to the Environmental Consultant.
2. Removal of isolated spot dumping along mountain bike trails (MTB) Trails, and in bush protection work areas (BP) and revegetation areas (RE), where accessible:
   - These wastes/items potentially presenting unacceptable health and aesthetic impacts will be removed by a licensed waste contractor, guided by the Environmental Consultant.
   - These materials will be assessed by the Environmental Consultant and be disposed of at a licensed facility in accordance with the relevant waste/recycling classification (Section 10).
   - Any asbestos containing material will be managed as per the above step and in accordance with Section 9.5.1.
   - Following removal, validation will be carried out by the Environmental Consultant based on a visual inspection of the footprint.
   -
3. Passive restriction of public access by utilising landscaping features:
   - Given that asbestos clearance may not be feasible in dense bushland, landscaping features (such as dense/spiky vegetation and sandstone boulders etc) will be placed in designated areas (eg. on sides of MTB Trails) to landscape architect's specifications, to restrict public access outside of the Sports Precinct and the MTB Trails.
   - Due to the sporadic nature of asbestos contamination and the dense bushland present in some areas, it is not feasible for all potential asbestos to be identified or cleared. In areas where asbestos is known to be present along the MTB trails, landscaping features should be present, in addition to areas subject to significant wear/highly trafficable areas. Landscaping design will be the primary factor in limiting access to this area. Landscaping design should be undertaken in consultation with the Environmental Consultant. Additional options may include regular signage indicating the presence of asbestos (eg 'DANGER – Asbestos') signs.
   - Where fill is evident within accessible BP and RE, a minimum of 100mm mulch or wood chip or crushed sandstone layer (Section 9.7) will be laid on top of the fill following the initial asbestos clearance. Asbestos clearance is proposed to be undertaken in fill areas prior to the application of mulch or crushed sandstone at depths of 100mm. It is noted that asbestos found within the BP and RE was surficial in nature and is likely to have been removed as part

of the initial clearance works. However, an Unexpected Finds Protocol should be followed should any potential asbestos containing material or other contamination (such as stained or odourous soils) be uncovered.

- Following the work, validation will be carried out by the Environmental Consultant based on visual observation records against landscaping design/specifications.

4. Installation of extra isolation layer, as an extra precaution, by incorporating extra covering on MTB Trial surfaces where fill is evident:
   - Where fill is evident within the MTB Trails and following spot dumping removal and asbestos clearance (if required), the fill area will be covered with additional crushed sandstone (Section 9.7) (compacted to minimum 150mm thick) and/or raised MTB platforms or features to engineer's specifications.
   - Following the work, validation will be carried out by the Environmental Consultant based on field observation records, surveyor's data and engineer's certifications.
5. Implementation of a long-term management plan:
   - A long-term environmental management plan (EMP) will be prepared by the Environmental Consultant (Section 9.10).

9.5.1. Asbestos Management

All asbestos related activities, including disturbance of fill (eg. earthwork), hand-picking (or emu picking) to remove fragments, will be carried out or supervised by a Class A Licensed Asbestos Removalist, monitored by a Licensed Asbestos Assessor.

Prior to handling asbestos, an Asbestos Removal Control Plan will be prepared by the Licensed Asbestos Removalist/Assessor in accordance with the Code of Practice "How to Safely Remove Asbestos", and will describe responsible parties, site plans PPE requirements, removal methods and management and disposal of waste. Background air monitoring requirements will be assessed by the Licensed Asbestos Assessor.

Following asbestos removal, each work area will be assessed by the Licensed Asbestos Assessor to provide a clearance certificate.

9.5.2. Capping Profile Guide

Following regrading of the landform to the required levels, the entire Sports Precinct will be covered with a non-woven geofabric marker layer, then overlain by an isolation layer of 400mm in thickness. The 400mm isolation layer can comprise different material combinations of sub-layers, depending on the type of land uses and surfaces.

The different material combinations of sub-layers to make up the 400mm (minimum) isolation layer will depend on the land uses and engineering requirements for the surfaces. Table 7 provides a general guide for the possible profiles for the different surfaces subject to landscape architect and engineer's requirements/specifications. In addition, ground improvement works (eg. preloading and/or dynamic compaction) may be required to reduce the risks of ground settlement prior to placement of the isolation layer.

Table 7: Capping Profile Guide Examples

Surface Type	Example Profile (400mm minimum) (top to bottom, adjusted to engineer's specifications)
Sports Turf (ST)	200mm topsoil 200mm drainage layer
Tar Burial Area	400mm low permeability clay cap (or equivalent geosynthetic clay liner, lain to manufacturer/engineer's specifications) Subject to the proposed location and site surfaces, placement of additional material layers (eg. topsoil and drainage layer) may be required above the clay cap
General Turf (GT)	150mm topsoil 250mm general VENM fill or optional drainage layer
Synthetic Turf (ST)	200mm drainage layer 200mm general VENM fill
Plant/Garden bed (P)	400mm topsoil, for shallow rooted vegetation Deeper planter box design would be required for deep rooted vegetation (see below discussion)
Revegetation area (RE) in fill area	400mm topsoil in accessible areas or 100mm mulch or wood chips following surface asbestos clearance in less accessible areas, plus passive access restrictions to limit public access
Bush protection area (BP) where fill is evident	100mm mulch or wood chips following surface asbestos clearance where fill is evident, plus passive access restrictions to limit public access
Soft surfaces/pavements	100mm asphalt 200mm road base 100mm general VENM fill
Hard surfaces/pavements	150mm concrete 200mm road base
Other alternatives	Geosynthetic reinforced surfaces/pavements may be considered in lieu of the 400mm isolation layer, provided that the material layer is not easily penetrable by hand tools (eg. shovel)

Hard surfaces/pavements (such as concrete slabs) do not need to meet the 400mm minimum thickness. Provided that the surface (eg. concrete) is not easily penetrable by general hand tools (eg. shovel), a minimum surface thickness of 150mm to provide isolation is recommended.

Deeper planter box design would be required for deep rooted vegetation. As a general guide, deeper planter boxes should be excavated beyond the expected root zones (in consultation with a landscape

architect) and lined with suitable geogrid as the marker layer. The planter boxes should then be backfilled with topsoil. Alternatively, subject to landscape architect's advice, large trees that are tolerant (or not sensitive) to soil contamination may not require specific planter boxes. In this circumstance, the marker layer should be placed/extended closely around the tree roots to the extent practicable. In addition, there may be site furniture and other landscaping features with footings penetrating beyond the isolation layer. Similarly, the marker layer should be placed/extended closely around the footings to the extent practicable.

9.5.3. Management of Unexpected Finds

Should unexpected contamination, aesthetically unacceptable material or heritage significant item be encountered onsite (eg. unusual odour/staining, buried chemical/fuel storage tanks, aboriginal items, etc) during site development, works will stop in the affected part of the site, and the find should be assessed by the Environmental Consultant. This area will be isolated to minimise potential for disturbance. Council and the Site Auditor will be notified of the unexpected find. Liaison with the Site Auditor will be undertaken to agree a management approach to mitigate risks from unexpected finds.

9.6. Validation Plan

A validation program will be implemented for quality control purposes, and to demonstrate that the remedial objectives have been met. In summary, key aspects of the validation program will include:

- Asbestos clearance certificates from the Licensed Asbestos Assessors to demonstrate the asbestos removals have been completed successfully (Section 9.5.1)
- Waste classification and material tracking records to demonstrate wastes have been managed appropriately (Section 10)
- Assessment reports and testing records for imported materials to demonstrate suitability for the site and that the importations were lawful (Section 9.7)
- Material grading, permeability testing and/or earthwork controls (eg. density testing for compaction of clay) from engineer's certificates to demonstrate low permeability nature of the installed clay cap for the tar burial area
- Field notes and visual observations records
- Surveying records from surveyors to confirm thicknesses of the various capping profiles meeting the remediation objectives
- Unexpected finds management records to demonstrate expected finds have been managed appropriately (Section 9.5.3)
- As built drawings or reports to be provided by the Contractor to demonstrate works have been carried out in accordance with the design

At the completion of the remedial works, a validation report will be prepared in general accordance with NSW EPA (2020) Consultants Reporting on Contaminated Land, documenting the works and outcomes.

The validation report will include a concluding statement that the site has been remediated in accordance with the RAP and that the site is suitable for the proposed recreational land use, subject to implementation of a long-term EMP.

The validation report should be prepared or reviewed by a Certified Site Contamination Specialist.

9.7. Material Importation

Materials such as topsoil, aggregate and mulch imported to the site for backfilling, regrading and landscaping purposes will need to be lawful and suitable for the site with respect to contamination.

Where imported fill material is imported to site to establish the proposed construction formation level or construct the cover layer, materials imported to site must be:

- Virgin excavated natural material (VENM)
- Other materials approved under the Resource Recovery Exemption/Order, such as excavated natural material (ENM)

In addition, materials imported onto the site must be adequately assessed as being appropriate for the final use of the site, including QA/QC evaluation of any sampling and analysis for material brought to site.

Prior to importing material to site, the Environmental Consultant will review documentation (eg. VENM certificates and ENM classification reports) provided by Contractor, to confirm suitability.

If insufficient documentation is provided by the Contractor, the Environmental Consultant will undertake:

- A visual inspection of the source site and the proposed material (source must be exposed)
- Detailed visual inspection of material at the receiving site by appropriately qualified Environmental Consultant confirming consistency of the material from the source site
- Collection and laboratory analysis of samples in accordance with relevant NSW EPA guidelines and Resource Recovery Exemption/Order requirements
- Sampling requirements for imported VENM where insufficient information is provided should be undertaken dependant on the volume and homogeneity of the material. A minimum of 4 samples should be taken up to 1,000m^3 or 1:250 or at least 10 samples (dependant on homogeneity of material type) for materials above 1,000m^3.
- Samples should be analysed for a suite of common contaminants, at least and including; Heavy Metals, TRH, PAH, OCP, PCB and asbestos. Further analytes may be required dependant on the source site and any particular requirements of the RRO.

On arrival, each truck load of imported material will be visually checked by the Contractor. Suspicious materials or materials different to the approved materials must be rejected.

The source site, volume, associated chemical test certificates and placement locations of the imported fill material will be tracked by the Contractor. These records along with a visual inspection log will be provided to the Environmental Consultant for inclusion in the Validation Report.

9.8. Contingency Plan

All remediation strategies have benefits and constraints. No investigations and/or remediation technologies can fully eliminate all risks. The remedial approaches presented above contain various constraints and risks. A number of these constraints and risks are as outlined in Table 8.

Table 8: Contingency Plan

Contingency Item	Alternative	Proposed Action
Insufficient supply of materials for isolation layer and clay layer	Alternative synthetic materials may be considered Or Change of remediation approach	To be assessed by the Environmental Consultant in consultation with Council and Site Auditor
Material for the clay cap in the tar area fails the permeability requirements	Additional ground improvements or material amendments may be carried out Or Alternative synthetic materials may be considered	To be assessed by the Environmental Consultant in consultation with Geotechnical Engineer, Council and Site Auditor
Significant volume of free flowing tar discovered (instead of adhering to soil), presenting migration and/or leachability risks	Tar stabilisation/treatment or more advanced encapsulation design (with lining) may be considered	To be assessed by the Environmental Consultant in consultation with Council and Site Auditor
Complaints of excessive dust, odour & trucks, or excessive asbestos detections in air monitoring	Stop work and adjust remediation/earthwork strategy	To be reviewed by the Contractor in consultation with Environmental Consultant and Council
Other unexpected outcomes	Change of remediation approach	To be assessed by the Environmental Consultant in consultation with Council and Site Auditor
Unexpected finds during remediation and earthworks	Refer to Section 9.5.3	Refer to Section 9.5.3

9.9. Site Management Plan during Remediation

A site-specific Construction Environmental Management Plan (CEMP) and Work Health and Safety (WHS) Plan, will be prepared by the Contractor and include, but not be limited to, the following minimum controls applicable to the remediation works:

- Site Preparation and controls
- Inductions and record keeping
- Site specific safety plan
  - SafeWork NSW requirements
  - Toolbox talks
  - Asbestos awareness training
  - Risk assessments
  - Safe work method statements
  - Site specific safety requirements associated with remedial works outlined within this RAP and managing contaminated materials
  - PPE/RPE
- Traffic management, access, barricades and signage
- Utilisation of appropriate travel routes (i.e. weight restrictions)
- Dust/odour control
- Noise management
- Sediment/stormwater control and stockpile management
- Asbestos management and air monitoring
- Remediation schedule and hours of operation
- Contingency and incident response
- Unexpected finds protocols
- Waste facility and waste consignment details for waste removed from the site
- Weighbridge dockets for the removal of waste from the site.
- Volume and Waste Classification of material removed from site

Construction Environmental Management Plan (CEMP) and Work Health and Safety (WHS) Plan, will be prepared by the Contractor prior to the commencement of works.

9.10. Long Term Site Management Plan Requirements

A long-term Environmental Management Plan (EMP) will be prepared (or modified) by the Environmental Consultant following completion of the remediation work. The long-term EMP will describe the nature and location of contamination remaining on-site that requires management. The long-term EMP will outline how contaminants will be managed, who will be responsible for the plan's implementation and over what time frame actions specified in the plan will take place.

The long-term EMP will be required to be recorded on the planning certificate issued under Section 10.7 of the EP&A Act 1979 or a covenant registered on the title to land under section 88B of the Conveyancing Act 1919. It is understood that the long-term EMP will be integrated into Council's park/asset management to enable effective implementation.

The long-term EMP shall include the following:

- A summary of the location, nature and types of contamination remaining at the site
- The assumptions on which exposure settings and risk management protocols are based
- A long-term maintenance and monitoring/inspection program to maintain the effectiveness of
  - vegetation covers
  - isolation/capping layers
  - passive access restriction features
  - MTB Trails
- Persons/entities responsible for the implementation of the EMP
- Controls and requirements during:
  - excavations and subsurface ground works that may penetrate the isolation/capping layer
  - lawn mowing and landscaping activities
  - other unexpected penetration of isolation/capping layer
- Signages and administrative controls
- An unexpected-finds protocol
- Contingency management plan

Specifically, the following items will need to be considered/incorporated:

- An Asbestos Management Plan should be prepared by a Licensed Asbestos Assessor and be attached/incorporated into the long-term EMP. Given the potential presence of asbestos, disturbance of the contaminated materials below the isolation/capping layer (eg. trenching to install underground services) will need to be managed by a Licensed Asbestos Removalist and monitored by a Licensed Asbestos Assessor to provide air monitoring and asbestos clearance where applicable. The Asbestos Management Plan should take into account asbestos impact throughout the site, including the Mountain Bike Trails.
- Administrative controls will be required to prevent accidental penetration or damage of the isolation/capping layer. Appropriate signage will need to be erected and site rules will need to be displayed.
- A maintenance and inspection program will be required to regularly assess the integrity of the vegetation layer and the ground cover. Dieback of vegetation will need to be reinstated. Erosion or ground depressions will need to be repaired. Damages or cracks on pavements will need to be repaired.
- Inspections of site surfaces (especially the isolation layer and MTB Trails in the EMZ) will be carried out by Council or a licensed asbestos removalist/assessor regularly (frequency to be documented in the EMP). Damages of site surfaces will need to be repaired such that the underlying contaminated fill would not be exposed. Asbestos fragments, if identified, will be

collected for offsite disposal by Council staff trained as a Licensed Asbestos Removalist/Assessor, or by an external licensed contractor.

- Following collection of the identified fragments, the environmental consultant should undertake validation sampling for asbestos (at least one sample from the base of where the contamination was found) in accordance with NEPC 2013 quantification requirements, to determine the potential presence of asbestos fines. Should asbestos fines be identified, it should be managed accordingly (for example a surface scrape or similar).
- As a precautionary measure, a landfill gas, groundwater and surface water monitoring program should be considered to assess potential changes of site conditions. Adverse impacts, if identified, will need to be investigated and rectified. While management of landfill gas and leachate have not been identified to be a requirement, it is considered prudent to monitor the site conditions through a monitoring program following redevelopment of the site to confirm subsurface conditions remain suitable for the on-going use. Monitoring frequency and duration will be documented in the EMP. At a minimum, an annual monitoring program should be carried out for a duration of 3 years.

9.11. Regulatory Compliance Requirements

This section discusses some of the regulatory compliance requirements associated with the remediation. It is important to note that this section is not exhaustive, and the Contractor must ensure they comply with all relevant and applicable legislation and guidelines.

Given the nature of the work and the presence of sensitive ecological community, the remediation work may fall under Category 1 remediation work, needing consent under SEPP 55. However, the remediation activities may form part of the overall site development and may be approved under a Development Application (DA). All works will be completed in accordance with the consent conditions and in accordance with any other requirements of Council and other regulatory agencies.

All approvals required to complete the works are to be obtained by the Contractor, prior to commencing the works. The Contractor is expected to comply with all approval conditions. Additionally, the Contractor will be responsible for all notification to the relevant authority (where required), including SafeWork NSW for asbestos removal activities. The Contractor will also be responsible for obtaining all licences required from, or by, regulatory agencies for remediation related works.

Disturbance, exhuming, processing and/or storage of landfill wastes may require approval/licence from NSW EPA under the Protection of the Environment Operations (POEO) Act 1997.

Asbestos related activities would need to be carried out by Licensed Asbestos Removalists/Assessors, where applicable, as per SafeWork NSW requirements.

9.12. Contacts During Remediation

Table 9 presents a list of site contacts. Site contact details are unavailable at this stage and are to be updated.

Table 9: Project Personnel

Role	Organisation / details	Contact details
Council	Hornsby Shire Council	TBC
Site Auditor	Lange Jorstad of Geosyntec	TBC
Project Manager	TBC	TBC
Contractor	TBC	TBC
Environmental Consultant	TBC	TBC

Licensed Asbestos Assessor	TBC	TBC
Licensed Asbestos Removalist	TBC	TBC

10. Waste Management

10.1. Waste Classification Reporting Requirements

Prior to offsite disposal, all waste must be assessed by the Environmental Consultant in accordance with the Waste Classification Guidelines (NSW EPA, 2014). Waste classification reports should be prepared in accordance with Table 2(d) of Consultants Reporting on Contaminated Land (NSW EPA, 2020).

Similarly, materials suitable to be reused/recycled must be assessed by the Environmental Consultant in accordance with the relevant Resource Recovery Exemptions/Orders and/or environmental protection licence (EPL) of the licensed facility.

Waste soils being removed from the site will be handled, transported and managed in accordance with the requirements of the POEO Regulations and other EPA guidance as appropriate. Additionally, the following minimum requirements for transport of material from the site will include:

- Waste will be transported by a licensed contractor.
- Excess dust or load material will be removed from the outside of the truck prior to leaving the site. This may require on-site a wheel wash or spray wash to dislodge excess material. Where soil is tracked outside the site, it will be promptly cleaned up in a manner that does not adversely affect the surrounding land, surface water bodies or local stormwater system.
- Trucks will be covered prior to leaving the site and throughout travel to the disposal site.
- Trucks will enter and exit the site in predetermined points and will follow strict transport routes to and from the disposal site/s.

10.2. Material Handling and Tracking

The source location, volume, classification and destination of waste material removed from site will be tracked by the Contractor. The Contractor will ensure that a material tracking register is maintained along with consignment dockets confirming receipt of the material at the disposal facility. These records shall be provided to the Environmental Consultant to be included in the validation report.

10.3. Lawful Disposal

Materials being disposed must be transported to an appropriately licensed facility or re-used under a Resource Recovery Exemption/Order.

10.4. Waste Disposal Record Keeping

Waste must be taken to a licensed facility for disposal/recycling/reuse. The facility's environmental protection license (EPL) must show it can lawfully receive that waste.

Waste disposal records/dockets must be kept and should contain:

- Estimated volume/tonnage of waste received by the licensed facility

- Class of waste/material type accepted by the licensed facility
- Time and date of receipt

11. Conclusions and Recommendations

Following implementation of the measures outlined in this RAP, it is considered that the site will be made suitable for the proposed recreational land use, subject to site validation and implementation of a long-term EMP.

The long-term EMP will be required to be recorded on the planning certificate issued under section 10.7 of the EP&A Act 1979 or a covenant registered on the title to land under section 88B of the Conveyancing Act 1919.

12. References

Arcadis (2017) Remedial Action Plan, 62 Quarter Sessions Road, Westleigh NSW, Ref: 16163RP01 Rev01, dated 5 April 2017

Arcadis (2018) Excavation Report, RFS Training Facility, Westleigh NSW, Ref: 10018854_Westleigh_Excavation, dated 7 September 2018

Coffey (2018) Westleigh Park Redevelopment: Appraisal of Remedial Approaches, Ref: SYDEN213135-L01c draft, dated 31 October 2018

Coffey (2020) Groundwater and Landfill Gas Investigation, Westleigh Park, Ref: SYDEN213135-1-R03, dated 18 May 2020

Coffey (2020a) Additional Groundwater Assessment, Westleigh Park, Ref: SYDEN213135-2-R02a, dated 21 September 2020

Geosyntec (2019) Site Audit of Westleigh Park Redevelopment, Westleigh, NSW – Interim Audit Advice #1 From Review of Appraisal of Remedial Approaches, Ref: GSY0086, dated 5 August 2019

JBS&G (2014) Detailed Site Investigation, Sydney Water Thornleigh Reservoir, Ref: 43386-58717 Rev0, dated 8 December 2014

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013)

NSW EPA (2020) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites

NSW EPA (2019) Assessment and Management of Hazardous Ground Gases

NSW EPA (2016) Environmental Guidelines, Solid Waste Landfills, Second edition

NSW EPA (2014) Waste Classification Guidelines

Senversa (2018) Detailed Site Investigation – 12 Warrigal Drive, Westleigh NSW, Ref: s13978_rpt_rev1, dated 27 April 2018

13. Limitations

It is the nature of contaminated land investigations that the degree of variability in site conditions cannot be known completely and no sampling and analysis program can fully eliminate all uncertainty concerning the condition of the site. Professional judgement must be exercised in the collection and interpretation of the data. Due to site access constraints and the presence of the dense vegetation, the possibility that other contamination present at the site cannot be precluded. Unexpected finds protocol should be implemented.

We have assumed third party information we used for this investigation and RAP preparation was accurate and can be relied up on.

This report does not represent any geotechnical advice. Ground improvement works such as pre-loading or dynamic compaction, may be required to reduce risks of ground settlement. Placement of materials will be subject to geotechnical/engineering requirements and/or specifications.

This report should be read in conjunction with the “Important Information about Your Coffey Environmental Report” which is attached to this report.

Appendix A - Concept Design

90˚ ANGLE PARKING SPACE :333
PARALLEL PARKING SPACE :17
TOTAL PARKING SPACE : **350**

QUARTER SESSIONS ROAD

WARRIGAL DRIVE

CORANG ROAD

BOUNDARY

FILL BOUNDARY

Elevated trail head landing with ramp access to trail system

tow174 bow172 (2m)
tow174 bow174 (0m)
tow175 bow175 (0m)
tow177 bow175 (2m)
tow177 bow170 (7m)
tow179 bow177 (2m)
tow175 bow175 (0m)
tow179 bow179 (0m)
tow179 bow173 (6m)
tow180 bow180 (0m)
tow181 bow176 (5m)
tow183.5 bow183.5 (0m)
tow184 bow180 (4m)
tow185 bow185 (0m)
tow184 bow184 (0m)
tow184 bow178 (6m)
tow184 bow176 (8m)
tow186 bow184 (2m)

66 92 41 15

BP RE GT ST SY P

LEGEND

INFRASTRUCTURE

- New roundabout to Quarter Sessions Road / Warrigal Drive intersection
- Asphalt roadway (with provision for verge parking or path)
- Concrete pedestrian only
- Concrete pedestrian / cycle shared path
- Car parking areas including WSUD stormwater management Total Parking number: 351
- Mountain bike trail heads
- Adjoining mountain bike trail networks (indicative only)
- Retaining walls - Gabion walls >1m height - Sandstone Rip Rap walls <1m height
- tow xxx bow xxx (xm) Retaining walls top & bottom of wall heights (indicative only)

PLAYGROUND / RECREATION

- Gravel mulch
- Mulch
- EPDM
- EPDM
- Deck seat or back seat
- PT Picnic table
- Picnic shelter
- Garden bed
- Turf embankment

INFRASTRUCTURE

- Potential sports/community amenities locations
- ST Sports turf surface
- GT General turf surface
- SY Synthetic turf surface
- Athletic track surface
- Athletic track markings on sports turf

ENVIRONMENT AND LANDSCAPE

- Indicative extent of landfill (Coffey geophysical investigation of Fill 2018)
- ? Estimate extent of landfill (Coffey geophysical investigation of Fill 2018)
- RE Revegetation over capped landfill areas
- BP Bush protection works (asbestos picking, marker layer, mulching)
- P Planting/Garden bed
- Detailed cross section of boundary conditions

ep environmental partnership

CLIENT: HORNSBY SHIRE COUNCIL

TITLE: PREFERRED CONCEPT OPTION 3

Westleigh Park
Sports Complex Concept Design

N

SCALE: 1:1500 @ A 1
0 10 20 30 40 50 M

DRAWING: 3527.PC.07

DATE: JAN 2019

ISSUE: B

BOUNDARY

BOUNDARY

BOUNDARY

BOUNDARY

BOUNDARY

BOUNDARY

ep | environmental partnership

CLIENT

HORNSBY SHIRE COUNCIL

TITLE

CONCEPT MASTER PLAN

Westleigh Park

Sports Complex Concept Design

N

SCALE

1:1500 @ A 1

0 10 20 30 40 50 M

DRAWING

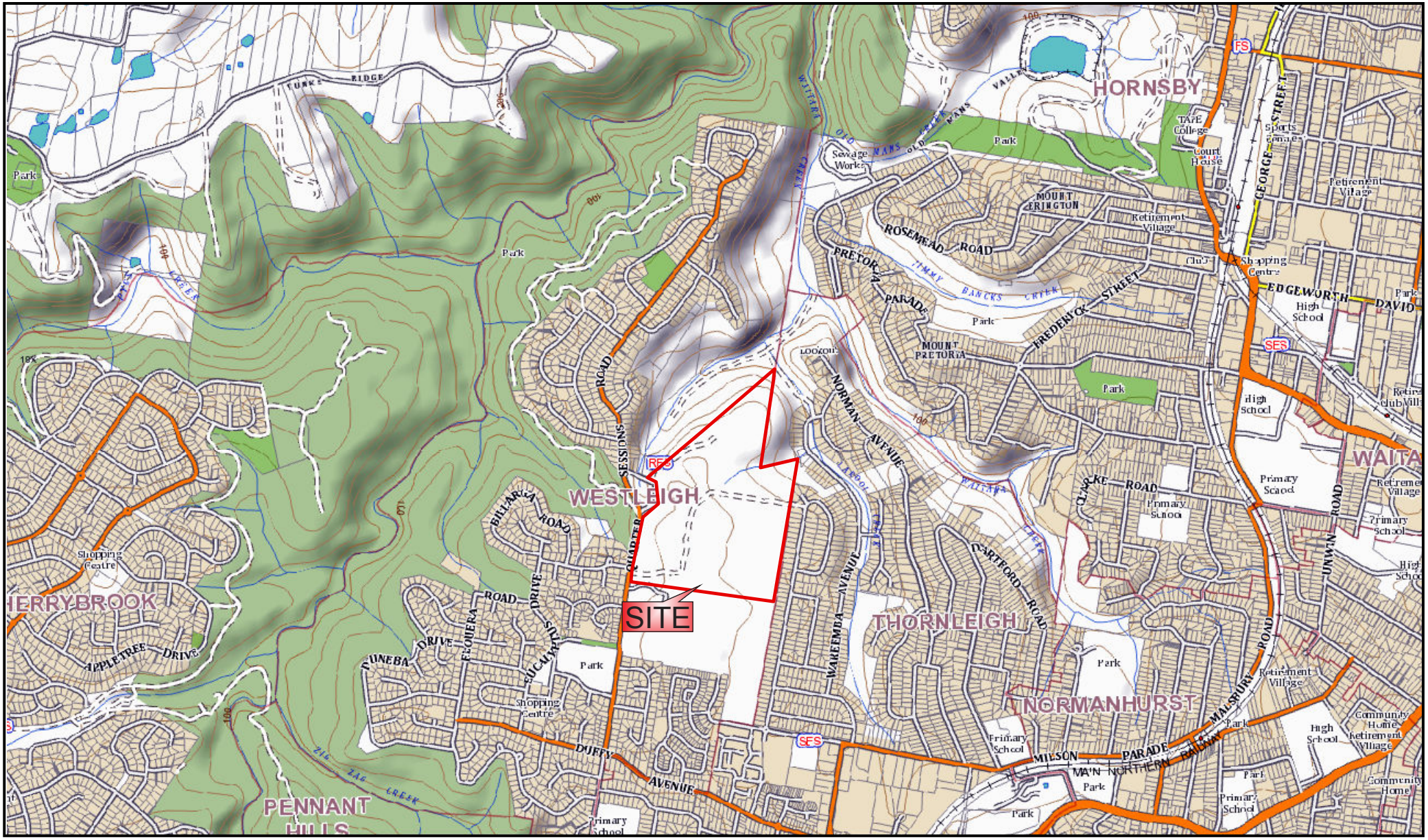
DATE

APR 2020

ISSUE

F

Appendix B - JBS&G (2014) Extract



Source: Base Image - © SIX Maps www.maps.six.nsw.gov.au, accessed 20-05-2014

0 195 390 780 m

Scale: 1:20,000

Datum: GDA 1994 MGA Zone 56 - AHD

Legend:

Site Boundary

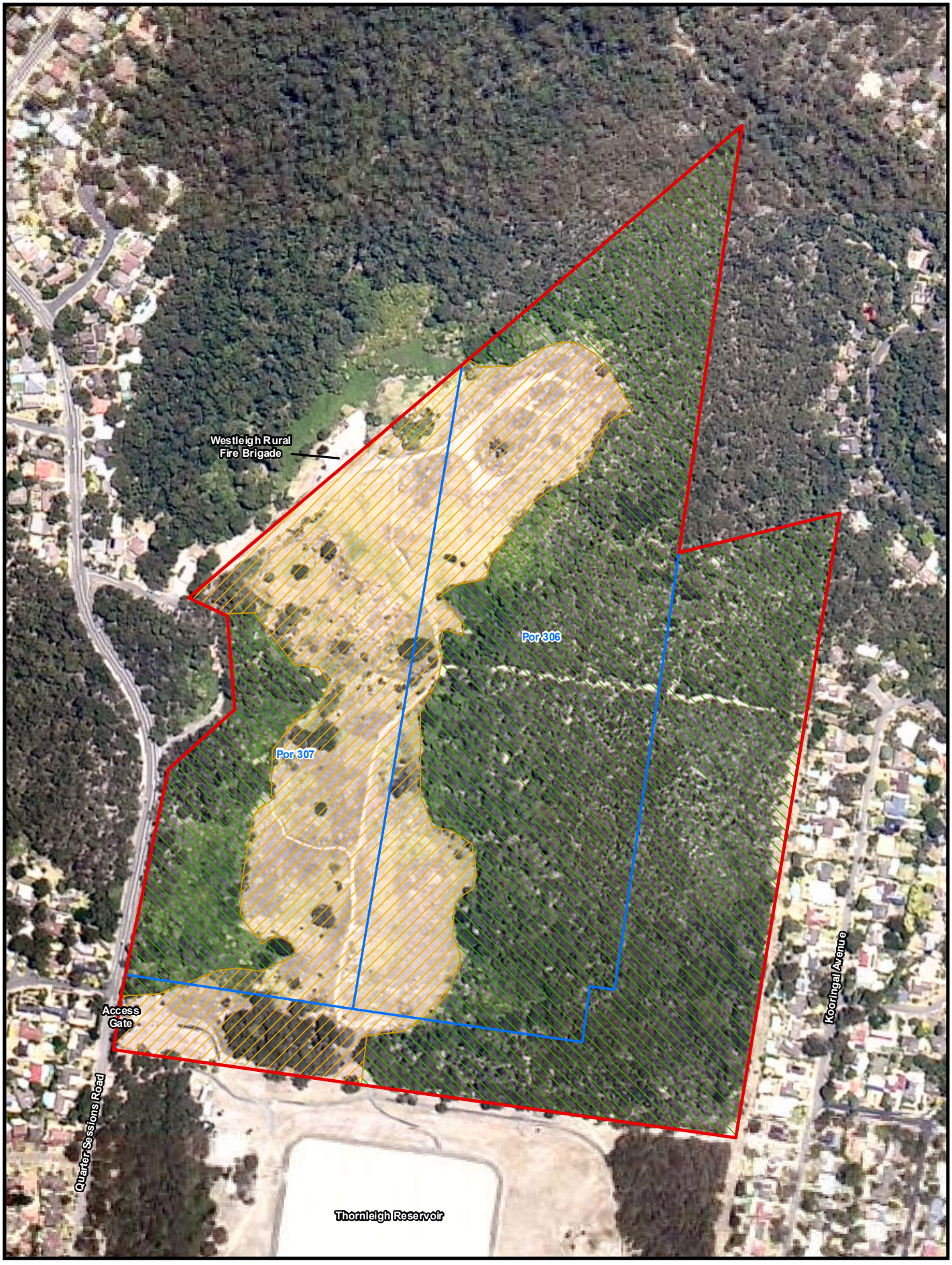
Rev	Description	Drn.	Date:
A4			
0	Original Issue - R02	SE	08-12-2014

JBS&G **Figure 1: Site Location**

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_01



Source: Base Image - © Near Map www.nearmap.com imagery date 08-02-2014, accessed 25-03-2014

0 50 100 200 m

Scale: 1:4,500

Datum: GDA 1994 MGA Zone 56 - AHD

A4			
0	Original Issue - R02	SE	08-12-2014
Rev	Description	Drn.	Date:

Legend:

- Site Boundary
- Historical Portion Boundary
- Developable Area
- Environmental Management Zones

JBS&G

Figure 2: Site Layout

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_02

Source: Base Image - © Near Map www.nearmap.com imagery date 08-02-2014, accessed 25-03-2014

0 25 50 100 m

Scale: 1:4,000

Datum: GDA 1994 MGA Zone 56 - AHD

A4			
0	Original Issue - R02	SE	08-12-2014
Rev	Description	Drn.	Date:

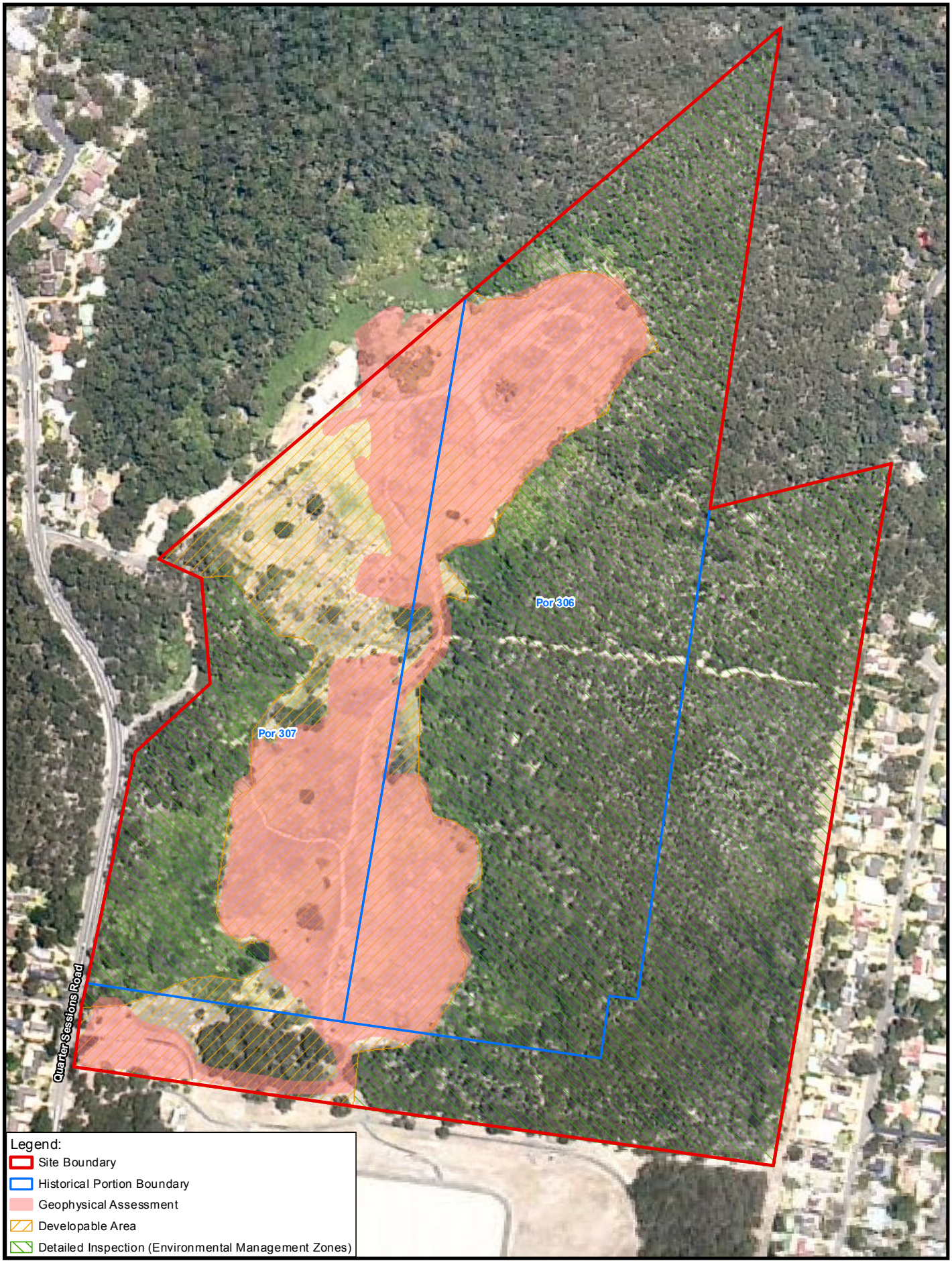
JBS&G

Figure 3: Historical Site Land Use

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_03



Source: Base Image - © Near Map www.nearmap.com imagery date 08-02-2014, accessed 25-03-2014

0 40 80 160 m

Scale: 1:4,000

Datum: GDA 1994 MGA Zone 56 - AHD

A4			
0	Original Issue - R02	SE	08-12-2014
Rev	Description	Drn.	Date:

JBS&G

Figure 4: Non-Intrusive Assessment Area

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_04

Source: Base Image - © Near Map www.nearmap.com, imagery date 08-02-2014, accessed 25-03-2013

0 25 50 100 m

Scale: 1:3,112

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
0	Original Issue - R02	SE	08-12-2014

Legend:

- Site Boundary
- Portion Boundary
- Developable Area
- Inaccessible Area (19570 m2)
- Concrete Slab
- Assumed Extent of Borrow Pit (1970)
- Landfill Encroachment (1961)
- Night Soil Depot (1961)
- Treated Wood Storage (1970)
- Asbestos Find Location
- Site Feature Location
- Stockpile Location

JBS&G

Figure 5: Stockpile and Site Feature Locations

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_05

Source: Base Image - © Near Map www.nearmap.com, imagery date 08-02-2014, accessed 25-03-2014 | Alpha GeoScience, AG-14-24 Apparant Conductivity 0-1m BGS

0 15 30 60 m

Scale: 1:1,843

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
0	Original Issue - R02	SE	08-12-2014

Legend:

- Site Boundary
- Test Pit Location
- Proposed Trench Location
- Cross Section A - B (Figure 9)
- Cross Section C - D (Figure 10)
- Cross_Section E-F (Figure 11)
- Cross_Section G-H (Figure 12)
- Treated Wood Storage (1970)
- Night Soil Depot (1961)
- Landfill Encroachment (1961)
- Assumed Extent of Borrow Pit (1970)
- Historical Portion Boundary
- Developable Area

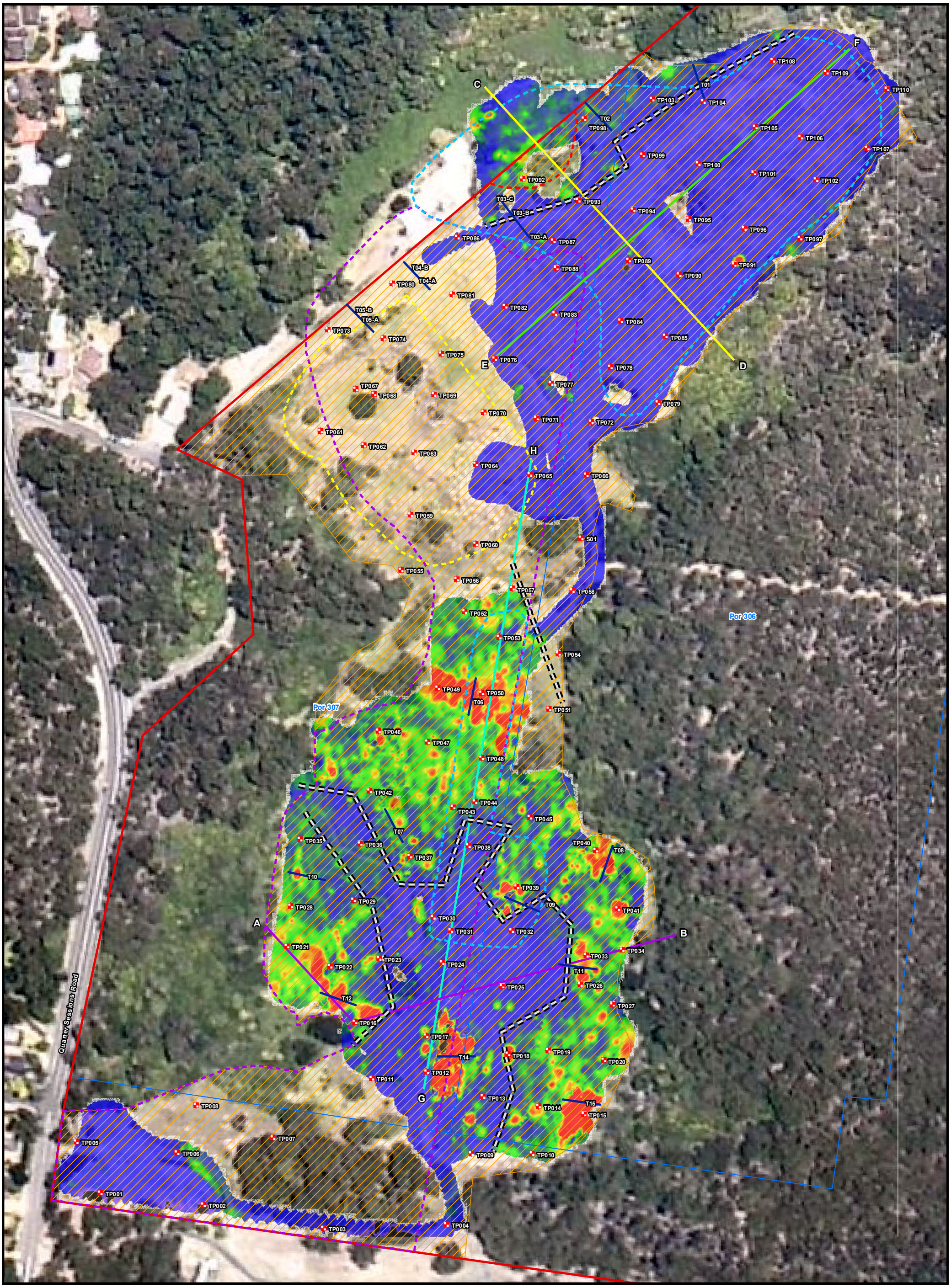
JBS&G

Figure 6A: Test Pit Locations

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_06A



Source: Base Image - © Near Map www.nearmap.com, imagery date 08-02-2014, accessed 25-03-2014 | Alpha GeoScience, AG-14-24 Apparent Conductivity 0-1m BGS

0 15 30 60 m

Scale: 1:1,843

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
0	Original Issue - R02	SE	08-12-2014

Legend:

- Test Pit Location
- Site Boundary
- Proposed Trench Location
- Possible Boundaries of Fill (Geophys)
- Cross Section A - B (Figure 9)
- Cross Section C - D (Figure 10)
- Cross Section E - F (Figure 11)
- Cross Section G - H (Figure 12)
- Treated Wood Storage (1970)
- Night Soil Depot (1961)
- Landfill Encroachment (1961)
- Assumed Extent of Borrow Pit (1970)
- Historical Portion Boundary
- Developable Area

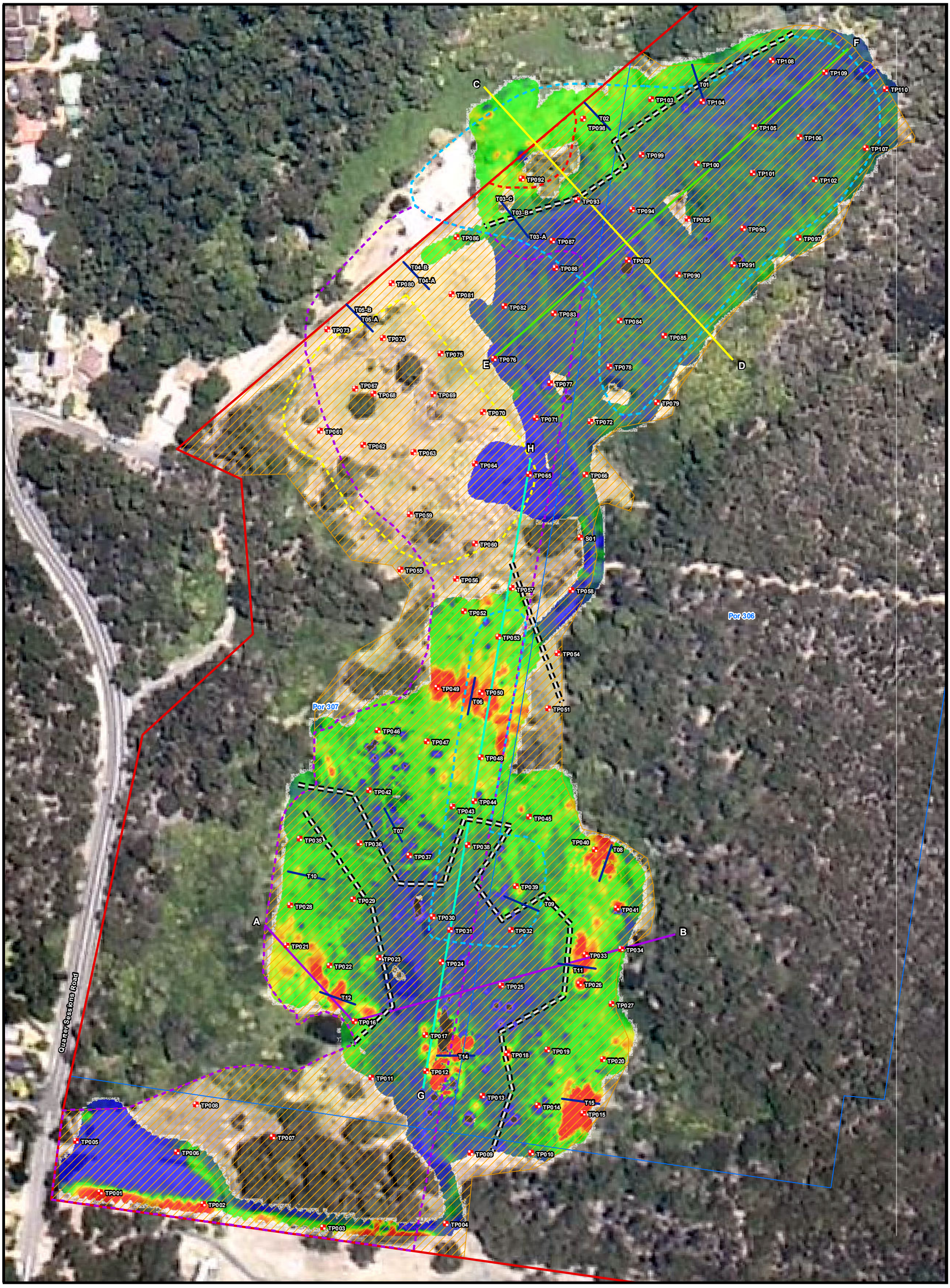
JBS&G

Figure 6B: Test Pit Locations and Apparent Conductivity (0 - 1 m BGS)

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_06B



Source: Base Image - © Near Map www.nearmap.com, imagery date 08-02-2014, accessed 25-03-2014 | Alpha GeoScience, AG-14-24 Apparant Conductivity 0-2m BGS

0 15 30 60 m

Scale:1:1,843

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
0	Original Issue - R02	SE	08-12-2014

Legend:

- Test Pit Location
- Site Boundary
- Proposed Trench Location
- Possible Boundaries of Fill (Geophys)
- Cross Section A - B (Figure 9)
- Cross Section C - D (Figure 10)
- Cross Section E - F (Figure 11)
- Cross Section G - H (Figure 12)
- Treated Wood Storage (1970)
- Night Soil Depot (1961)
- Landfill Encroachment (1961)
- Assumed Extent of Borrow Pit (1970)
- Historical Portion Boundary
- Developable Area

JBS&G

Figure 6C: Test Pit Locations and Apparent Conductivity (0-2 m BGS)

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_06C

Approximate Volume of Fill (m^3)	
Area A	25,600
Area B	4,500
Area C	11,200
Area D	52,700
Area E	15,800
Area of Investigation	**109,800**

Depth of Fill (m BGS)
0
1
2
3
4

Source: Base Image - © Near Map www.nearmap.com, imagery date 08-02-2014, accessed 25-03-2014 | Alpha GeoScience, AG-14-24 Apparant Conductivity 0-1m BGS

0 15 30 60 m
Scale: 1:1,843
Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
0	Original Issue - R02	SE	08-12-2014

Legend:
- Site Boundary
- Test Pit Location
- Proposed Trench Location
- Area of Investigation
- Treated Wood Storage (1970)
- Night Soil Depot (1961)
- Landfill Encroachment (1961)
- Assumed Extent of Borrow Pit (1970)
- Historical Portion Boundary
- Significant Fill with Large Proportion of Building & Demolition Waste
- Significant Fill (Assumed; Limited Access)

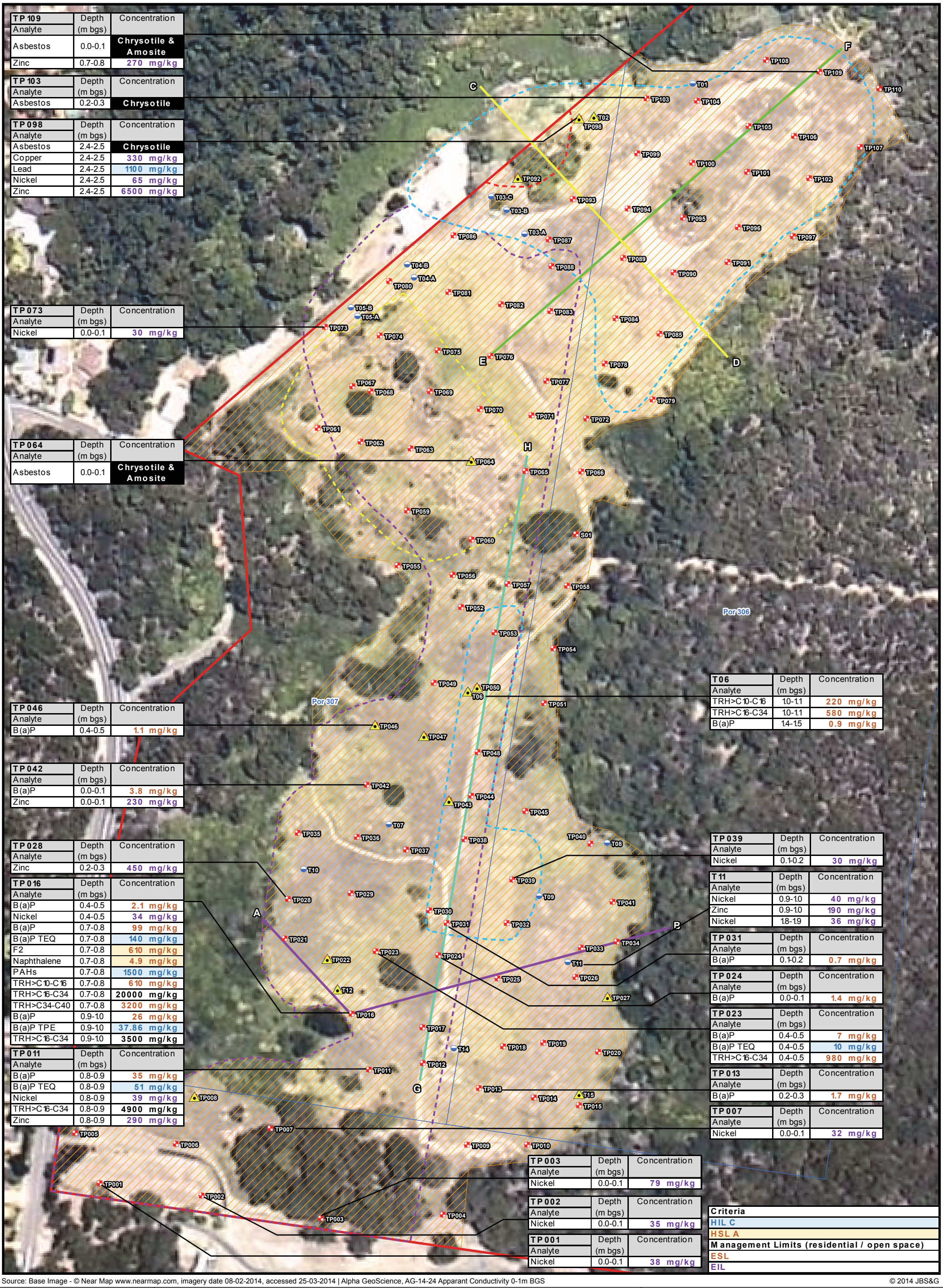
JBS&G

Figure 7: Depth and Approximate Volume of Fill

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 43386_07



Source: Base Image - © Near Map www.nearmap.com, imagery date 08-02-2014, accessed 25-03-2014 | Alpha GeoScience, AG-14-24 Apparant Conductivity 0-1m BGS

0 15 30 60 m

Scale:1:1,843

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
0	Original Issue - R02	SE	08-12-2014

Legend:

- Site Boundary
- Cross Section A - B (Figure 9)
- Cross Section C - D (Figure 10)
- Cross Section E - F (Figure 11)
- Cross Section G - H (Figure 12)
- Treated Wood Storage (1970)
- Night Soil Depot (1961)
- Landfill Encroachment (1961)
- Assumed Extent of Borrow Pit (1970)
- Historical Portion Boundary
- Developable Area
- Test Pit Location
- Trench Location
- Visible ACM Location

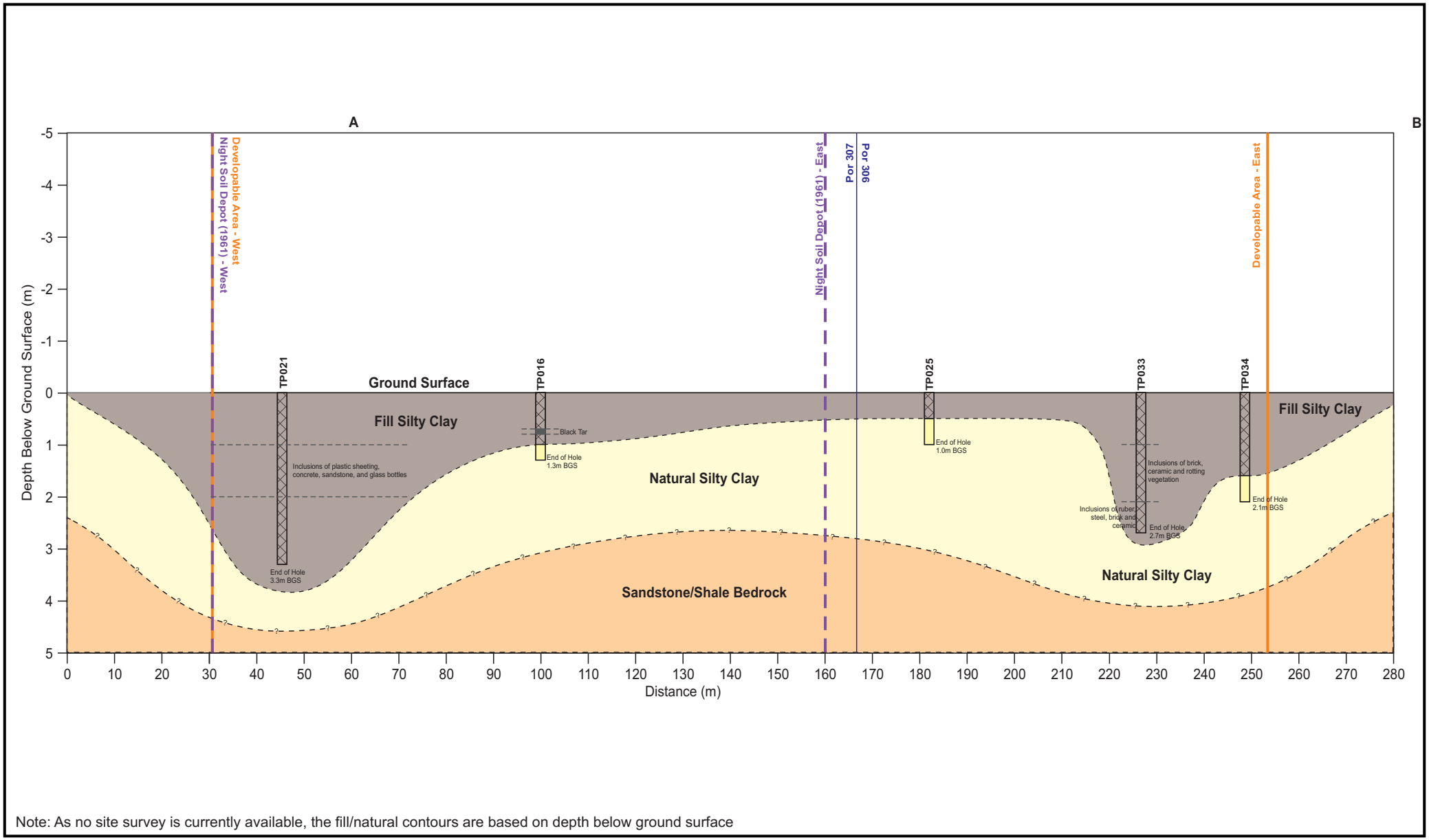
JBS&G

Figure 8: Exceedances

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_08



Note: As no site survey is currently available, the fill/natural contours are based on depth below ground surface

Scale: Approximate -Vertical Exaggeration: 10

Datum: MGA94 Zone 56 - AHD

Rev	Description	Drn.	Date
A4			
0	Original Issue - R02		08-12-2014

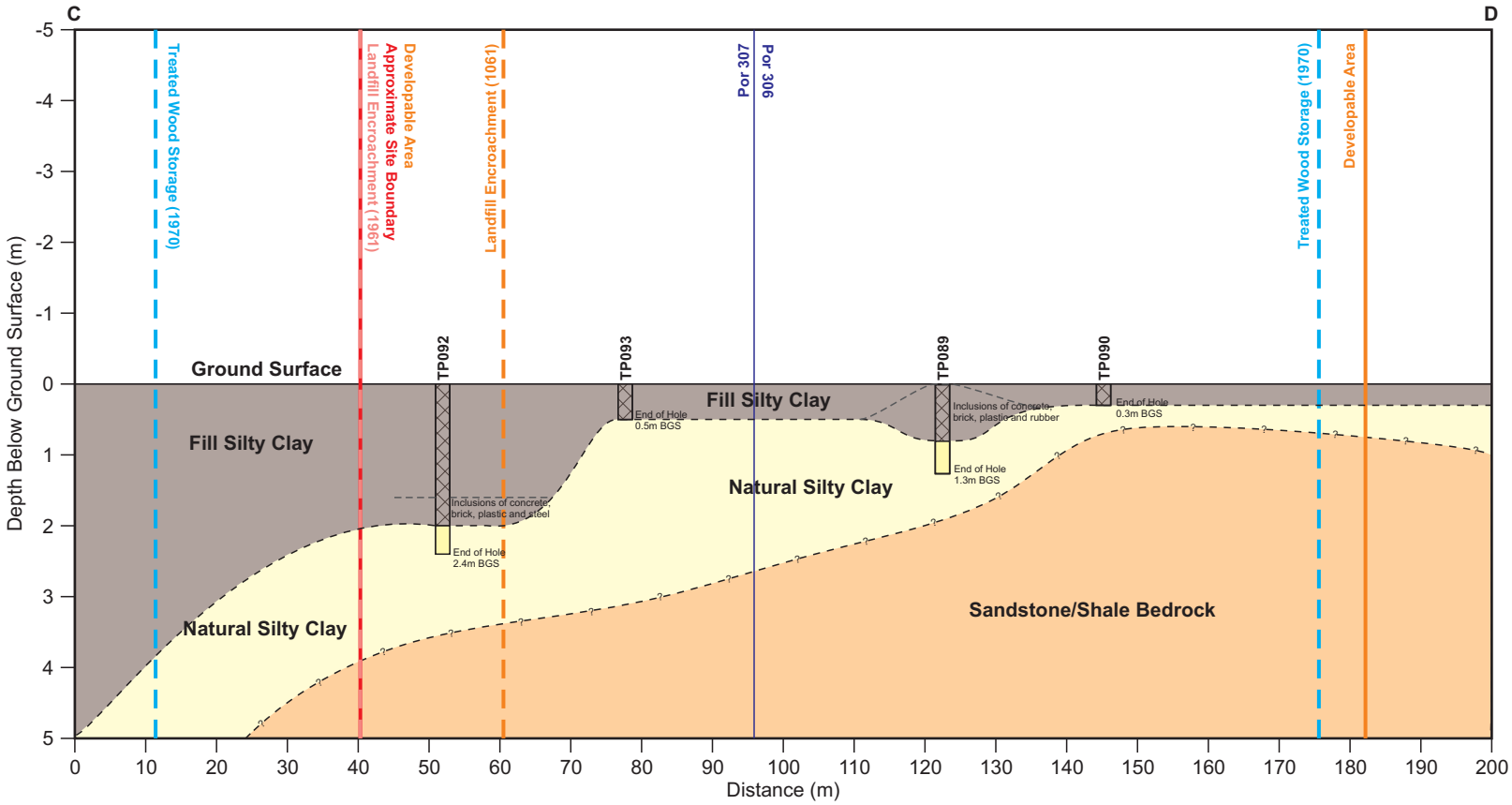
JBS&G

Figure 9: Cross Section A - B

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_09



Note: As no site survey is currently available, the fill/natural contours are based on depth below ground surface

Scale: Approximate -Vertical Exaggeration: 10

Datum: MGA94 Zone 56 - AHD

Rev	Description	Drn.	Date
A4			
0	Original Issue - R02	SE	08-12-2014

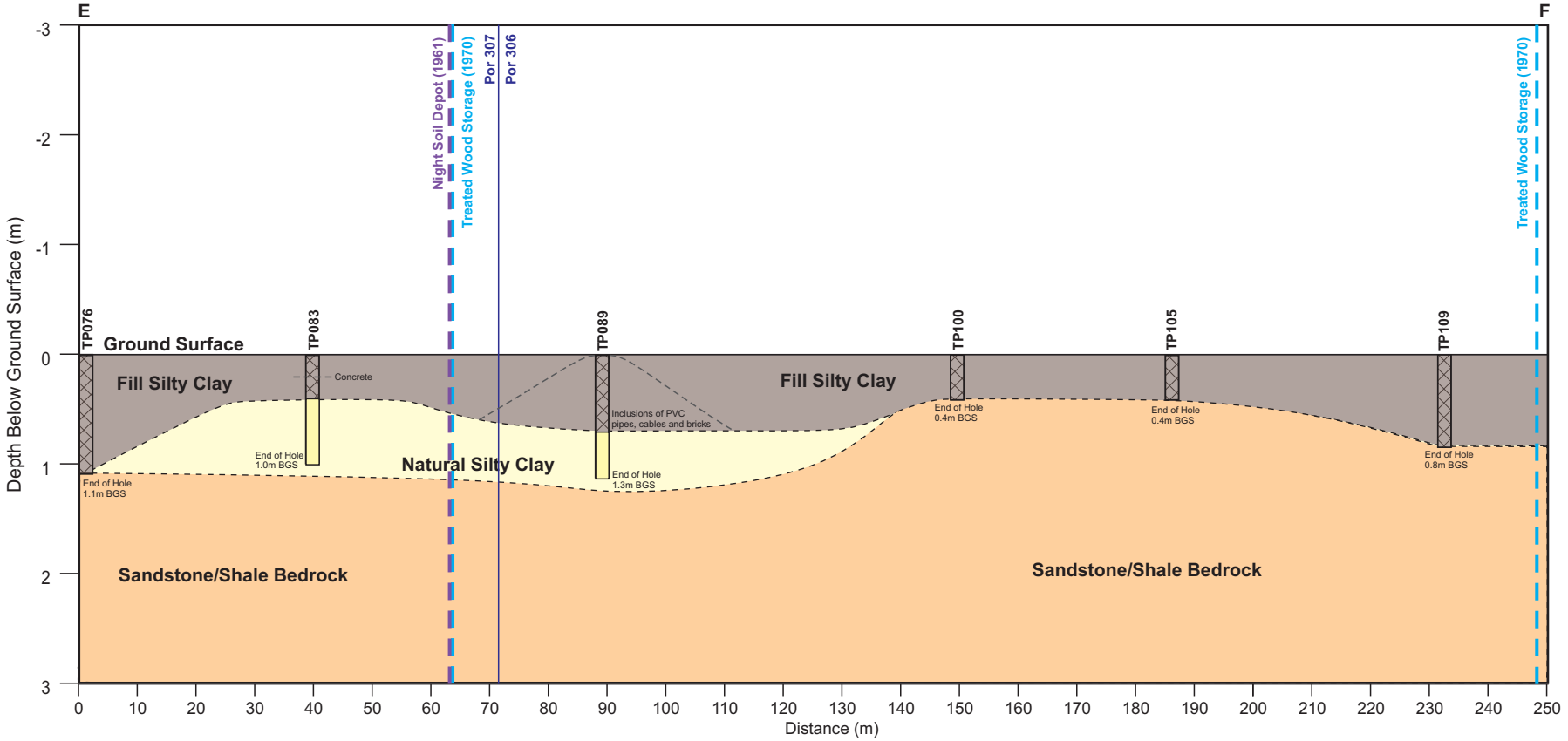
JBS&G

Figure 10: Cross Section C - D

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_10



Note: As no site survey is currently available, the fill/natural contours are based on depth below ground surface

Scale: Approximate -Vertical Exaggeration: 20

Datum: MGA94 Zone 56 - AHD

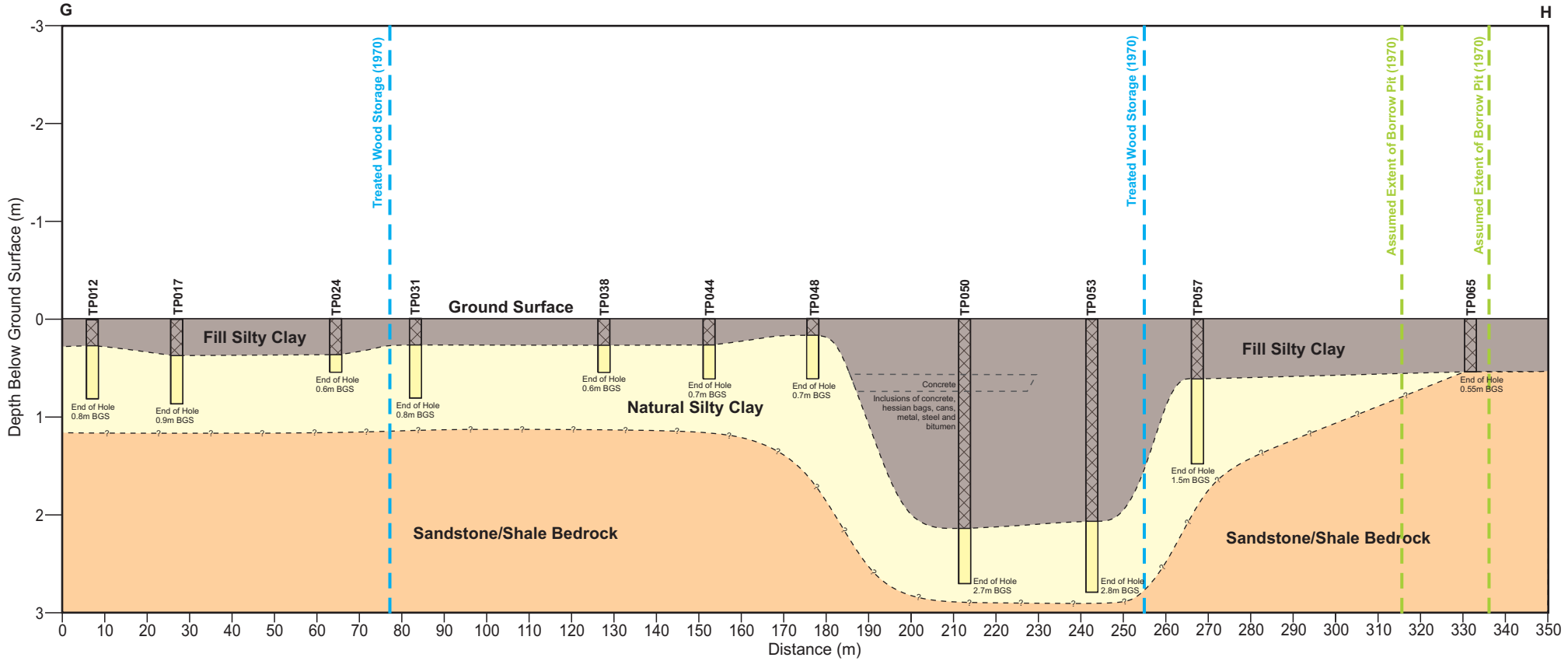
Rev	Description	Drn.	Date
A4			
0	Original Issue - R02	SE	01-12-2014

JBS&G **Figure 11: Cross Section E - F**

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_11



Note: As no site survey is currently available, the fill/natural contours are based on depth below ground surface

Scale: Approximate -Vertical Exaggeration: 24

Datum: MGA94 Zone 56 - AHD

Rev	Description	Drn.	Date
A4			
0	Original Issue - R02	SE	08-12-2014

JBS&G

Figure 12: Cross Section G - H

Client: Sydney Water

Project: Thornleigh Reservoir Assessment - ESA

Job No: 43386 File Name: 43386_12

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 1: Site Features

Feature Code	Description	Approximate Size
Stockpiles		
SP1	Small stockpile of crushed sandstone mixed with silty clay with some plastic fragments	<10 m3
SP2	Grass clippings/garden waste	<5 m3
SP3	Grass clippings/garden waste mixed with silty sand, ash and charcoal	<20 m3
SP4	coarse river sand mixed with white silty clay	<1 m3
SP5	Grass cuttings mixed with some silty clay fill material and crushed sandstone	<5 m3
SP6	Silty clay fill material mixed with crushed sandstone, some bricks and charcoal	<5 m3
SP7	Silty clay fill material mixed with grass cuttings, some bricks and concrete surrounded by some general household litter	<20 m3
SP8	Grass clippings mixed with wood chips surrounded by corrugated iron fence sheeting, terracotta pipe and some concrete pipe segments	<5 m3
SP9	Silty clay fill material mixed with sandstone gravels	<20 m3
SP10	Grass covered silty clay mixed with car tyres, machine parts, motor, concrete pipe segments	<5 m3
SP11a	Cement/concrete mixed with silty clay, aluminium cans, glass jars and some plastic fragments	<10 m3
SP11b	Concrete fragments mixed with aluminium cans, timber, potential telegraph poles	>100 m3
SP12	Grass covered stockpile	<50 m3
SP13	Concrete fragments mixed with chain wire, multiple metal pans and sandstone	<20 m3
SP14	Bricks and concrete mixed with river stones	<5 m3
SP15	Silty clay, possible ant mound	<5 m3
SP16	Silty clay fill mixed with corrugated ACM sheeting, terrecota pipe segments	<5 m3
SP17	Silty clay fill mixed with concrete and terrecota pipe segments	<10 m3
SP18	Bricks, concrete fragments, glass bottles, ACM sheeting, corrugated iron	<10 m3
SP19	Grass covered mound	<30 m3
SP20	Grass covered mound with some bricks and concrete visible	<30 m3
SP21	Grass covered mound with some asphaltic gravels and silty clay fill material visible	<10 m3
SP22	Group of multiple small stockpiles (<10 m3) of silty clay fill mixed with blue metal gravel, bitumen, bricks, sandstone gravels and some large basalt boulders	<200 m3
SP23	Grass covered mound	<75 m3
SP24	Group of multiple stockpiles, concrete, sandstone blocks and silty clay fill material	<100 m3
SP25	Concrete, steel, plastic and bitumen	<20 m3
Features		
F01	Small incinerator and some burnt timber	-
F02	Dumped metal shelving	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 1: Site Features

Feature Code	Description	Approximate Size
Stockpiles		
F03	Car tyre	-
F04a	Dumped hot water tank, some steel and concrete fragments	-
F04b	Trailer and associated tyres	-
F05	Dumped yellow car	-
F06	Dumped car shell and steel pipe segments	-
F07	Corrugated iron sheeting and couch springs	-
F08	Steel rusted fire drum with some rubbish inside	-
F09	Corrugated iron sheet	-
F10	A line of sandstone blocks	-
F11	Old trailer and associated tyres	-
F12	Metal pan	-
F13	Metal pans (2)	-
F14	Corrugated iron, metal pipe segments	-
F15	General rubbish, plastic, water storage container, metal pans	-
F16a	Burnt car frame and 2 wheels/tyres	-
F16b	2 x wheels and asssociated tyres	-
F17a	Metal pan filled with bitumen/tar	-
F17b	Burnt car frame and some concrete fragments	-
F18	Stock of metal sheeting, corrugated iron sheeting, cans, bottles and timber	-
F19	Open rectangular excavation (1.5 x 2 x 2 m in depth) with no backfill	-
F20	Corrugated iron sheeting	-
F21	Bike trail ladder with some metal fragments and a wheelbarrow	-
F22	Corrugated iron sheeting	-
F23	Metal pan	-
F24	Some scattered bricks	-
F25a	Dissused utility vehicle	-
F25b	Ashy grey white fill material mixed with glass bottles	-
F26	Large metal boilers and underground steel/metal structure with small portion protruding out of ground	-
F27	Large concrete pipe segments and concrete boxes	-
F28	Large concrete pipe segments	-
F29	Car tyre	-
F30	Segment of concrete pipe	-
F31	Disused tanker/trailer surrounded by some steel, wire and tyres	-
F32	Former storage tank, very rusty, tyre, steel pipes and collars	-
F33	Metal pans (6) with some associated bitumen/tar	-
F34	Scattered wood logs (some burnt) and general waste materials including concrete and timber	-
F35	Some waste metal pipes and possible ash material	-
F36	General building waste	
Bonded Asbestos Sheeting/Fragments		
A01	1 fragment of suspected ACM in moderate condition	20 x 15 cm
A02	1 fragment of suspected ACM in moderate condition	10 x 5 cm
A03	1 fragment of suspected ACM pipe	40 cm
A04	1 fragment of suspected ACM	-
A05	Multiple (>10) fragments of suspected ACM	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 1: Site Features

Feature Code	Description	Approximate Size
Stockpiles		
A06	Multiple (>10) fragments of suspected ACM	-
A07	1 fragment of suspected ACM in moderate condition	-
A08	1 fragment os suspected ACM in moderate condition	2 x 3 cm
A09	Multiple (>50) small fragments of suspected ACM	3 x 4 cm
A10	Multiple (>10) fragments of suspected ACM	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 2: Sample Register

Area	Sub-area	Location ID	Material Type	Depth	Field Screening											
					PID	Landfill Gas	TPH/BTEX	PAHs	Heavy Metals	OCP	PCB	Asbestos	Speciated Phenolics	TCLP HM/PAHs	Microbiological	pH & nutrients
Site Entry (south western corner		TP01	Fill	0.0-0.1	x	-	1	1	1	1	1	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.6-0.7	x	-	-	-	1	-	-	-	-	-	-	-
Current access Road (south)		TP02	Fill	0.0-0.1	x	-	1	1	1			1	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.5-0.6	x	-	-	-	1	-	-	-	-	-	-	-
		TP03	Fill	0.0-0.1	x	-	1	1	1	-	-	-	-	-	-	-
		TP04	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	-	1	1	-	-	-	-	-	-	-
		TP05	Fill	0.0-0.1	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
		TP06	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	1	-	1	-	-	-	-	-	-	-
Historical access track (1961)		TP07	Fill	0.0-0.1	x	-	1	1	1	1	-	1	-	-	-	-
			Fill	0.2-0.3	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	-	-	1	-	-	-	-	-	-	-
		TP08	Fill	0.0-0.1	x	-	1	1	-	-	-	1	-	-	-	-
			Fill	0.9-1.0	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.6-1.7	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.7-1.8	x	-	-	-	-	-	-	-	-	-	-	-
		TP09	Fill	0.1-0.2	x	-	1	-	1	1	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	-	-	1	-	-	-	-	-	-	-
		TP10	Fill	0.0-0.1	x	-									-	-
			Fill	0.6-0.7	x	-	1	1	1		1	1			-	-
			Natural	0.9-1.0	x	-			1						-	-
	Taring workshop	TP11	Fill	0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.8-0.9	x	-	1	1	1			1	1	1	-	-
			Natural	1.2-1.3	x	-	1	1	-	-	-	-	-	-	-	-
		TP12	Fill	0.0-0.1	x	-	-	1	-	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	-	1	-	-	-	-	-	-	-	-
		TP13	Fill	0.2-0.3	x	-	1	1	1	1	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	-	1	-						-	-
		TP14	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	1	-	-	-	-	-
			Natural	0.6-0.7	x	-	-	-	-	-	-	-	-	-	-	-
		TP15	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x		1	1	1	-	-	-	-	-	-	-
			Fill	1.2-1.3	x	-	-	-	-	-	-	-	-	-	-	-
	Taring workshop	TP16	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	1	1	1	1	1	1	1	-	-	-
			Fill	0.7-0.8	x		1	1				-	1	1	-	-
			Fill	0.9-1.0	x	-	1	1	-	-	-	-	1	-	-	-
			Natural	1.0-1.1	x	-	1	1	1	-	-	-	-	-	-	-
		TP17	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	-	-	1	-	-	-	-	-	-	-
			Natural	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
		TP18	Fill	0.0-0.1	x	-	-	1	1	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.4-0.5	x										-	-
		TP19	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.8-0.9	x	-	1	1	1	-	-	-	-	-	-	-
			Natural	0.9-1.0	x	-	1	1	1	-	-	-	-	-	-	-
		TP20	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.8-0.9	x		1	1	-	-	-	1	-	-	-	-
			Fill	1.9-2.0	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	3.0-3.1	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	3.3-3.4	x	-	-	-	-	-	-	-	-	-	-	-
		TP21	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.4-1.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.9-2.0	x	-	1	1	1	-	-	1	-	-	-	-
			Fill	2.5-2.6	x	-	-	-	-	-	-	-	-	-	-	-
		TP22	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.4-1.5	x	-	1	1	1	1	1	1	-	-	-	-
			Natural	1.9-2.0	x	-	1	1	1	1	1	-	-	-	-	-
		TP23	Fill	0.4-0.5	x	-	1	1	1	-	-	1	-	-	-	-
			Natural	1.0-1.1	x	-	1	1	-	-	-	-	-	-	-	-
		TP24	Fill	0.0-0.1	x	-	1	1	-	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	-	1	-	-	-	-	-	-	-	-
		TP25	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	1	-	-	-	-	-	-	-	-
			Natural	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
		TP26	Fill	0.1-0.2	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.7-0.8	x	-	1	1	1	-	-	-	-	-	-	-
			Natural	1.1-1.2	x	-	-	-	-	-	-	-	-	-	-	-
		TP27	Fill	0.1-0.2	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.5-1.6	x	-	-	1	-	-	1	1	-	-	-	-
			Fill	1.8-1.9	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.1-2.2	x	-	-	-	-	-	-	-	-	-	-	-
		TP28	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.2-0.3	x		1	1	1	-	-	1	-	-	-	-
			Fill	0.6-0.7	x	-	1	1	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.4-1.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	2.4-2.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	3.4-3.5	x	-	-	-	-	-	-	-	-	-	-	-
		TP29	Fill	0.0-0.1	x	-	-	-	-	1	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.2-1.3	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	1.4-1.5	x	-	1	1	1	1	1	-	-	-	-	-
Former nightsoil area		TP30	Fill	0.0-0.1	x	-	-	-	-	1	-	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.8-0.9	x	-	-	-	-	-	-	-	-	-	-	-
	Treated wood storage	TP31	Fill	0.1-0.2	x	-	1	1	1	1	1	1	1	-	-	-
			Natural	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.0-0.1	x	-	-	-	-	1	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 2: Sample Register

Area	Sub-area	Location ID	Material Type	Depth	Field Screening											
					PID	Landfill Gas	TPH/BTEX	PAHs	Heavy Metals	OCP	PCB	Asbestos	Speciated Phenolics	TCLP HM/PAHs	Microbiological	pH & nutrients
	storage	TP32	Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.6-0.7	x	-	-	-	-	-	-	-	-	-	-	-
		TP33	Fill	0.1-0.2	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	1.2-1.3	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.1-2.2	x	-	1	1	-	-	-	-	-	-	-	-
		TP34	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	1.4-1.5	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	1.6-1.7	x	-	1	1	1	1	1	-	-	-	-	-
		TP35	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	-	1	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.9-2.0	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.2-2.3	x	-	-	-	-	-	-	-	-	-	-	-
		TP36	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	1	1	1	-	-	1	-	-	-	-
			Fill	0.9-1.0	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.9-2.0	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.3-2.4	x	-	-	-	-	-	-	-	-	-	-	-
		TP37	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.6-0.7	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	1.3-1.4	x	-	-	-	-	-	-	-	-	-	-	-
	Treated wood storage	TP38	Fill	0.1-0.2	x	-	-	-	1	-	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
		TP39	Fill	0.1-0.2	x	-	-	-	1	1	-	-	-	-	-	-
			Fill	0.8-0.9	x		-	-	-	-	-	-	-	-	-	-
			Natural	1.2-1.3	x	-	-	-	-	-	-	-	-	-	-	-
		TP40	Fill	0.2-0.3	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	-	1	1	-	-	-	-	-	-	-	-
			Fill	1.4-1.5	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.0-2.1	x	-	1	1	1	-	-	-	-	-	-	-
		TP41	Fill	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.2-1.3	x	-									-	-
			Fill	1.8-1.9	x	-		1	1		1				-	-
			Natural	2.0-2.1	x	-	-	-	-	-	-	-	-	-	-	-
		TP42	Fill	0.0-0.1	x	-	1	1	1	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	1.6-1.7	x	-	-	-	-	-	-	-	-	-	-	-
	Treated wood storage	TP43	Fill	0.1-0.2	x	-	-	1	-	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
		TP44	Fill	0.2-0.3	x	-	1	1	1	1	1	1	1	-	-	-
			Natural	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
		TP45	Fill	0.1-0.2	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	1.7-1.8	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	1.8-1.9	x	-	-	-	-	-	-	-	-	-	-	-
		TP46	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	1	1	1	-	-	1	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.4-1.5	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.3-2.4	x	-	-	-	-	-	-	-	-	-	-	-
		TP47	Fill	0.0-0.1	x	-	1	1	1	-	-	1	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.2-1.3	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.9-2.0	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.1-2.2	x	-	-	-	-	-	-	-	-	-	-	-
	Treated wood storage	TP48	Fill	0.0-0.1	x	-	-	-	1	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
		TP49	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.2-0.3	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	1	1	1	1	1	1	-	-	-	-
			Fill	1.4-1.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	2.4-2.5	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.6-2.7	x	-	-	-	-	-	-	-	-	-	-	-
	Treated wood storage	TP50	Fill	0.0-0.1	x	-	-	-	-	1	1	-	1	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	1	1	1	-	-	1	-	-	-	-
			Fill	2.0-2.1	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.4-2.5	x	-	1	1	1	1	1	-	-	-	-	-
Central Portion of Site		TP51	Natural	0.0-0.1	x	-	-	-	-	-	1	-	-	-	-	-
Former night soil area	Treated wood storage	TP52	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	1.9-2.0	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	2.1-2.2	x	-	-	-	-	-	-	-	-	-	-	-
		TP53	Fill	0.0-0.1	x		1	1							-	-
			Fill	0.9-1.0	x										-	-
			Fill	2.0-2.1	x										-	-
			Natural	2.1-2.2	x										-	-
Central portion of site		TP54	Natural		x	-	-	-	-	1	-	-	-	-	-	-
		TP55	Fill	0.4-0.5	x		1	1	1						-	-
			Fill	1.5-1.6	x										-	-
			Natural	2.9-3.0	x		1	1	1	1	1				-	-
Former night soil area		TP56	Fill	0.3-0.4	x		1	1		1					-	-
			Natural	0.7-0.8	x				1						-	-
		TP57	Fill	0.2-0.3	x				1						-	-
Central Portion of site		TP58	Fill	0.2-0.3	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	2.0-2.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	2.2-2.3	x	-	-	1	-	-	-	-	-	-	-	-
			Natural	2.6-2.7	x	-	-	-	-	-	-	-	-	-	-	-
	Former night soil area	TP59	Fill	0.0-0.1	x	x	1	1	-	-	-	-	-	-	-	-
			Natural	0.3-0.4	x	x	-	-	1	-	-	-	-	-	-	-
		TP60	Fill	0.1-0.2	x	x	-	-	1	-	-	-	-	-	-	-
			Natural	1.0-1.1	x	x	1	1	1	1	1	-	-	-	-	-
		TP61	Fill	0.2-0.3	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	x	-	-	1	-	-	-	-	-	-	-
			Natural	1.0-1.1	x	x	1	1	1	1	1	-	-	-		1
Borrow Pit			Fill	0.0-0.1	x	x	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 2: Sample Register

Area	Sub-area	Location ID	Material Type	Depth	Field Screening											
					PID	Landfill Gas	TPH/BTEX	PAHs	Heavy Metals	OCP	PCB	Asbestos	Speciated Phenolics	TCLP HM/PAHs	Microbiological	pH & nutrients
Borrow Pit	Former night soil area	TP62	Fill	0.4-0.5	x	x	-	-	1	-	1	-	-	-	-	-
			Natural	1.4-1.5	x	x	-	-	-	-	-	-	-	-	-	-
		TP63	Fill	0.0-0.1	x	x	-	1	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	x	-	-	-	-	-	-	-	-	-	-
		TP64	Fill	0.0-0.1	x	x	-	-	-	-	-	1	-	-	-	-
			Fill	0.4-0.5	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	x	-	-	-	-	-	-	-	-	-	-
		TP65	Natural		x	x	-	-	-	1	-	-	-	-	-	-
Central portion of site		TP66	Fill	0.1-0.2	x	-	1	1	1	1	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
Borrow Pit	Former night soil area	TP67	Fill	0.0-0.1	x	x	-	-	-	1	-	-	-	-	-	-
			Fill	0.4-0.5	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	1.1-1.2	x	x	-	-	-	-	-	-	-	-	-	-
		TP68	Fill	0.0-0.1	x	x	-	-	1	-	-	-	-	-	-	-
			Natural	1.0-1.1	x	x	-	-	-	-	-	-	-	-	-	-
		TP69	Fill	0.0-0.1	x	x	-	1	-	-	-	-	-	-	-	-
		TP70	Fill	0.2-0.3	x	x	1	1	-	-	-	-	-	-	-	-
Northern portion of site		TP71	Fill	0.0-0.1	x	-	-	-	1	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	1	1	1	-	-	-	-	-	-	-
		TP72	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.0-1.1	x	-	-	-	1	-	-	-	-	-	-	-
			Natural	1.2-1.3	x	-	-	-	-	-	-	-	-	-	-	-
Landfill	Former night soil area	TP73	Fill	0.0-0.1	x	x	1	1	1	1	1	-	-	-	-	-
			Fill	0.5-0.6	x	x	-	-	-	-	-	-	-	-	-	-
			Natural	1.5-1.6	x	x	-	-	-	-	-	-	-	-	-	-
Borrow Pit		TP74	Fill	0.0-0.1	x	x	-	-	-	1	-	-	-	-	-	-
			Natural	0.9-1.0	x	x	-	-	-	-	-	-	-	-	-	-
		TP75	Fill	0.0-0.1	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	x	-	1	1	-	-	-	-	-	-	-
			Natural	1.3-1.4	x	x	-	-	-	-	-	-	-	-	-	-
Northern portion of site		TP76	Fill	0.1-0.2	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	1.0-1.1	x	-	-	-	-	-	1	-	-	-	-	-
		TP77	Fill	0.1-0.2	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	-	-	-	-	-	-	-	-	-	-	-
		TP78	Fill	0.1-0.2	x	-	-	1	-	-	-	-	-	-	-	-
			Natural	0.5-0.6	x	-	-	-	1	-	-	-	-	-	-	-
		TP79	Fill	0.0-0.1	x	-	1	1	1	-	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
Landfill	Former night soil area	TP80	Fill	0.0-0.1	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	x	-	1	-	-	-	1	-	-	-	-
			Natural	1.0-1.1	x	x	-	-	-	-	-	-	-	-	-	-
Northern portion of site		TP81	Fill	0.1-0.2	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	-	1	-	-	-	-	-	-	-
		TP82	Fill	0.1-0.2	x	-	-	1	-	-	-	-	-	-	-	-
			Natural	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
		TP83	Fill	0.0-0.1	x	-	-	-	1	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
		TP84	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	1	1	1	-	-	-	-	-	-	-
		TP85	Fill	0.0-0.1	x	-	-	-	1	1	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
Landfill	Former night soil area	TP86	Fill	0.2-0.3	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.9-1.0	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	1.5-1.6	x	x	1	1	-	-	-	-	-	-	-	-
			Fill	2.4-2.5	x	x	-	-	-	-	-	-	-	-	-	-
Northern portion of site		TP87	Fill	0.1-0.2	x	-	1	-	-	-	-	-	-	-	-	-
			Natural	0.2-0.3	x	-	-	-	1	-	-	-	-	-	-	-
	Former night soil area	TP88	Fill	0.1-0.2	x	-	-	-	-	1	-	-	-	-	-	-
			Natural	0.2-0.3	x	-	-	-	-	-	-	-	-	-	-	-
		TP89	Fill	0.1-0.2	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.7-0.8	x	-	1	-	-	-	-	1	-	-	-	-
			Natural	0.8-0.9	x	-	-	-	-	-	-	-	-	-	-	-
		TP90	Fill	0.1-0.2	x	-	1	1	1	-	-	-	-	-	-	-
		TP91	Fill	0.1-0.2	x	-	1	-	1		1	1			-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
Landfill		TP92	Fill	0.0-0.1	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	x	-	1	-	-	-	1	-	-	-	-
			Fill	1.2-1.3	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	1.7-1.8	x	x	-	-	-	-	-	-	-	-	-	-
			Natural	2.0-2.1	x	x	1	1	1	1	1	-	-	-	-	-
		TP93	Fill	0.0-0.1	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	x	-	1	1	-	-	-	-	-	-	-
Northern portion of site		TP94	Fill	0.0-0.1	x	-	-	1	1	-	-	-	-	-	-	-
			Natural	0.4-0.5	x	-	-	-	1	-	-	-	-	-	-	-
		TP95	Fill	0.1-0.2	x	-	-	-	1	-	-	-	-	-	-	-
		TP96	Fill	0.0-0.1	x	-	-	-	-	1	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	-	-	-	-	-	-	-	-	-	-
		TP97	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	-	1	-	-	-	-	-	-	-	-
Landfill		TP98	Fill	0.0-0.1	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	1.2-1.3	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	2.0-2.1	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	2.4-2.5	x	x	1	1	1	-	1	1	-	1	-	-
Northern portion of site		TP99	Fill	0.1-0.2	x	-	1	-	1	1	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	1.1-1.2	x	-	-	-	-	-	-	-	-	-	-	-
		TP100	Fill	0.2-0.3	x	-	-	-	1	-	-	-	-	-	-	-
		TP101	Fill	0.0-0.1	x	-	-	-	-	-	-	-	-	-	-	-
			Fill	0.3-0.4	x	-	-	1	-	-	-	-	-	-	-	-
			Natural	0.5-0.6	x	-	1	-	1	-	-	-	-	-	-	-
		TP102	Fill	0.1-0.2	x	-	-	1	-	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
Landfill		TP103	Fill	0.2-0.3	x	x	1	-	-	-	1	1	-	-	-	-
			Fill	0.8-0.9	x	x	-	-	-	-	-	-	-	-	-	-
			Fill	1.8-1.9	x	x	-	-	-	-	-	-	-	-	-	-
		TP104	Fill	0.0-0.1	x	-	-	-	1	-	-	-	-	-	-	-
			Fill	0.4-0.5	x	-	-	-	-	-	-	-	-	-	-	-
		TP105	Fill	0.0-0.1	x	-	-	-	1	1	-	-	-	-	-	-
		TP106	Fill	0.0-0.1	x	-	1	1	-	-	-	-	-	-	-	-
			Natural	0.3-0.4	x	-	1	1	1	1	1	-	-	-	-	1

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 2: Sample Register

Area	Sub-area	Location ID	Material Type	Depth	Field Screening											
					PID	Landfill Gas	TPH/BTEX	PAHs	Heavy Metals	OCP	PCB	Asbestos	Speciated Phenolics	TCLP HM/PAHs	Microbiological	pH & nutrients
Northern portion of site		TP107	Fill	0.2-0.3	x	-	1	1	1	-	-	-	-	-	-	-
			Fill	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
		TP108	Fill	0.0-0.1	x	-	1	1	1	-	-	-	-	-	-	-
			Fill	0.7-0.8	x	-	-	-	-	-	-	-	-	-	-	-
		TP109	Fill	0.0-0.1	x	-	-	-	-	-	-	1	-	-	-	-
			Fill	0.7-0.8	x	-	-	1	1	-	-	-	-	-	-	-
		TP110	Fill	0.0-0.1	x	-	-	-	-	-	-	1	-	-	-	-
			Fill	0.4-0.5	x	-	1	1	1	-	1	-	-	-	-	-
			Natural	0.5-0.6	x	-	-	-	-	-	-	-	-	-	-	-
Landfill		T01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T02	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Former night soil area	T04	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Former nightsoil area		T06	Fill	1.0-1.1	-	-	1	1	-	-	-	-	-	-	-	-
			Fill	1.4-1.5	-	-	1	1	-	-	-	-	-	-	-	-
			Fill	1.9-2.0	-	-	1	1	-	-	-	-	-	-	-	-
		T07	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T08	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T09	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T11	Fill	0.9-1.0		-	1	1	1	1	1	1	-	-	-	-
			Fill	1.8-1.9		-	1	1	1	-	1	1	-	-	-	-
		T12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		T15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waterlogged area	Surface Sample		Fill	-	-	-	1	1	1	-	-	-	-	-	-	-
COMP01	TP01-0.8-0.9		Fill	0.8-0.9	-	-	-	-	-	-	-	-	-	-	1	-
	TP22-0.4-0.5			0.4-0.5												
COMP02	TP28-0.6-0.7		Fill	0.6-0.7	-	-	-	-	-	-	-	-	-	-	1	-
	TP29-0.6			0.6												
	TP35-1.9-2.0			1.9-2.0												
	TP42-1.0-1.1			1.0-1.1												
COMP03	TP36-0.9-1.0		Fill	0.9-1.0	-	-	-	-	-	-	-	-	-	-	1	-
	TP46-0.4-0.5			0.4-0.5												
	TP49-1.0-1.1			1.0-1.1												
	TP50-0.4-0.5			0.4-0.5												
COMP04	TP20-0.8-0.9		Fill	0.8-0.9	-	-	-	-	-	-	-	-	-	-	1	-
	TP15-1.2-1.3			1.2-1.3												
	TP14-0.5-0.6			0.5-0.6												
	TP32-0.4-0.5			0.4-0.5												
	TP25-0.0-0.1			0.0-0.1												
COMP05	TP33-1.0-1.1		Fill	1.0-1.1	-	-	-	-	-	-	-	-	-	-	1	-
	TP41-1.8-1.9			1.8-1.9												
	TP45-0.5-0.6			0.5-0.6												
	TP39-0.3			0.3												
	TP34-0.9-1.0			0.9-1.0												
COMP06	TP73-0.5-0.6		Fill	0.5-0.6	-	-	-	-	-	-	-	-	-	-	1	-
	TP92-1.7-1.8			1.7-1.8												
	TP820.1-0.2			0.1-0.2												
	TP61-1.0-1.1			1.0-1.1												
	TP75-1.3-1.4			1.3-1.4												
COMP07	TP04-0.0-0.1		Fill	0.0-0.1	-	-	-	-	-	-	-	-	-	-	1	-
	TP07-0.0-0.1			0.0-0.1												
	TP08-1.7-1.8			1.7-1.8												
	TP09-0.1-0.2			0.1-0.2												
	TP10-0.0-0.1			0.0-0.1												

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Metals & Metalloids								Non-Metallic Inorganics						Ionic Balance		Other					
			Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	Nitrate (as N)	Nitrite (as Nitrite)	Phosphorus	Sulphate (as SO4)	Sulfur	Hexachlorobenzene	Total Alkalinity as CaCO3	pH 1:5 soil:water	Moisture	% Moisture 103oC	Sulphide (as S)	Nitrate & Nitrite (as N)	Total Kjeldahl Nitrogen (as N)	Total Nitrogen (as N)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ph Units	%	%	mg/kg	mg/kg	mg/kg	mg/kg
EQL			2	0.4	1	1	1	0.05	1	1	0.1	0.1	10	10	100	0.05	50	0.1		0.1	1	0.1	10	10
NEPC 2013 EIL, EILs Aged Sediment			100			130	1100		30	180														
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																								
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																								
NEPC 2013 Soil HIL A			100	20	100	6000	300	40	400	7400						10								
NEPC 2013 Soil HIL C			300	90		17000	600	80	1200	30000						10								
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																								
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																								
Field ID	Depth	Date																						
TP01	0-0.1	6/08/2014	6.4	<0.4	53	10	13	<0.05	38	32	-	-	-	-	-	<0.05	-	-	-	12	-	-	-	-
QC15 (Duplicate of TP01-0.0-0.1)	0-0.1	6/08/2014	5.6	<0.4	46	5.9	12	<0.05	20	18	-	-	-	-	-	<0.05	-	-	-	11	-	-	-	-
QC15A (Triplicate of TP01-0.0-0.1)		6/08/2014	5	<0.4	30	6	14	<0.1	16	16	-	-	-	-	-	<0.1	-	-	17	-	-	-	-	-
TP01	0.6-0.7	6/08/2014	3.2	<0.4	26	<5	8.8	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	19	-	-	-	-
TP02	0-0.1	6/08/2014	20	<0.4	60	10	14	<0.05	35	29	-	-	-	-	-	-	-	-	-	6.7 - 8.1	-	-	-	-
TP02	0.5-0.6	6/08/2014	6.5	<0.4	25	<5	17	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP03	0-0.1	6/08/2014	<2	0.6	76	19	13	<0.05	79	58	-	-	-	-	-	-	-	-	-	7 - 8	-	-	-	-
TP04	0.4-0.5	6/08/2014	3.5	<0.4	16	<5	72	<0.05	<5	11	-	-	-	-	-	-	-	-	-	11	-	-	-	-
TP05	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP06	0.3-0.4	6/08/2014	3.5	<0.4	16	<5	6	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	9.1 - 12	-	-	-	-
TP06	1.9-2	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	-	-	-	-
TP07	0-0.1	6/08/2014	12	<0.4	57	12	14	<0.05	32	30	-	-	-	-	-	<0.05	-	-	-	5.5	-	-	-	-
TP07	0.3-0.4	6/08/2014	6.6	0.6	35	<5	6.1	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP08	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17 - 19	-	-	-	-
TP09	0.1-0.2	6/08/2014	4.7	<0.4	15	5.9	26	<0.05	5.6	26	-	-	-	-	-	<0.05	-	-	-	11 - 13	-	-	-	-
TP09	0.3-0.4	6/08/2014	13	0.8	32	<5	11	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP10	0.6-0.7	6/08/2014	<2	<0.4	12	19	100	<0.05	7	60	-	-	-	-	-	-	-	-	-	5.3 - 6.8	-	-	-	-
TP10	0.9-1	6/08/2014	4.9	0.5	27	<5	11	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP11	0.8-0.9	29/07/2014	5.5	<0.4	49	28	100	0.07	39	290	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP11	1.1-1.3	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP110	0.4-0.5	5/08/2014	4.1	0.4	8.2	11	14	<0.05	<5	7.2	-	-	-	-	-	-	-	-	-	16 - 17	-	-	-	-
TP110	0.5-0.6	5/08/2014	<2	<0.4	5.5	<5	<5	<0.05	<5	7.3	-	-	-	-	-	-	-	-	-	9.8	-	-	-	-
TP12	0.4-0	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-
TP13	0.2-0.3	1/08/2014	4.1	<0.4	24	25	40	0.31	13	61	-	-	-	-	-	<0.05	-	-	-	11	-	-	-	-
QC08 (Duplicate of TP013-0.2-0.3)	0.2-0.3	1/08/2014	4	<0.4	10	24	40	0.43	<5	46	-	-	-	-	-	<0.05	-	-	-	9.8	-	-	-	-
QC08A (Triplicate of TP013-0.2-0.3)		1/08/2014	5	<0.4	14	47	42	0.4	5	57	-	-	-	-	-	<0.1	-	-	12	-	-	-	-	-
TP13	0.3-0.4	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP14	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	-	-
TP15	0.4-0.5	31/07/2014	3.5	<0.4	14.0	5.3	16	<0.05	7.1	17	-	-	-	-	-	-	-	-	-	10	-	-	-	-
TP16	0.4-0.5	29/07/2014	2.9	0.5	18	120	41	<0.05	34	130	-	-	-	-	-	<0.5	-	-	-	10.00	-	-	-	-
QC01 (duplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	<2	0.6	14	35	20	<0.05	29	78	-	-	-	-	-	<0.05	-	-	-	10	-	-	-	-
QC01A (triplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	5.0	<0.4	12.0	33	24	<0.1	18.0	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16	0.7-0.8	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-
TP16	0.9-1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP16	1-1.1	29/07/2014	<2	<0.4	7	7.4	6.6	<0.05	<5	40	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP17	0.3-0.4	29/07/2014	<2	<0.4	18	<5	<5	<0.05	16	9.2	-	-	-	-	-	-	-	-	-	7.3	-	-	-	-
TP18	0-0.1	1/08/2014	4.7	<0.4	9.5	48	88	0.92	<5	82	-	-	-	-	-	-	-	-	-	18	-	-	-	-
TP19	0.8-0.9	31/07/2014	<2	<0.4	7.3	24	20	0.05	26	39	-	-	-	-	-	-	-	-	-	4.2	-	-	-	-
TP19	0.9-1	31/07/2014	6.4	<0.4	23	<5	13	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP20	0.8-0.9	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP21	1.9-2	29/07/2014	4.5	<0.4	25	19	24	<0.05	29	53	-	-	-	-	-	-	-	-	-	16	-	-	-	-
QC02 (Duplicate of TP21-1.9-2.0)	1.9-2	29/07/2014	3.7	<0.4	23	16	30	<0.05	21	50	-	-	-	-	-	-	-	-	-	18	-	-	-	-
QC02A (Triplicate of TP21-1.9-2.0)	1.9-2.0	29/07/2014	<4.0	<0.4	10	26	33	<0.1	8	25	-	-	-	-	-	-	-	-	32	-	-	-	-	-
TP22	1.4-1.5	29/07/2014	4.4	<0.4	13	27	46	0.61	<5	47	-	-	-	-	-	<0.05	-	-	-	22	-	-	-	-
TP22	1.9-2	29/07/2014	9.1	<0.4	22	<5	12	<0.05	<5	15	-	-	-	-	-	<0.05	-	-	-	22	-	-	-	-
TP23	0.4-0.5	29/07/2014	4.6	<0.4	16	49	76	0.5	<5	170	-	-	-	-	-	-	-	-	-	9.9	-	-	-	-
TP23	1-1.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP24	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15 - 17	-	-	-	-
TP24	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5	-	-	-	-
TP25	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	-	-	-	-
TP26	0.7-0.8	1/08/2014	2.3	<0.4	7.7	8.2	10	<0.05	9.9	24	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP27	1.5-1.6	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP28	0.2-0.3	30/07/2014	4.5	<0.4	9.9	8.7	35	<0.05	6	450	-	-	-	-	-	-	-	-	-	18	-	-	-	-
TP28	0.6-0.7	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP29	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	18	-	-	-	-
TP29	1.4-1.5	30/07/2014	5.5	<0.4	14	<5	16	0.07	<5	<5	-	-	-	-	-	<0.05	-	-	-	17	-	-	-	-
TP30	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	17	-	-	-	-
TP31	0.1-0.2	29/07/2014	4.5	<0.4	16	21	32	0.13	6.9	37	-	-	-	-	-	<0.05	-	-	-	14	-	-	-	-
TP32	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	18	-	-	-	-
TP33	1-1.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-
TP33	2.1-2.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Metals & Metalloids								Non-Metallic Inorganics						Ionic Balance		Other					
			Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	Nitrate (as N)	Nitrite (as Nitrite)	Phosphorus	Sulphate (as SO4)	Sulfur	Hexachlorobenzene	Total Alkalinity as CaCO3	pH 1:5 soil:water	Moisture	% Moisture 103oC	Sulphide (as S)	Nitrate & Nitrite (as N)	Total Kjeldahl Nitrogen (as N)	Total Nitrogen (as N)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ph Units	%	%	mg/kg	mg/kg	mg/kg	mg/kg
EQL			2	0.4	1	1	1	0.05	1	1	0.1	0.1	10	10	100	0.05	50	0.1		0.1	1	0.1	10	10
NEPC 2013 EIL, EILs Aged Sediment			100			130	1100		30	180														
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																								
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																								
NEPC 2013 Soil HIL A			100	20	100	6000	300	40	400	7400						10								
NEPC 2013 Soil HIL C			300	90		17000	600	80	1200	30000						10								
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																								
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																								
Field ID	Depth	Date																						
TP34	0.9-1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6	-	-	-	-
TP35	0.5-0.6	30/07/2014	3.8	<0.4	17	14	20	<0.05	15	43	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP36	0.3-0.4	30/07/2014	<2	<0.4	7.6	6.5	7.5	<0.05	<5	17	-	-	-	-	-	-	-	-	-	24	-	-	-	-
QC04 (Duplicate of TP036-0.3-0.4)	0.3-0.4	30/07/2014	5.5	<0.4	11	16	14	<0.05	7.6	26	-	-	-	-	-	-	-	-	-	6.8	-	-	-	-
QC04A (Triplicate of TP036-0.3-0.4)	0.3-0.4	31/07/2014	9	<0.4	15	25	18	<0.1	12	50	-	-	-	-	-	-	-	-	9.5	-	-	-	-	-
TP38	0.1-0.2	29/07/2014	4	<0.4	12	15	34	<0.05	8.9	33	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP39	0.1-0.2	1/08/2014	<2	<0.4	16	33	28	0.08	30	55	-	-	-	-	-	<0.05	-	-	-	11	-	-	-	-
TP40	0.9-1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP40	2-2.1	1/08/2014	17	0.6	29	<5	23	<0.05	<5	9.3	-	-	-	-	-	-	-	-	-	20	-	-	-	-
TP41	1.8-1.9	1/08/2014	2.6	<0.4	11	34	44	<0.05	6.6	120	-	-	-	-	-	-	-	-	-	22	-	-	-	-
TP42	0-0.1	30/07/2014	8.4	<0.4	22	27	53	<0.05	14	230	-	-	-	-	-	-	-	-	-	19	-	-	-	-
TP42	0.4-0.5	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP43	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	-	-
TP44	0.2-0.3	29/07/2014	2.6	<0.4	9.7	12	38	<0.05	6.4	44	-	-	-	-	-	<0.05	-	-	-	12	-	-	-	-
QC03 (Duplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	2.5	<0.4	10	11	32	<0.05	6.3	32	-	-	-	-	-	<0.05	-	-	-	11	-	-	-	-
QC03A (Triplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	<4	<0.4	8	6	15	<0.1	3	14	-	-	-	-	-	<0.1	-	-	15	-	-	-	-	-
TP45	0.5-0.6	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP46	0.4-0.5	30/07/2014	4.2	<0.4	22	22	39	0.1	18	30	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP47	0-0.1	30/07/2014	3.7	<0.4	12	9.5	26	<0.05	7.6	24	-	-	-	-	-	<0.05	-	-	-	20	-	-	-	-
TP48	0-0.1	29/07/2014	6	<0.4	12	6.9	22	<0.05	11	21	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP49	1-1.1	30/07/2014	4.4	<0.4	18	27	44	0.05	18	150	-	-	-	-	-	<0.05	-	-	-	13	-	-	-	-
TP50	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	13	-	-	-	-
TP50	1-1.1	30/07/2014	5.8	<0.4	11	20	25	<0.05	8.3	31	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP50	2.4-2.5	30/07/2014	11	<0.4	24	<5	27	<0.05	<5	<5	-	-	-	-	-	<0.05	-	-	-	18	-	-	-	-
TP51	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-
TP52	0.9-1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP53	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP54	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	10	-	-	-	-
TP55	0.4-0.5	5/08/2014	5.2	0.6	19	6.9	18	0.06	<5	58	-	-	-	-	-	-	-	-	-	18	-	-	-	-
TP55	2.9-3	5/08/2014	5.3	<0.4	14	11	20	0.12	<5	30	-	-	-	-	-	<0.05	-	-	-	20	-	-	-	-
TP56	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	8.6 - 12	-	-	-	-
TP56	0.7-0.8	5/08/2014	4.1	0.4	11	<5	15	<0.05	<5	5.4	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP57	0.2-0.3	5/08/2014	6.3	0.5	22	6.4	29	0.07	<5	29	-	-	-	-	-	-	-	-	-	16	-	-	-	-
TP58	2.2-2.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	-	-	-	-
TP59	0.0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-
TP59	0.3-0.4	5/08/2014	2.3	<0.4	<5	<5	8.1	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP60	0.1-0.2	1/08/2014	11	<0.4	13	<5	14	<0.05	<5	7	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP60	1-1.1	1/08/2014	9.8	<0.4	10	17	16	<0.05	<5	9.7	-	-	-	-	-	<0.05	-	-	-	8.3	-	-	-	-
TP61	0.9-1	4/08/2014	4.1	<0.4	13	9.6	22	0.15	<5	14	-	-	-	-	-	-	-	-	-	10	-	-	-	-
TP61	1-1.1	4/08/2014	2.9	<0.4	17	<5	5.7	<0.05	<5	<5	<0.1	<0.1	37	31	170	<0.05	<50	4.7	-	12	-	<0.1	250	250
TP62	0.4-0.5	4/08/2014	3.8	<0.4	9.9	<5	11	0.06	<5	6.1	-	-	-	-	-	-	-	-	-	7.6	-	-	-	-
TP63	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	-	-	-	-
TP65	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	15	-	-	-	-
TP66	0.1-0.2	5/08/2014	6	0.7	18	13	28	0.23	<5	37	-	-	-	-	-	<0.05	-	-	-	14	-	-	-	-
QC14 (Duplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	3.4	0.8	14	13	25	0.25	<5	39	-	-	-	-	-	<0.05	-	-	-	14	-	-	-	-
QC14/A (Triplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	6	<0.4	20	12	27	0.2	2	35	-	-	-	-	-	<0.1	-	-	15	-	-	-	-	-
TP67	0.1-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	26	-	-	-	-
TP68	0-0.1	4/08/2014	4.7	0.7	13	28	49	0.27	<5	58	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP69	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-
TP70	0.2-0.3	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP71	0-0.1	1/08/2014	6.9	0.8	22	21	27	0.28	<5	130	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP71	0.4-0.5	1/08/2014	4.3	1.5	17	32	36	0.19	<5	130	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP72	1-1.1	5/08/2014	<2	<0.4	5.3	<5	7.3	<0.05	<5	6.1	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP73	0-0.1	4/08/2014	2.6	<0.4	28	18	13	0.05	30	42	-	-	-	-	-	-	-	-	-	6.6	-	-	-	-
TP73	0.5-0.6	4/08/2014	3.3	<0.4	15	<5	13	<0.05	<5	19	-	-	-	-	-	<0.05	-	-	-	10	-	-	-	-
QC11 (Duplicate of TP073-0.5-0.6)	0.5-0.6	4/08/2014	4.5	<0.4	13	12	36	0.43	<5	45	-	-	-	-	-	<0.05	-	-	-	18	-	-	-	-
TP74	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	19	-	-	-	-
TP75	0.4-0.5	4/08/2014	5.8	<0.4	16	12	30	0.2	<5	32	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP76	1-1.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.8	-	-	-	-
TP77	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP78	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.1	-	-	-	-
TP78	0.5-0.6	5/08/2014	4.1	<0.4	11	<5	5.5	0.06	<5	20	-	-	-	-	-	-	-	-	-	11	-	-	-	-
TP79	0-0.1	5/08/2014	3	0.5	8.8	11	15	0.11	<5	46	-	-	-	-	-	-	-	-	-	14	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Metals & Metalloids								Non-Metallic Inorganics						Ionic Balance		Other					
			Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	Nitrate (as N)	Nitrite (as Nitrite)	Phosphorus	Sulphate (as SO4)	Sulfur	Hexachlorobenzene	Total Alkalinity as CaCO3	pH 1:5 soil:water	Moisture	% Moisture 103oC	Sulphide (as S)	Nitrate & Nitrite (as N)	Total Kjeldahl Nitrogen (as N)	Total Nitrogen (as N)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ph Units	%	%	mg/kg	mg/kg	mg/kg	mg/kg
EQL			2	0.4	1	1	1	0.05	1	1	0.1	0.1	10	10	100	0.05	50	0.1		0.1	1	0.1	10	10
NEPC 2013 EIL, EILs Aged Sediment			100			130	1100		30	180														
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																								
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																								
NEPC 2013 Soil HIL A			100	20	100	6000	300	40	400	7400						10								
NEPC 2013 Soil HIL C			300	90		17000	600	80	1200	30000						10								
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																								
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																								
Field ID	Depth	Date																						
TP80	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP81	0.5-0.6	4/08/2014	4.2	<0.4	11	9.5	21	0.14	<5	17	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP82	0.2-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-
TP83	0-0.1	1/08/2014	7.1	<0.4	20	6.7	6	<0.05	<5	23	-	-	-	-	-	-	-	-	-	12	-	-	-	-
TP84	0.4-0.5	5/08/2014	50	1	63	93	25	0.23	10	130	-	-	-	-	-	-	-	-	-	16	-	-	-	-
TP85	0-0.1	5/08/2014	<2	<0.4	13	11	8.1	0.07	6.2	39	-	-	-	-	-	<0.05	-	-	-	11	-	-	-	-
TP86	1.5-1.6	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.4	-	-	-	-
TP87	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	-	-	-	-
TP87	0.2-0.3	1/08/2014	2.9	<0.4	20	<5	<5	<0.05	<5	22	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP88	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-
TP89	0.7-0.8	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-
TP90	0.1-0.2	5/08/2014	2	<0.4	12	15	53	0.07	5.1	40	-	-	-	-	-	-	-	-	-	10 - 11	-	-	-	-
QC13 (Duplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	2.6	<0.4	11	10	26	<0.05	6.6	28	-	-	-	-	-	-	-	-	-	12	-	-	-	-
QC13/A (Triplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	<4	<0.4	13	4	15	<0.1	1	16	-	-	-	-	-	-	-	-	11	-	-	-	-	-
TP91	0.1-0.2	5/08/2014	12	0.7	22	32	61	0.1	<5	68	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP92	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-
TP93	0.4-0.5	5/08/2014	<2	<0.4	<5	<5	12	<0.05	<5	27	-	-	-	-	-	-	-	-	-	10 - 11	-	-	-	-
TP94	0-0.1	5/08/2014	11	0.9	28	22	40	0.09	15	62	-	-	-	-	-	-	-	-	-	6.3	-	-	-	-
TP95	0.1-0.2	4/08/2014	3.4	<0.4	13	<5	12	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	13	-	-	-	-
TP96	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	8.6	-	-	-	-
TP96	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	<0.1 - 0.5	-	34	<10	-	-	790	7	-	11	<1	0.6	130	130
TP97	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP98	2.4-2.5	4/08/2014	33	12	45	330	1100	0.26	65	6500	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP99	0.1-0.2	5/08/2014	3.8	0.6	16	9.3	37	<0.05	9.1	17	-	-	-	-	-	<0.05	-	-	-	18 - 24	-	-	-	-
TP100	0.2-0.3	5/08/2014	11	<0.4	11	7.4	12	<0.05	<5	13	-	-	-	-	-	-	-	-	-	10	-	-	-	-
TP101	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-
TP101	0.5-1	5/08/2014	2.1	<0.4	11	<5	7.7	<0.05	<5	<5	-	-	-	-	-	-	-	-	-	14	-	-	-	-
TP102	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-
TP103	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-
TP104	0-0.1	5/08/2014	6.2	<0.4	16	25	20	<0.05	<5	62	-	-	-	-	-	-	-	-	-	10	-	-	-	-
TP105	0-0.1	5/08/2014	<2	<0.4	7.6	<5	<5	<0.05	<5	<5	-	-	-	-	-	<0.05	-	-	-	5.5	-	-	-	-
TP106	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
TP106	0.3-0.4	5/08/2014	3.4	<0.4	20	<5	5.2	<0.05	<5	<5	<0.1	<0.1	28	44	200	<0.05	430	5.8	-	17	-	<0.1	170	170
TP107	0.2-0.3	5/08/2014	<2	<0.4	15	5.8	6.2	<0.05	7.7	19	-	-	-	-	-	-	-	-	-	7	-	-	-	-
TP108	0-0.1	5/08/2014	3.5	<0.4	27	19	6	<0.05	23	30	-	-	-	-	-	-	-	-	-	15 - 16	-	-	-	-
TP109	0.7-0.8	5/08/2014	5.3	9.5	28	33	240	0.07	5.7	270	-	-	-	-	-	-	-	-	-	15	-	-	-	-
S01	Surface	5/08/2014	4.8	<0.4	7.3	<5	7.9	<0.05	<5	15	-	-	-	-	-	-	-	-	-	20	-	-	-	-
T06	1.1-1.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-
T06	1.4-1.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-
T11	0.9-1	6/08/2014	<2	0.5	37	24	55	0.06	40	190	-	-	-	-	-	<0.05	-	-	-	10	-	-	-	-
T11	1.8-1.9	6/08/2014	<2	0.5	57	38	26	<0.05	36	150	-	-	-	-	-	-	-	-	-	12	-	-	-	-
T12	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Polycyclic Aromatic Hydrocarbons																								
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(a)pyrene TEQ (WHO)	Benzo(b,k)fluoranthene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Total)	PAHs (Sum of Total)	Phenanthrene	Pyrene	Total +ve PAHs
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5			0.5	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.5		0.1	0.1	
NEPC 2013 EIL, EILs Aged Sediment																					170					
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil							0.7																			
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																										
NEPC 2013 Soil HIL A									3													300	300			
NEPC 2013 Soil HIL C									3													300	300			
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																					3					
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																					NL					
Field ID	Depth	Date																								
TP01	0-0.1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
QC15 (Duplicate of TP01-0.0-0.1)	0-0.1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
QC15A (Triplicate of TP01-0.0-0.1)		6/08/2014	<0.1	<0.1	<0.1	<0.1	<0.05	-	-	-	<0.5	<0.2	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	**<0.1**	-	1.125	<0.1	<0.1	0
TP01	0.6-0.7	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0-0.1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
TP02	0.5-0.6	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03	0-0.1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP04	0.4-0.5	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP05	0-0.1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP06	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	-	-	-	-
TP06	1.9-2	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP07	0-0.1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP07	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08	0-0.1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP09	0.1-0.2	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	-	-	-	-
TP09	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10	0.6-0.7	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	1.75	-	-	-
TP10	0.9-1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	0.8-0.9	29/07/2014	1.1	1	5.3	22	**35**	51	**51**	51	-	-	24	20	31	27	6.4	41	0.7	15	**<0.5**	290	263.8	10	48	-
TP11	1.1-1.3	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP110	0.4-0.5	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	0.25 - 5.25	<0.5	<0.5	-
TP110	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12	0.4-0	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP13	0.2-0.3	1/08/2014	<0.5	<0.5	<0.5	1.2	**1.5**	2	2.3	2.5	-	-	1.4	0.9	1.3	1.2	<0.5	1.7	<0.5	0.6	**<0.5**	13	0.25 - 12.7	0.9	1.9	-
QC08 (Duplicate of TP013-0.2-0.3)	0.2-0.3	1/08/2014	<0.5	<0.5	<0.5	1.4	**1.7**	2.2	2.4	2.7	-	-	1.1	1	1.7	1.4	<0.5	1.9	<0.5	0.7	**<0.5**	14	14.3	0.9	2.1	-
QC08A (Triplicate of TP013-0.2-0.3)		1/08/2014	0.1	<0.1	0.2	1.1	**1.5**	-	-	-	2	2.4	-	1	-	1.3	0.1	1.7	<0.1	0.8	**<0.1**	-	12.95	0.8	1.8	13
TP13	0.3-0.4	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP14	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-
TP15	0.4-0.5	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP16	0.4-0.5	29/07/2014	<0.5	<0.5	<0.5	1.10	**2.10**	2.70	2.90	3.20	-	-	1.90	1.80	1.70	1.40	<0.5	1.90	<0.5	1.10	**<0.5**	15.00	-	<0.5	2.40	15.00
QC01 (duplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	<0.5	<0.5	0.6	1.4	**1.8**	2.4	2.6	2.9	-	-	1.4	1.6	1.6	1.6	<0.5	2.7	<0.5	1	**<0.5**	18	19.45	1.5	2.9	-
QC01A (triplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	<0.1	0.10	0.20	1.10	**1.80**	3.00	-	-	-	2.60	-	1.40	-	1.20	0.20	1.80	<0.1	1.20	**<0.1**	14.00	0.50	-	2.30	-
TP16	0.7-0.8	29/07/2014	31	4.9	73	80	**99**	140	**140**	140	-	-	71	49	100	84	15	290	25	37	**<0.5 - 4.9**	**1500**	**1413**	240	280	-
TP16	0.9-1	29/07/2014	4.5	0.6	8	18	**26**	38	**38**	38	-	-	22	15	19	21	4.5	40	3.1	11	**0.8 - 1.9**	260	241.6	29	40	-
TP16	1-1.1	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP17	0.3-0.4	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18	0-0.1	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP19	0.8-0.9	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP19	0.9-1	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP20	0.8-0.9	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP21	1.9-2	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
QC02 (Duplicate of TP21-1.9-2.0)	1.9-2	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
QC02A (Triplicate of TP21-1.9-2.0)	1.9-2.0	29/07/2014	<0.1	<0.1	<0.1	<0.1	0.07	-	-	-	<0.5	<0.2	-	<0.1	-	<0.1	<0.1	0.2	<0.1	<0.1	**<0.1**	-	1.27	0.2	0.2	0.7
TP22	1.4-1.5	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	0.6	<0.5	0.8	<0.5	<0.5	**<0.5**	2.2	6.7	<0.5	0.8	-
TP22	1.9-2	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
TP23	0.4-0.5	29/07/2014	<0.5	<0.5	0.9	3.9	**7**	10	**10**	10	-	-	7.1	4.7	6.5	5.4	1.3	6.7	<0.5	3.4	**<0.5**	56	50.1	1.6	7.7	-
TP23	1-1.1	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP24	0-0.1	29/07/2014	<0.5	<0.5	<0.5	1.1	**1.4**	1.8	2.1	2.3	-	-	1.1	0.8	1.4	1.1	<0.5	2.3	<0.5	0.6	**<0.5**	13	0.25 - 13.1	0.8	2.1	-
TP24	0.4-0.5	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP25	0.4-0.5	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP26	0.7-0.8	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP27	1.5-1.6	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	**<0.5**	1.6	6.35	<0.5	0.8	-
TP28	0.2-0.3	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
TP28	0.6-0.7	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP29	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP29	1.4-1.5	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
TP30	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP31	0.1-0.2	29/07/2014	<0.5	<0.5	<0.5	0.6	**0.7**	1	1.2	1.5	-	-	0.9	<0.5	0.7	0.7	<0.5	0.8	<0.5	<0.5	**<0.5**	5.3	8.15	<0.5	0.9	-
TP32	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP33	1-1.1	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP33	2.1-2.2	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Polycyclic Aromatic Hydrocarbons																								
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(a)pyrene TEQ (WHO)	Benzo(b,k)fluoranthene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Total)	PAHs (Sum of Total)	Phenanthrene	Pyrene	Total +ve PAHs
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5			0.5	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.5		0.1	0.1	
NEPC 2013 EIL, EILs Aged Sediment																					170					
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil							0.7																			
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																										
NEPC 2013 Soil HIL A									3													300	300			
NEPC 2013 Soil HIL C									3													300	300			
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																					3					
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																					NL					
Field ID	Depth	Date																								
TP34	0.9-1	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP35	0.5-0.6	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP36	0.3-0.4	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
QC04 (Duplicate of TP036-0.3-0.4)	0.3-0.4	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
QC04A (Triplicate of TP036-0.3-0.4)	0.3-0.4	31/07/2014	<0.1	<0.1	<0.1	<0.1	<0.05	-	-	-	<0.5	<0.2	-	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	**<0.1**	-	-	0.1	0.1	0.3
TP38	0.1-0.2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP39	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP40	0.9-1	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP40	2-2.1	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP41	1.8-1.9	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
TP42	0-0.1	30/07/2014	<0.5	<0.5	0.9	1.8	3.8	5.4	5.4	5.4	-	-	1.5	4.9	3.1	1.9	0.7	6.3	<0.5	2.6	**<0.5**	35	-	1.6	5.8	-
TP42	0.4-0.5	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	**<0.5**	2.9	-	0.9	0.9	-
TP43	0.4-0.5	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP44	0.2-0.3	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	**<0.5**	1.2	5.95	<0.5	0.6	-
QC03 (Duplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	<0.5	<0.5	<0.5	<0.5	0.6	0.6	0.9	1.3	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	**<0.5**	2.3	6.8	<0.5	0.8	-
QC03A (Triplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	<0.1	<0.1	<0.1	0.1	0.14	-	-	-	<0.5	0.2	-	0.1	-	0.1	<0.1	0.2	<0.1	<0.1	**<0.1**	-	1.79	<0.1	0.2	0.99
TP45	0.5-0.6	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	**<0.5**	1.2	4.45	<0.5	0.6	-
TP46	0.4-0.5	30/07/2014	<0.5	<0.5	<0.5	0.7	1.1	1.4	1.6	1.9	-	-	0.7	0.8	1.1	0.7	<0.5	1.1	<0.5	0.6	**<0.5**	7.9	-	<0.5	1.1	-
TP47	0-0.1	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
TP48	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP49	1-1.1	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
TP50	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP50	1-1.1	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	**<0.5**	1.2	-	<0.5	0.6	-
TP50	2.4-2.5	30/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
TP51	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-
TP52	0.9-1	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	**<0.5**	1.1	4.35	<0.5	0.6	-
TP53	0-0.1	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP54	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP55	0.4-0.5	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	0.25 - 3.75	<0.5	<0.5	-
TP55	2.9-3	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
TP56	0.3-0.4	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	0.25 - 3.75	<0.5	<0.5	-
TP56	0.7-0.8	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP57	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP58	2.2-2.3	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP59	0.0-0.1	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP59	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP60	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP60	1-1.1	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
TP61	0.9-1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP61	1-1.1	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
TP62	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-
TP63	0-0.1	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP65	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP66	0.1-0.2	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
QC14 (Duplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
QC14/A (Triplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	<0.1	<0.1	<0.1	<0.1	<0.05	-	-	-	<0.5	<0.2	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	**<0.1**	-	0.775	<0.1	<0.1	0
TP67	0.1-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP68	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP69	0-0.1	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP70	0.2-0.3	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP71	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP71	0.4-0.5	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP72	1-1.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP73	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP73	0.5-0.6	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
QC11 (Duplicate of TP073-0.5-0.6)	0.5-0.6	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
TP74	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP75	0.4-0.5	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP76	1-1.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-
TP77	0.1-0.2	1/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	**<0.5**	1.5	4.75	<0.5	0.7	-
TP78	0.1-0.2	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP78	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP79	0-0.1	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Polycyclic Aromatic Hydrocarbons																								
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(a)pyrene TEQ (WHO)	Benzo(b,k)fluoranthene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Total)	PAHs (Sum of Total)	Phenanthrene	Pyrene	Total +ve PAHs
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5			0.5	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.5		0.1	0.1	
NEPC 2013 EIL, EILs Aged Sediment																					170					
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil							0.7																			
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																										
NEPC 2013 Soil HIL A									3													300	300			
NEPC 2013 Soil HIL C									3													300	300			
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																					3					
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																					NL					
Field ID	Depth	Date																								
TP80	0.4-0.5	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP81	0.5-0.6	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP82	0.2-0.2	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP83	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP84	0.4-0.5	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP85	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP86	1.5-1.6	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP87	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	0.25	-	-	-
TP87	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP88	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP89	0.7-0.8	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	0.25	-	-	-
TP90	0.1-0.2	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	0.25 - 3.75	<0.5	<0.5	-
QC13 (Duplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
QC13/A (Triplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	<0.1	<0.1	<0.1	<0.1	0.1	-	-	-	<0.5	<0.2	-	0.1	-	0.1	<0.1	0.2	<0.1	<0.1	**<0.1**	-	1.25	<0.1	0.2	0.62
TP91	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	0.25 - 1.5	-	-	-
TP92	0.4-0.5	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP93	0.4-0.5	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP94	0-0.1	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP95	0.1-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP96	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP96	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP97	0.3-0.4	4/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP98	2.4-2.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-
TP99	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	0.25	-	-	-
TP100	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	0.3-0.4	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP101	0.5-1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	0.25	-	-	-
TP102	0.1-0.2	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP103	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**<0.5**	-	1.75	-	-	-
TP104	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	0-0.1	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP106	0.3-0.4	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	5.25	<0.5	<0.5	-
TP107	0.2-0.3	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
TP108	0-0.1	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	0.25 - 3.75	<0.5	<0.5	-
TP109	0.7-0.8	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
501	Surface	5/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-
T06	1.1-1.1	31/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	2.2	5.45	1.5	0.7	-
T06	1.4-1.5	31/07/2014	<0.5	<0.5	<0.5	0.9	**0.9**	1.2	1.5	1.7	-	-	0.9	<0.5	1	0.9	<0.5	1.4	<0.5	<0.5	**<0.5**	7.5	8.85	<0.5	1.5	-
T11	0.9-1	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
T11	1.8-1.9	6/08/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	-	<0.5	<0.5	-
T12	0.4-0.5	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5	3.75	<0.5	<0.5	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			BTEX								TPHs (NEPC 1999)						TRHs (NEPC 2013)							
			Benzene	Ethylbenzene	BTEX (Sum of Total)	Toluene	Xylene (m & p)	Xylene (o)	Xylene (Total)	Xylene (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C36 (Sum of Total)	C6-C10 Fraction	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	C6 - C10 less BTEX (F1)	>C10 - C16 less Naphthalene (F2)	>C10-C40 (Sum of Total)	
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EQL			0.1	0.1		0.1	0.2	0.1	0.3		20	20	50	50	50		20	50	100	100	20	50		
NEPC 2013 EIL, EILs Aged Sediment																								
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil			50	70		85			105								180	120	300	2800				
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																	700	1000	2500	10000				
NEPC 2013 Soil HIL A																								
NEPC 2013 Soil HIL C																								
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m			0.5	55		160			40												45	110		
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m			NL	NL		NL			NL												NL	NL		
Field ID	Depth	Date																						
TP01	0-0.1	6/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
QC15 (Duplicate of TP01-0.0-0.1)	0-0.1	6/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
QC15A (Triplicate of TP01-0.0-0.1)		6/08/2014	**<0.2**	**<1**	2.35	**<0.5**	<2	<1	-	1.5	<25	<50	<100	<100	-	125	<25	<50	<100	<100	**<25**	**<50**	125	
TP01	0.6-0.7	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP02	0-0.1	6/08/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP02	0.5-0.6	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP03	0-0.1	6/08/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP04	0.4-0.5	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP05	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP06	0.3-0.4	6/08/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP06	1.9-2	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP07	0-0.1	6/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	33	58	93	180	184	<20	<50	110	<100	**<20**	**<50**	185	
TP07	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP08	0-0.1	6/08/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP09	0.1-0.2	6/08/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP09	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP10	0.6-0.7	6/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	63	63	98	<20	<50	<100	<100	**<20**	**<50**	125	
TP10	0.9-1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP11	0.8-0.9	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	29	2700	3100	5800	5829	<20	52	**4900**	1400	**<20**	**52**	6352	
TP11	1.1-1.3	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP110	0.4-0.5	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP110	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP12	0.4-0	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP13	0.2-0.3	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	78	94	170	182	<20	<50	160	<100	**<20**	**<50**	235	
QC08 (Duplicate of TP013-0.2-0.3)	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
QC08A (Triplicate of TP013-0.2-0.3)		1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP13	0.3-0.4	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP14	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP15	0.4-0.5	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP16	0.4-0.5	29/07/2014	**<0.1**	**<0.1**	0.30	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	130.00	120.00	250.00	500.00	0.50	<50	240.00	<100	**<0.5**	**<50**	240.00	
QC01 (duplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	99	110	210	219	<20	<50	190	<100	**<20**	**<50**	265	
QC01A (triplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	**<0.2**	**<1.0**	2.35	**<0.5**	<2.0	<1.0	-	-	-	<50	<100	150.00	150.00	150.00	<25	-	-	-	**<25**	**<50**	-	
TP16	0.7-0.8	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	140	13000	8300	21000	21440	<20	**610**	**20000**	**3200**	**<20**	**610**	23810	
TP16	0.9-1	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	35	1900	2000	3900	3935	<20	76	**3500**	930	**<20**	**75**	4506	
TP16	1-1.1	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP17	0.3-0.4	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP18	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP19	0.8-0.9	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP19	0.9-1	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP20	0.8-0.9	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP21	1.9-2	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	97	97	132	<20	<50	<100	<100	**<20**	**<50**	125	
QC02 (Duplicate of TP21-1.9-2.0)	1.9-2	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
QC02A (Triplicate of TP21-1.9-2.0)	1.9-2.0	29/07/2014	**<0.2**	**<1**	2.35	**<0.5**	<2	<1	-	1.5	<25	<50	<100	<100	-	125	<25	<50	<100	<100	**<25**	**<50**	125	
TP22	1.4-1.5	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	92	150	240	252	<20	<50	210	<100	**<20**	**<50**	285	
TP22	1.9-2	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP23	0.4-0.5	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	490	580	1100	1080	<20	<50	**980**	230	**<20**	**<50**	1235	
TP23	1-1.1	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP24	0-0.1	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP24	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP25	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP26	0.7-0.8	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP27	1.5-1.6	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP28	0.2-0.3	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP28	0.6-0.7	30/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP29	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP29	1.4-1.5	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP30	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP31	0.1-0.2	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	60	100	160	170	<20	<50	140	<100	**<20**	**<50**	215	
TP32	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP33	1-1.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP33	2.1-2.2	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			BTEX								TPHs (NEPC 1999)						TRHs (NEPC 2013)							
			Benzene	Ethylbenzene	BTEX (Sum of Total)	Toluene	Xylene (m & p)	Xylene (o)	Xylene (Total)	Xylene (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C36 (Sum of Total)	C6-C10 Fraction	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	C6 - C10 less BTEX (F1)	>C10 - C16 less Naphthalene (F2)	>C10-C40 (Sum of Total)	
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EQL			0.1	0.1		0.1	0.2	0.1	0.3		20	20	50	50	50		20	50	100	100	20	50		
NEPC 2013 EIL, EILs Aged Sediment																								
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil			50	70		85			105								180	120	300	2800				
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																	700	1000	2500	10000				
NEPC 2013 Soil HIL A																								
NEPC 2013 Soil HIL C																								
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m			0.5	55		160			40												45	110		
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m			NL	NL		NL			NL												NL	NL		
Field ID	Depth	Date																						
TP34	0.9-1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP35	0.5-0.6	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP36	0.3-0.4	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
QC04 (Duplicate of TP036-0.3-0.4)	0.3-0.4	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
QC04A (Triplicate of TP036-0.3-0.4)	0.3-0.4	31/07/2014	**<0.2**	**<1**	-	**<0.5**	<2	<1	-	-	<25	<50	<100	<100	-	-	<25	<50	<100	<100	**<25**	**<50**	-	
TP38	0.1-0.2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP39	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP40	0.9-1	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP40	2-2.1	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP41	1.8-1.9	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP42	0-0.1	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	71	130	200	-	<20	<50	160	120	**<20**	**<50**	-	
TP42	0.4-0.5	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP43	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP44	0.2-0.3	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	29	<50	<50	<50	79	<20	<50	<100	<100	**<20**	**<50**	125	
QC03 (Duplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
QC03A (Triplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	**<0.2**	**<1**	2.35	**<0.5**	<2	<1	-	1.5	<25	<50	<100	<100	-	125	<25	<50	<100	<100	**<25**	**<50**	125	
TP45	0.5-0.6	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP46	0.4-0.5	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP47	0-0.1	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP48	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP49	1-1.1	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP50	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP50	1-1.1	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP50	2.4-2.5	30/07/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-	
TP51	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP52	0.9-1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP53	0-0.1	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP54	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP55	0.4-0.5	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP55	2.9-3	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP56	0.3-0.4	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	110	110	145	<20	<50	<100	150	**<20**	**<50**	225	
TP56	0.7-0.8	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP57	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP58	2.2-2.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP59	0.0-0.1	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP59	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP60	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP60	1-1.1	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP61	0.9-1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP61	1-1.1	4/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	85	85	120	<20	<50	<100	<100	**<20**	**<50**	125	
TP62	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP63	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP65	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP66	0.1-0.2	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	69	69	104	<20	<50	<100	<100	**<20**	**<50**	125	
QC14 (Duplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
QC14/A (Triplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	**<0.2**	**<1**	2.35	**<0.5**	<2	<1	-	1.5	<25	<50	<100	<100	-	125	<25	<50	<100	<100	**<25**	**<50**	125	
TP67	0.1-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP68	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP69	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP70	0.2-0.3	4/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP71	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP71	0.4-0.5	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP72	1-1.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP73	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP73	0.5-0.6	4/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
QC11 (Duplicate of TP073-0.5-0.6)	0.5-0.6	4/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	
TP74	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP75	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP76	1-1.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP77	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP78	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP78	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP79	0-0.1	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125	

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			BTEX								TPHs (NEPC 1999)						TRHs (NEPC 2013)						
			Benzene	Ethylbenzene	BTEX (Sum of Total)	Toluene	Xylene (m & p)	Xylene (o)	Xylene (Total)	Xylene (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	>C10-C36 (Sum of Total)	C6-C10 Fraction	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	C6 - C10 less BTEX (F1)	>C10 - C16 less Naphthalene (F2)	>C10-C40 (Sum of Total)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1		0.1	0.2	0.1	0.3		20	20	50	50	50		20	50	100	100	20	50	
NEPC 2013 EIL, EILs Aged Sediment																							
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil			50	70		85			105								180	120	300	2800			
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																	700	1000	2500	10000			
NEPC 2013 Soil HIL A																							
NEPC 2013 Soil HIL C																							
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m			0.5	55		160			40												45	110	
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m			NL	NL		NL			NL												NL	NL	
Field ID	Depth	Date																					
TP80	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP81	0.5-0.6	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP82	0.2-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP83	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP84	0.4-0.5	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP85	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP86	1.5-1.6	4/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	67	67	102	<20	<50	<100	<100	**<20**	**<50**	125
TP87	0.1-0.2	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP87	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP88	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP89	0.7-0.8	1/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP90	0.1-0.2	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
QC13 (Duplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC13/A (Triplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP91	0.1-0.2	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	78	120	200	208	<20	<50	140	<100	**<20**	**<50**	215
TP92	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP93	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP94	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP95	0.1-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP96	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP96	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP97	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP98	2.4-2.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP99	0.1-0.2	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	140	140	175	<20	<50	<100	140	**<20**	**<50**	215
TP100	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	0.5-1	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP102	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	0.2-0.3	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP104	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	0-0.1	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP106	0.3-0.4	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP107	0.2-0.3	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
TP108	0-0.1	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	52	52	87	<20	<50	<100	<100	**<20**	**<50**	125
TP109	0.7-0.8	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
501	Surface	5/08/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	<20	<50	<50	<50	60	<20	<50	<100	<100	**<20**	**<50**	125
T06	1.1-1.1	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	69	540	260	870	869	<20	**220**	**580**	240	**<20**	**220**	1040
T06	1.4-1.5	31/07/2014	**<0.1**	**<0.1**	0.3	**<0.1**	<0.2	<0.1	**<0.3**	0.15	<20	34	260	88	380	382	<20	100	240	120	**<20**	**100**	460
T11	0.9-1	6/08/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-
T11	1.8-1.9	6/08/2014	**<0.1**	**<0.1**	-	**<0.1**	<0.2	<0.1	**<0.3**	-	<20	<20	<50	<50	<50	-	<20	<50	<100	<100	**<20**	**<50**	-
T12	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Polychlorinated Biphenyls								Phenols													
			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,4-dinitrophenol	2,6-dichlorophenol	2-chlorophenol	2-Methylphenol	2-nitrophenol	3- & 4-Methylphenol	4-Chloro-3-Methylphenol	4-nitrophenol	Phenol
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1		0.1	0.1	0.1	0.1	0.1	0.5		0.5	0.5	0.5	0.5			0.5	0.5	0.5	1	0.5		0.5
NEPC 2013 EIL, EILs Aged Sediment																								
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																								
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																								
NEPC 2013 Soil HIL A										1														3000
NEPC 2013 Soil HIL C										1														40000
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																								
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																								
Field ID	Depth	Date																						
TP01	0-0.1	6/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC15 (Duplicate of TP01-0.0-0.1)	0-0.1	6/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC15A (Triplicate of TP01-0.0-0.1)		6/08/2014	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP01	0.6-0.7	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0.5-0.6	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04	0.4-0.5	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06	1.9-2	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09	0.1-0.2	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10	0.6-0.7	6/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10	0.9-1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	0.8-0.9	29/07/2014	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
TP11	1.1-1.3	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP110	0.4-0.5	5/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP110	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12	0.4-0	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC08 (Duplicate of TP013-0.2-0.3)	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC08A (Triplicate of TP013-0.2-0.3)		1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	0.3-0.4	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	0.4-0.5	31/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16	0.4-0.5	29/07/2014	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	-	-
QC01 (duplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
QC01A (triplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<1.0	<1.0	<1.0	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<2.0	-	<10.0	<1.0
TP16	0.7-0.8	29/07/2014	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	1.4	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
TP16	0.9-1	29/07/2014	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
TP16	1-1.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17	0.3-0.4	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	0.8-0.9	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	0.9-1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20	0.8-0.9	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21	1.9-2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02 (Duplicate of TP21-1.9-2.0)	1.9-2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02A (Triplicate of TP21-1.9-2.0)	1.9-2.0	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP22	1.4-1.5	29/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP22	1.9-2	29/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
TP23	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP23	1-1.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP24	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP24	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP25	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP26	0.7-0.8	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP27	1.5-1.6	1/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28	0.2-0.3	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28	0.6-0.7	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP29	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP29	1.4-1.5	30/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP30	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP31	0.1-0.2	29/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
TP32	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP33	1-1.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP33	2.1-2.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Polychlorinated Biphenyls								Phenols														
			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,4-dinitrophenol	2,6-dichlorophenol	2-chlorophenol	2-Methylphenol	2-nitrophenol	3- & 4-Methylphenol	4-Chloro-3-Methylphenol	4-nitrophenol	Phenol
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1		0.1	0.1	0.1	0.1	0.1	0.5		0.5	0.5	0.5	0.5			0.5	0.5	0.5	1	0.5		0.5
NEPC 2013 EIL, EILs Aged Sediment																								
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																								
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																								
NEPC 2013 Soil HIL A										1														3000
NEPC 2013 Soil HIL C										1														40000
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																								
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																								
Field ID	Depth	Date																						
TP34	0.9-1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP35	0.5-0.6	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP36	0.3-0.4	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04 (Duplicate of TP036-0.3-0.4)	0.3-0.4	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04A (Triplicate of TP036-0.3-0.4)	0.3-0.4	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP38	0.1-0.2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP39	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP40	0.9-1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP40	2-2.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP41	1.8-1.9	1/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP42	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP42	0.4-0.5	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP43	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP44	0.2-0.3	29/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
QC03 (Duplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
QC03A (Triplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<2	-	<10	<1
TP45	0.5-0.6	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP46	0.4-0.5	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP47	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP48	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP49	1-1.1	30/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP50	0-0.1	30/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<1	<0.5	-	<0.5
TP50	1-1.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP50	2.4-2.5	30/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP51	0-0.1	31/07/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP52	0.9-1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP53	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP54	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP55	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP55	2.9-3	5/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP56	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP56	0.7-0.8	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP57	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP58	2.2-2.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP59	0.0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP59	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP60	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP60	1-1.1	1/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP61	0.9-1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP61	1-1.1	4/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP62	0.4-0.5	4/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP63	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP65	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP66	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC14 (Duplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC14/A (Triplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP67	0.1-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP68	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP69	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP70	0.2-0.3	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP71	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP71	0.4-0.5	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP72	1-1.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP73	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP73	0.5-0.6	4/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC11 (Duplicate of TP073-0.5-0.6)	0.5-0.6	4/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP74	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP75	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP76	1-1.1	4/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP77	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP78	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP78	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP79	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Polychlorinated Biphenyls								Phenols														
			Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,4-dinitrophenol	2,6-dichlorophenol	2-chlorophenol	2-Methylphenol	2-nitrophenol	3- & 4-Methylphenol	4-Chloro-3-Methylphenol	4-nitrophenol	Phenol
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1		0.1	0.1	0.1	0.1	0.1	0.5		0.5	0.5	0.5	0.5			0.5	0.5	0.5	1	0.5		0.5
NEPC 2013 EIL, EILs Aged Sediment																								
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																								
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																								
NEPC 2013 Soil HIL A										1														3000
NEPC 2013 Soil HIL C										1														40000
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																								
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																								
Field ID	Depth	Date																						
TP80	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP81	0.5-0.6	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP82	0.2-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP83	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP84	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP85	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP86	1.5-1.6	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP87	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP87	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP88	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP89	0.7-0.8	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP90	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC13 (Duplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC13/A (Triplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP91	0.1-0.2	5/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP92	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP93	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP94	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP95	0.1-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP96	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP96	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP97	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP98	2.4-2.5	4/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP99	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP100	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	0.5-1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	0.2-0.3	5/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	0.3-0.4	5/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP107	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP108	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP109	0.7-0.8	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S01	Surface	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T06	1.1-1.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T06	1.4-1.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T11	0.9-1	6/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T11	1.8-1.9	6/08/2014	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T12	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Organochlorine Pesticides																										Major Anions
			Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	beta-BHC	delta-BHC	alpha-Chlordane	gamma-Chlordane	Chlordane	DDD	DDE	DDT	DDT+DDE+DDD (Sum of Total)	Dieldrin	Endosulfan alpha	Endosulfan beta	Endosulfan Sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Pentachlorophenol	Toxaphene	Chloride
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.05		0.05	0.05	0.05			0.1	0.05	0.05	0.05		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	1	1	10
NEPC 2013 EIL, EILs Aged Sediment													180															
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																												
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																												
NEPC 2013 Soil HIL A				6						50				240					10			6			300	100	20	
NEPC 2013 Soil HIL C				10						70				400					20			10			400	120	30	
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																												
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																												
Field ID	Depth	Date																										
TP01	0-0.1	6/08/2014	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
QC15 (Duplicate of TP01-0.0-0.1)	0-0.1	6/08/2014	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
QC15A (Triplicate of TP01-0.0-0.1)		6/08/2014	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	-	-
TP01	0.6-0.7	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0.5-0.6	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04	0.4-0.5	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06	1.9-2	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07	0-0.1	6/08/2014	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP07	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08	0-0.1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP09	0.1-0.2	6/08/2014	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP09	0.3-0.4	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10	0.6-0.7	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10	0.9-1	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	0.8-0.9	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-
TP11	1.1-1.3	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP110	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP110	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12	0.4-0	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	0.2-0.3	1/08/2014	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
QC08 (Duplicate of TP013-0.2-0.3)	0.2-0.3	1/08/2014	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
QC08A (Triplicate of TP013-0.2-0.3)		1/08/2014	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	-	-
TP13	0.3-0.4	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP15	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP16	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	<0.05	0.27	0.06	0.33	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<1	-
QC01 (duplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	<0.05	0.06	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	0.16	<0.05	0.21	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<1	-
QC01A (triplicate of TP16-0.4-0.5)	0.4-0.5	29/07/2014	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	-	-
TP16	0.7-0.8	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-
TP16	0.9-1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-
TP16	1-1.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP17	0.3-0.4	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	0.8-0.9	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	0.9-1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20	0.8-0.9	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21	1.9-2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02 (Duplicate of TP21-1.9-2.0)	1.9-2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02A (Triplicate of TP21-1.9-2.0)	1.9-2.0	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP22	1.4-1.5	29/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP22	1.9-2	29/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<1	-
TP23	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP23	1-1.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP24	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP24	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP25	0.4-0.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP26	0.7-0.8	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP27	1.5-1.6	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28	0.2-0.3	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28	0.6-0.7	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP29	0-0.1	30/07/2014	<0.05	-	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP29	1.4-1.5	30/07/2014	<0.05	-	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP30	0-0.1	29/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP31	0.1-0.2	29/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<1	-
TP32	0-0.1	31/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP33	1-1.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP33	2.1-2.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Organochlorine Pesticides																										Major Anions
			Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	beta-BHC	delta-BHC	alpha-Chlordane	gamma-Chlordane	Chlordane	DDD	DDE	DDT	DDT+DDE+DDD (Sum of Total)	Dieldrin	Endosulfan alpha	Endosulfan beta	Endosulfan Sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Pentachlorophenol	Toxaphene	Chloride
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.05		0.05	0.05	0.05			0.1	0.05	0.05	0.05		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	1	1	10
NEPC 2013 EIL, EILs Aged Sediment													180															
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																												
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																												
NEPC 2013 Soil HIL A				6						50				240					10			6			300	100	20	
NEPC 2013 Soil HIL C				10						70				400					20			10			400	120	30	
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																												
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																												
Field ID	Depth	Date																										
TP34	0.9-1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP35	0.5-0.6	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP36	0.3-0.4	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04 (Duplicate of TP036-0.3-0.4)	0.3-0.4	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04A (Triplicate of TP036-0.3-0.4)	0.3-0.4	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP38	0.1-0.2	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP39	0.1-0.2	1/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP40	0.9-1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP40	2-2.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP41	1.8-1.9	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP42	0-0.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP42	0.4-0.5	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP43	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP44	0.2-0.3	29/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<1	-
QC03 (Duplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<1	-
QC03A (Triplicate of TP44-0.2-0.3)	0.2-0.3	29/07/2014	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<10	-	-
TP45	0.5-0.6	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP46	0.4-0.5	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP47	0-0.1	30/07/2014	<0.05	-	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP48	0-0.1	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP49	1-1.1	30/07/2014	<0.05	-	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP50	0-0.1	30/07/2014	<0.05	-	<0.05	<0.05	<0.05	-	-	0.6	0.11	<0.05	<0.05	0.11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<1	<1	-
TP50	1-1.1	30/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP50	2.4-2.5	30/07/2014	<0.05	-	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP51	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP52	0.9-1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP53	0-0.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP54	0-0.1	31/07/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP55	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP55	2.9-3	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP56	0.3-0.4	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP56	0.7-0.8	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP57	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP58	2.2-2.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP59	0.0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP59	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP60	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP60	1-1.1	1/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP61	0.9-1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP61	1-1.1	4/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	<10
TP62	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP63	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP65	0.2-0.3	1/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP66	0.1-0.2	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
QC14 (Duplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
QC14/A (Triplicate of TP066-0.1-0.2)	0.1-0.2	5/08/2014	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	-	-
TP67	0.1-0.1	4/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP68	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP69	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP70	0.2-0.3	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP71	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP71	0.4-0.5	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP72	1-1.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP73	0-0.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP73	0.5-0.6	4/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
QC11 (Duplicate of TP073-0.5-0.6)	0.5-0.6	4/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP74	0-0.1	4/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP75	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP76	1-1.1	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP77	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP78	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP78	0.5-0.6	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP79	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 3: Soil Analytical Results

			Organochlorine Pesticides																										Major Anions
			Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	beta-BHC	delta-BHC	alpha-Chlordane	gamma-Chlordane	Chlordane	DDD	DDE	DDT	DDT+DDE+DDD (Sum of Total)	Dieldrin	Endosulfan alpha	Endosulfan beta	Endosulfan Sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Pentachlorophenol	Toxaphene	Chloride
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.05		0.05	0.05	0.05			0.1	0.05	0.05	0.05		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	1	1	10
NEPC 2013 EIL, EILs Aged Sediment													180															
NEPC 2013 ESL Urban Residential and Public Open Space, Coarse Soil																												
NEPC 2013 Management Limits - Res., Parkland and Pub. Open Space, Coarse																												
NEPC 2013 Soil HIL A				6						50				240					10			6			300	100	20	
NEPC 2013 Soil HIL C				10						70				400					20			10			400	120	30	
NEPC 2013 Soil HSL A and B for Vapour Intrusion - Sand 0 to <1m																												
NEPC 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																												
Field ID	Depth	Date																										
TP80	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP81	0.5-0.6	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP82	0.2-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP83	0-0.1	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP84	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP85	0-0.1	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP86	1.5-1.6	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP87	0.1-0.2	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP87	0.2-0.3	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP88	0.1-0.2	1/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP89	0.7-0.8	1/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP90	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC13 (Duplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC13/A (Triplicate of TP90-0.1-0.2)	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP91	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP92	0.4-0.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP93	0.4-0.5	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP94	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP95	0.1-0.2	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP96	0-0.1	4/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP96	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10
TP97	0.3-0.4	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP98	2.4-2.5	4/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP99	0.1-0.2	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP100	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	0.3-0.4	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP101	0.5-1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP102	0.1-0.2	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP103	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP104	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP105	0-0.1	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
TP106	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP106	0.3-0.4	5/08/2014	<0.05	0.05	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	<10
TP107	0.2-0.3	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP108	0-0.1	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP109	0.7-0.8	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S01	Surface	5/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T06	1.1-1.1	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T06	1.4-1.5	31/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T11	0.9-1	6/08/2014	<0.05	-	<0.05	<0.05	<0.05	-	-	<0.1	<0.05	<0.05	<0.05	<0.075	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	-	<1	-
T11	1.8-1.9	6/08/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T12	0.4-0.5	29/07/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386

Table 4: TCLP Soil Analytical Results

				Heavy Metal								PAH																				
				Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	Naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Total)	Phenanthrene	Pyrene	Carcinogenic PAHs as B(a)P TPE	PAHs (Sum of Total)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/l	µg/L
EQL				0.1	10	5	50	50	10	1	50		1	1	1	1	1	1	1	1	1	2	1	1			20	20	20	0.1	
Field_ID	LocCode	Depth	Date																													
TP11	TP11	0.8-0.9	29/07/2014	-	-	-	-	-	-	-	-	-	15	10	1	<1	<1	<1	<1	<1	<1	<1	<1	8	<1	110	150	6	<1	1.21	154.5
TP16	TP16	0.7-0.8	29/07/2014	-	-	-	-	-	-	-	-	-	45	3	8	<1	<1	<1	<1	<1	<1	<1	7	17	<1	37	160	35	5	1.21	160.5
TP98	TP98	2.4-2.5	4/08/2014	<10	94	<50	190	2900	<1	100	42000.00	<20	58	7	2	<1	<1	<1	<1	<1	<1	<1	<1	23	<1	110	210	12	<1	1.21	216.5

Site: Thornleigh Reservoir
Client: Sydney Water
Job Number: 43386
Table 5: Soil Microbiological Results

Client Sample Id	Date Sampled	Time Received	Date Received	Test Comment	E.coli	Faecal Coliforms	Salmonella spp	Adenovirus	Enterovirus	Reovirus	Helminth	Total solids	Moisture	pH	Nitrite Nitrogen NO2-N in sediment	Nitrate Nitrogen by Caculation	TN by calculation in soil & sediment	Oxidised Nitrogen in sediment by H2O	Total Kjeldahl Nitrogen	Total Phosphorus	Sulphate(1:5)	Sulphide in Soils	Chloride	Lime Value
Test Method					MI11	MI11	MI05	MV10	MV10	MV10	XAL_HOVA_S	WC47SL	WC56NS	WC100	NU47	NU48	NU66	NU45	NU72	TM56MKG	XSE_SO4	XSES_SULP	XSE_CL	XSE_ALK
Units					MPN/100g	MPN/100g	Present/absent	MPN IU	MPN IU	MPN IU	Orgs / 4g	% (w/w)	% (w/w)	pH units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg SO4 / kg		mg/kg	mg CaCO3/L
																						A		
COMP 1*	29/07/2014	4:53:09 PM	29/07/2014	[1][2][3]	49	49	A	<1.1	<1.1	<3.6	<1	94.13	5.87	7.84	0.5	<5.0	934	-	-	327	7.8	A	103.5	0.3
COMP 2*	30/07/2014	4:20:08 PM	30/07/2014	[4][5][6]	<2	23	A	<1.1	<1.1	<3.6	<1	81.97	18	7.17	0.3	<5.0	567	-	-	552	36.8	A	94.3	0.7
COMP 3*	30/07/2014	4:20:08 PM	30/07/2014	[7][8][9]	79	79	A	<1.1	<1.1	<3.6	<1	85.93	14.1	8.1	0.5	<5.0	783	-	-	283	14.5	A	95.2	0.85
BQC01 (duplicate of COMP 3)	30/07/2014	4:20:08 PM	30/07/2014	[10][11][12]	49	49	A	<1.1	<1.1	<3.6	<1	86.31	13.7	8.18	1	<5.0	829	-	-	340	9.4	A	216	0.61
BQC01/A (triplicate of COMP 3)	30/07/2014	-	-	-	1	>2500 (MPN/g)	A	<1 per 20 g	<1 per 20 g	<1 per 20 g	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMP 4*	31/07/2014	3:47:01 PM	31/07/2014	[13][14][15]	22	22	A	<1.1	<1.1	<3.6	<1	86.7	13.3	7.1	1	<5.0	1710	-	-	928	<5	A	61.1	0.27
COMP 5*	1/08/2014	4:47:34 PM	4/08/2014	[16][17][18]	25	25	A	<1.1	<1.1	<3.6	<1	85.72	14.3	6.76	0.8	<5.0	932	-	-	564	10.2	A	133.1	0.37
COMP 6*	4/08/2014	4:47:34 PM	4/08/2014	[19][20][21]	<2	<2	A	<1.1	<1.1	<3.6	<1	85.28	14.7	6.7	0.5	19.3	1110	-	-	820	8.6	A	117.7	0.12
COMP 7*	6/08/2014	4:39:48 PM	6/08/2014	[22][23][24][25]	5	5	A	<1.1	<1.1	<3.6	<1	89.09	10.9	6.98	0.5	<5.0	714	-	-	174	16	A	128.6	0.35

Notes- unless otherwise detailed:
[1] - No Salmonella detected in 50g of dry weight
[2] - Adenovirus#c Enterovirus and Reovirus not detected. MPNIU relates to sample weight. 4g dry weight sample analysed.
[3] - Analysed by SESL. Reference number 5000380190.
[4] - No Salmonella detected in 50g of dry weight
[5] - Adenovirus#c enterovirus and reovirus not detected. MPNIU relates to sample weight. 4g dry weight sample analysed.
[6] - Analysed by SESL. Reference number 5000380190.
[7] - No Salmonella detected in 50g of dry weight
[8] - Adenovirus#c enterovirus and reovirus not detected. MPNIU relates to sample weight. 4g dry weight sample analysed.
[9] - Analysed by SESL. Reference number 5000380190.
[10] - No Salmonella detected in 50g of dry weight
[11] - Adeno#c Entero and Reo viruses have not been detected. MPNIU relates to sample weight. 4g dry weight sample analysed.
[12] - Analysed by SESL. Reference number 5000380190.
[13] - No Salmonella detected in 50g dry weight of the sample
[14] - Adeno#c Entero and Reo viruses have not been detected. MPNIU relates to sample weight. 4g dry weight sample analysed.
[15] - Analysed by SESL. Reference number 5000380190.
[16] - No Salmonella detected in 50g dry weight of the sample
[17] - Adeno#c Entero and Reo viruses have not been detected. MPNIU relates to sample weight. 4g dry weight sample analysed
[18] - Analysed by SESL. Reference number 5000380190
[19] - No Salmonella detected in 50g dry weight of the sample
[20] - Adeno#c Entero and Reo viruses have not been detected. MPNIU relates to sample weight. 4g dry weight sample analysed
[21] - Analysed by SESL. Reference number 5000380190
[22] - No Salmonella detected in 50g dry weight of the sample
[23] - Adeno#c Entero and Reo have not been detected. MPNIU relates to sample weight. 4g dry weight analysed
[24] - Helminth Ova was analysed by ALS#c Report No. 453137
[25] - Analysed by SESL. Reference number 5000380190

*COMP01	TP01-0.8-0.9
	TP22-0.4-0.5
*COMP02	TP28-0.6-0.7
	TP29-0.6
	TP35-1.9-2.0
	TP42-1.0-1.1
*COMP03	TP36-0.9-1.0
	TP42-1.0-1.1
	TP46-0.4-0.5
	TP49-1.0-1.1
	TP50-0.4-0.5
*COMP04	TP20-0.8-0.9
	TP15-1.2-1.3
	TP14-0.5-0.6
	TP32-0.4-0.5
	TP25-0.0-0.1

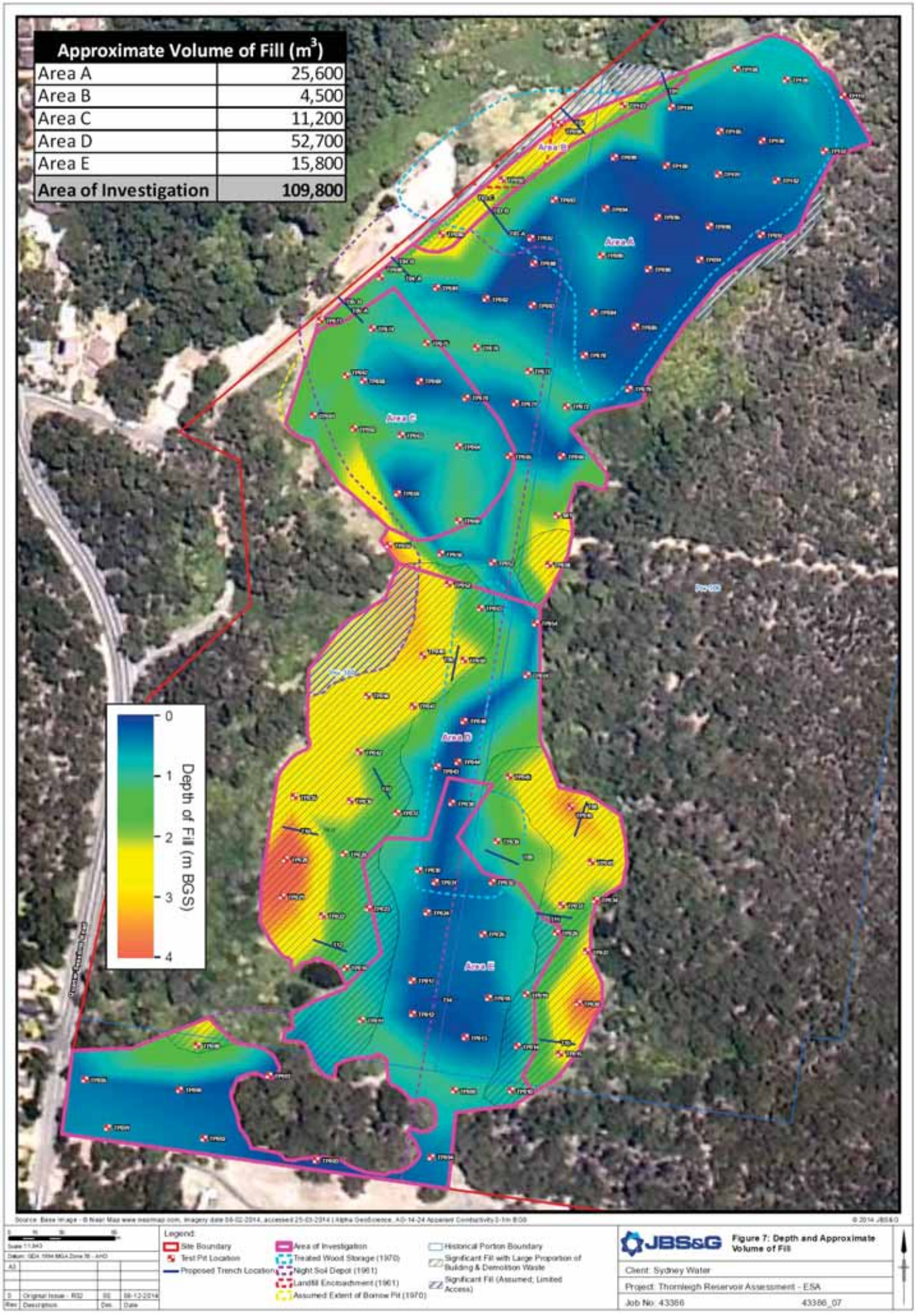
*COMP05	TP33-1.0-1.1
	TP41-1.8-1.9
	TP45-0.5-0.6
	TP39-0.3
	TP34-0.9-1.0
*COMP06	TP73-0.5-0.6
	TP92-1.7-1.8
	TP820.1-0.2
	TP61-1.0-1.1
	TP75-1.3-1.4
*COMP07	TP04-0.0-0.1
	TP07-0.0-0.1
	TP08-1.7-1.8
	TP09-0.1-0.2
	TP10-0.0-0.1

Appendix C - Arcadis (2017) Extract

ARCADIS Design & Consultancy for natural and built assets

Site boundary | Figure 1

Hornsby City Council
Quarter Sessions Road, Westleigh NSW

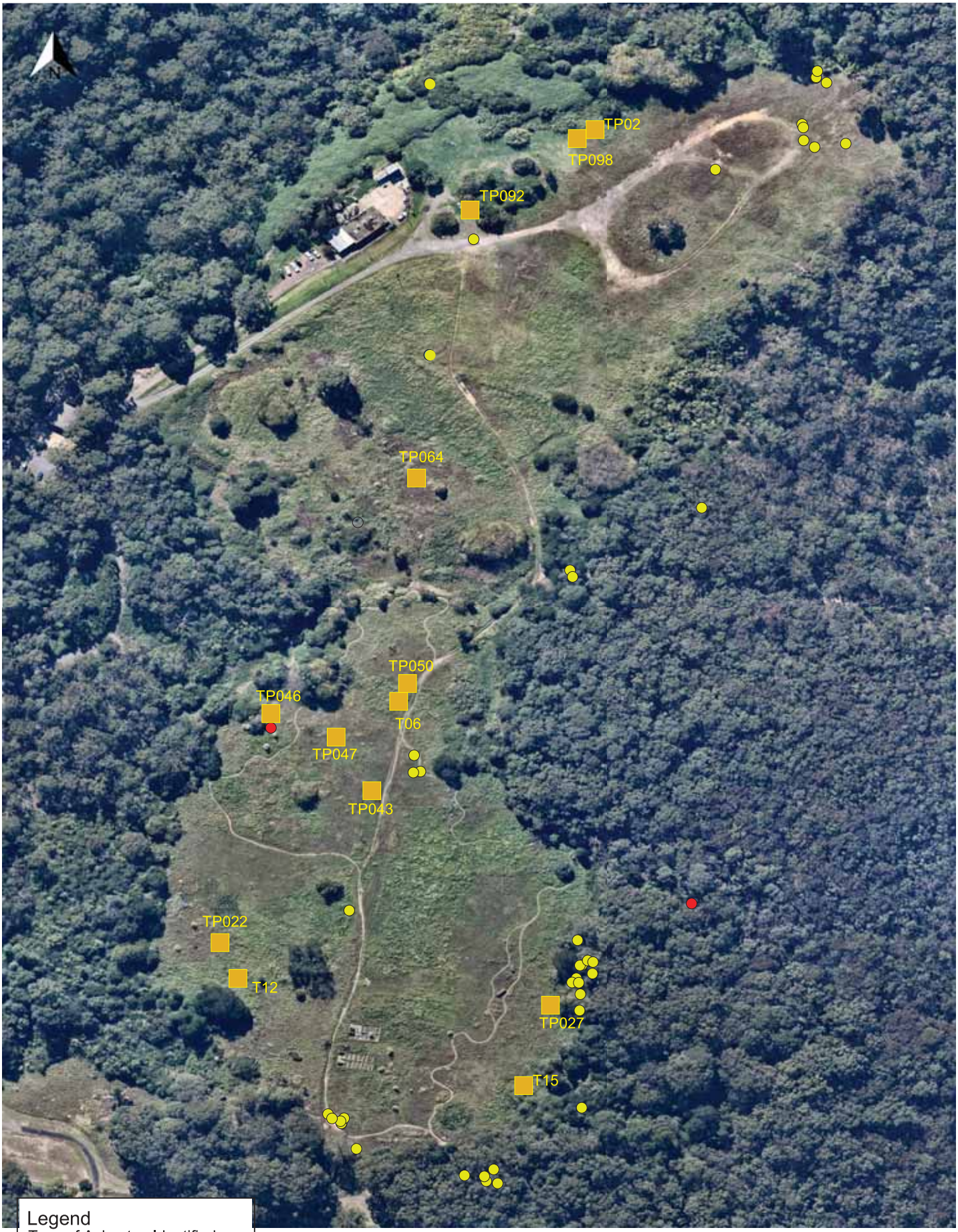


Sourced From: JBS& G Report

ARCADIS Design & Consultancy for natural and built assets

Suspected Asbestos Identified locations | Figure 3

Hornsby City Council
Quarter Sessions Road, Westleigh NSW



Legend
Type of Asbestos Identified
- JBS&G 2014 Test Pits
- Bonded Fragments
- Bonded Pipe

0 50 100 150 200 250 m

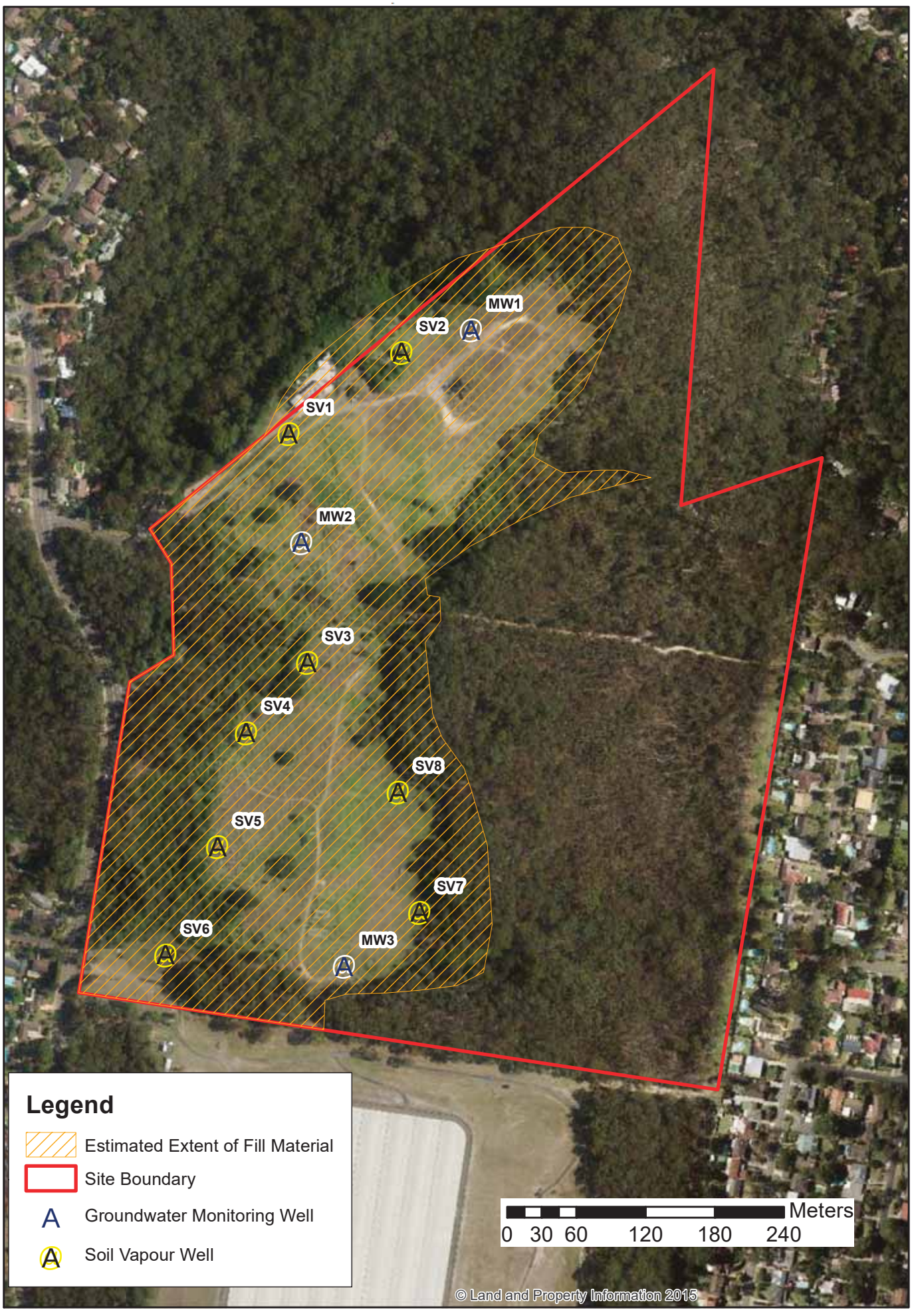
Base image from Nearmap (www.nearmap.com)
Projection WSG 84
Drafted by TS
21/06/2016

ARCADIS Design & Consultancy for natural and built assets

Sample Locations and Extent of Fill | Figure 4

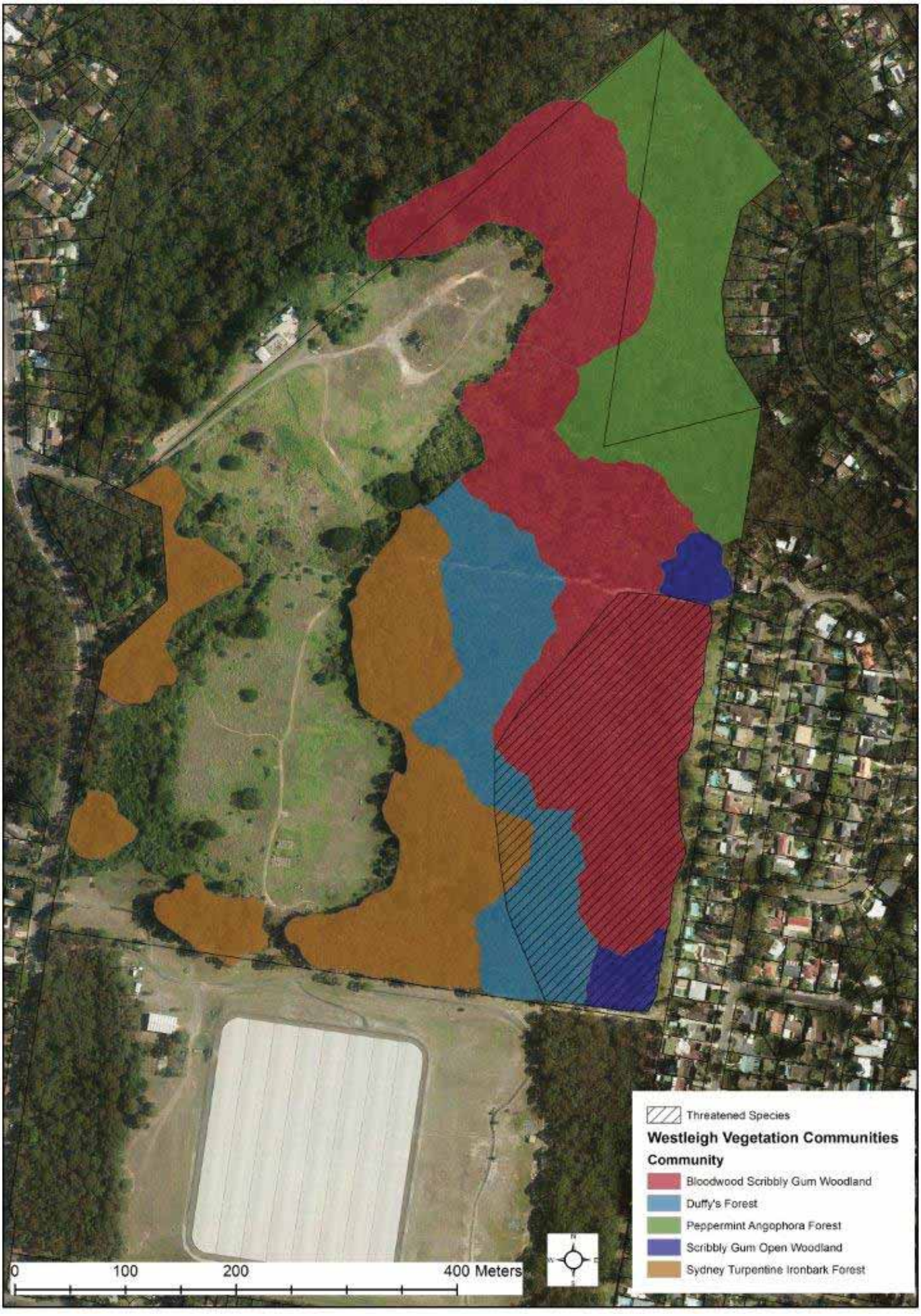
Hornsby City Council

Quarter Sessions Road, Westleigh NSW



Vegetation Communities | Figure 5

Hornsby City Council
Quarter Sessions Road, Westleigh NSW



GAS MONITORING RECORD SHEET

EnvironmentalStrategies
PROVIDING BENEFITS

Field Gas Monitoring Form

Site :	**Ground Conditions :**
Job No : 16163	**Weather :**
Date : 14-9-16	**Pressure :** Ap=989
Instrumentation : GMF **Serial Nos :**	**Start :** mb at 989 lmb
	Finish : mb at

1/2

Hole : SV6	Flow : 0.1 l/hr	Hole : SV1	Flow : 0.6 l/hr
Response Zone :	to	Response Zone :	to
MP State :	R of C : very slow #1	MP State :	R of C : fast #2
SWL : 0.895	MP Depth : m	SWL : 2.658	MP Depth : m
Sample :	BG O_2 : 20.7 % v/v	Sample :	BG O_2 : 20.7 % v/v

Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)
30	0	0	0.1	20.8	30	0	0	9.2	4.7
60	0	0	0.1	20.8	60	0	0	9.4	4.2
90	0	0	0.1	21	90	0	0	9.5	4.1
4:30	0	0	0.4	19.5					
5.00	0	0	0.6	18.9					

Hole : SV3	Flow : 0.0 l/hr	Hole : SV4	Flow : 0.0 l/hr
Response Zone :	to	Response Zone :	to
MP State : ~~Open~~	R of C : fast	MP State : ~~Open~~	R of C :
SWL : 3.335	MP Depth : m	SWL : 2.574	MP Depth : m
Sample : NA	BG O_2 : 21.1 % v/v	Sample : NA	BG O_2 : 21.1 % v/v

Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)
30	0	0	13.7	0	30	0	0	11.7	0.0
60	0	0	14.1	0	60	0	0	12.0	0.0
90	0	0	14.2	0	90	0	0	12.2	0.0

Hole : SV5	Flow : 0.0 l/hr	Hole : SV 8	Flow : 1.8 l/hr
Response Zone :	to	Response Zone :	to DP-9m
MP State :	R of C : fast.	MP State :	R of C :
SWL : 2.172	MP Depth : m	SWL : 2.56	MP Depth : m
Sample :	BG O_2 : 21.4 % v/v	Sample :	BG O_2 : 21.1 % v/v

Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)
30	0	0	5.1	9.7	30	0	0	7.7	17.6
60	0	0	5.2	9.5	60	0	0	7.8	17.6
90	0	0	5.2	9.4	90	0	0	7.8	17.6

NOTES :

SV6# 1 stickup 0.73 m, not sealed on arrival. SV 8 - Stic 0.56m, Sealed
SV1# 2 Stick up 0.83m, Sealed
SV3# 3 stickup 0.87m, sealed
SV4 4 Stickup 0.77m, sealed
SV5 5 Stick up 0.86m, Sealed

Operator : DL

GAS MONITORING RECORD SHEET

EnvironmentalStrategies
PROVIDING BENEFITS

Field Gas Monitoring Form

Site :	**Ground Conditions :** 2/2
Job No :	**Weather :**
Date :	**Pressure :**
Instrumentation : GFM430 Gas Analyser	**Serial Nos :**
	Start : mb at
	Finish : mb at 895

Hole : SU7	Flow : l/hr	Hole : SU7	Flow : l/hr
Response Zone :	to	Response Zone :	to
MP State :	R of C : very slow	MP State :	R of C :
SWL : 2.42	MP Depth : m	SWL :	MP Depth : m
Sample :	BG O_2 : 21.6 % v/v	Sample :	BG O_2 : % v/v

Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)
30	0	0	0.1	21.4	30	0	0	0.6	20.3
60	0	0	0.1	21.5	60	0	0	0.6	20.2
90	0	0	0.1	21.5	90				
5min	0	0	0.4	20.9					
6min	0	0	0.6	20.4					

Hole : SU2	Flow : 0.5 l/hr	Hole :	Flow : l/hr
Response Zone :	to	Response Zone :	to
MP State :	R of C :	MP State :	R of C :
SWL :	MP Depth : m	SWL :	MP Depth : m
Sample :	BG O_2 : % v/v	Sample :	BG O_2 : % v/v

Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)
30	0	0	6.2	6.1	30				
60	0	0	5.7	6.3	60				
90	0	0	5.6	6.4	90				

Hole :	Flow : l/hr	Hole :	Flow : l/hr
Response Zone :	to	Response Zone :	to
MP State :	R of C :	MP State :	R of C :
SWL :	MP Depth : m	SWL :	MP Depth : m
Sample :	BG O_2 : % v/v	Sample :	BG O_2 : % v/v

Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Time (secs)	LEL (%)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)
30					30				
60					60				
90					90				

NOTES :

1 SU7 not sealed on arival, sealed for 1hr before sampling stickup 0.82
2 SU2 stickup 0.86m
3
4
5

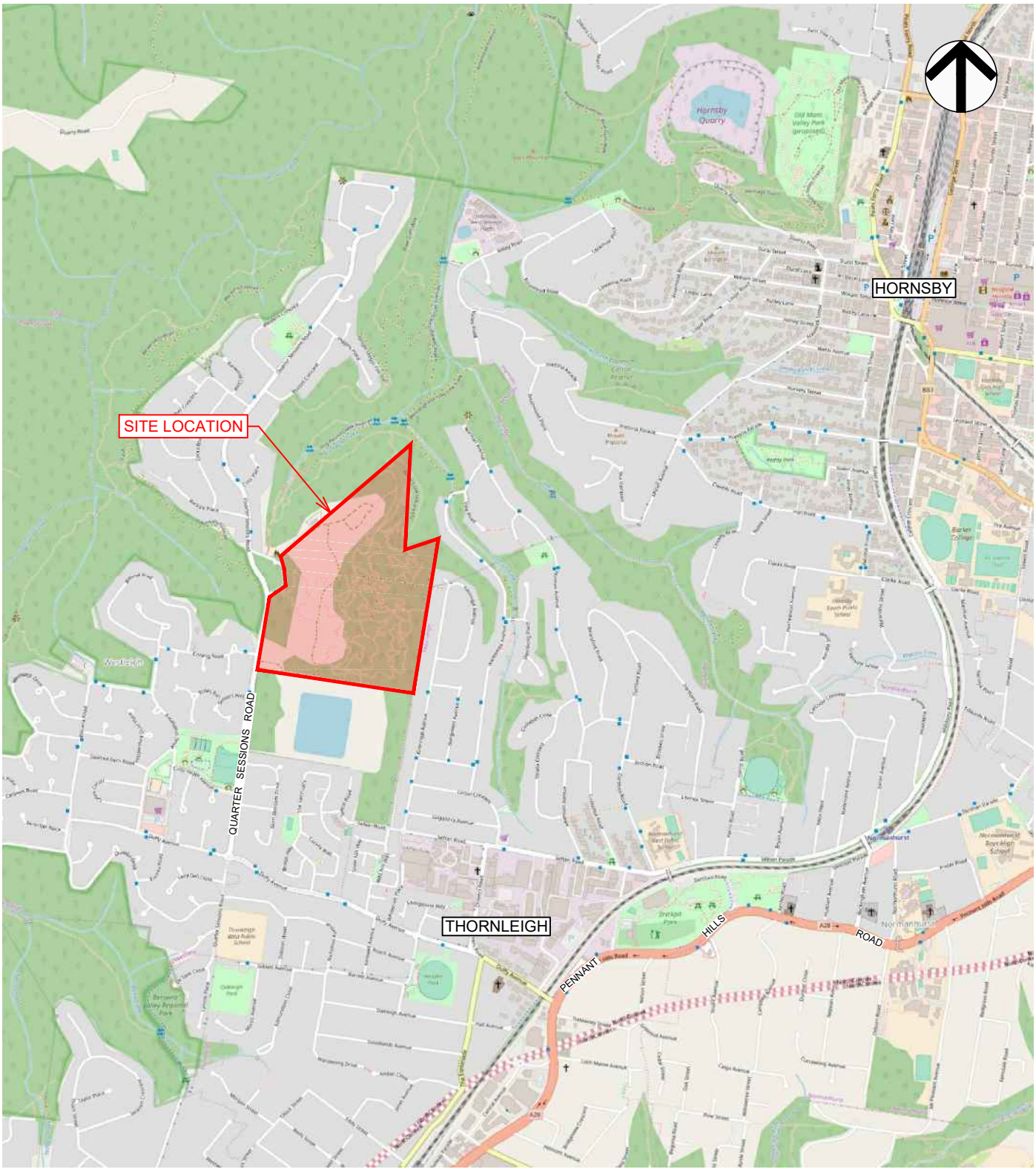
Operator : _____

		Metals								BTEXN							TPH				TRH						PAH																		Nutrients	
		Arsenic-Dissolved	Cadmium-Dissolved	Chromium-Dissolved	Copper-Dissolved	Lead-Dissolved	Mercury-Dissolved	Nickel-Dissolved	Zinc-Dissolved	BTEXN	Toluene	Ethylbenzene	m+p-xylene	o-xylene	Naphthalene	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C6 - C10	C6 - C10 less BTEX (F1)	>C10 - C16	>C10 - C16 less Naphthalene (F2)	>C16 - C34	>C34 - C40	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ	Ammonia as N in water	Nitrate as N in water
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
		1	0.1	1	1	1	0.05	1	1	1	1	1	2	1	1	10	50	100	100	10	10	50	50	100	100	1	1	1	1	1	1	1	1	1	2	1	1	1	1	5	0.005	0.005
GAC		24	0.2	1	1.4	3.4	0.06	11	8		NL	NL	550		16						1000		1000																		900	700
Sample	Date Sampled																																										
MW1	14/09/2016	<1	<0.1	<1	14	2	<0.05	18	39	<1	<1	<1	<2	<1	<1	<10	<50	<100	<100	<10	<10	<50	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<5	0.014	0.006
MW2	14/09/2016	<1	<0.1	1	22	7	<0.05	21	83	<1	<1	<1	<2	<1	<1	<10	<50	<100	<100	<10	<10	<50	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<5	0.21	5.6
MW3	14/09/2016	<1	0.2	<1	19	4	0.07	46	150	<1	<1	<1	<2	<1	<1	<10	<50	<100	<100	<10	<10	<50	<50	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<5	2.2	9.7

		Clorinated hydrocarbons																																												
		Dichlorodifluoromethane	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	1,1-Dichloroethene	Trans-1,2-dichloroethene	1,1-dichloroethane	Cis-1,2-dichloroethene	Bromochloromethane	Chloroform	2,2-dichloropropane	1,2-dichloroethane	1,1,1-trichloroethane	1,1-dichloropropene	Cyclohexane	Carbon tetrachloride	Benzene	Dibromomethane	1,2-dichloropropane	Trichloroethene	Bromodichloromethane	trans-1,3-dichloropropene	cis-1,3-dichloropropene	1,1,2-trichloroethane	Toluene	1,3-dichloropropane	Dibromochloromethane	1,2-dibromoethane	Tetrachloroethene	1,1,1,2-tetrachloroethane	Chlorobenzene	Ethylbenzene	Bromoform	m+p-xylene	Styrene	1,1,2,2-tetrachloroethane	o-xylene	1,2,3-trichloropropane	Isopropylbenzene
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		10	10	10	10	10	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1
Sample	Date Sampled																																											
MW1	14/09/2016	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
MW2	14/09/2016	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1
MW3	14/09/2016	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1

		Perfluoroalkylated Substances																								
		Perfluorobutanesulfonic acid	Perfluorohexanesulfonic acid	Perfluorooctanesulfonic acid PFOS	Perfluorodecanesulfonic acid	Perfluorobutanoic acid	Perfluorohexanoic acid	Perfluoroheptanoic acid	Perfluorooctanoic acid PFOA	Perfluorononanoic acid	Perfluorodecanoic acid	Perfluoroundecanoic acid	Perfluorododecanoic acid	Perfluorotridecanoic acid	Perfluorotetradecanoic acid	4:2 FTS	6:2 FTS	8:2 FTS	Perfluorooctane sulfonamide	N-Methyl perfluorooctane sulfonamide	N-Ethyl perfluorooctanesulfon-amide	N-Me perfluorooctanesulfonamido-oethanol	N-Et perfluorooctanesulfonamido-oethanol
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0	0	0.01	0.02	0	0.01	0	0	0	0	0	0.1	0.1	0.5	0	0	0.01	0.1	0.1	0.1	0.1	0.1	0.5
GAC				0.13					220															
Sample	Date Sampled																							
MW1	14/09/2016	0.1	1.4	0.25	<0.02	0	0.17	0	0.1	0.1	<0.01	<0.01	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.1	<0.05	<0.1	<0.05	<0.5
MW2	14/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW3	14/09/2016	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.1	<0.5	<0.01	<0.01	<0.01	<0.1	<0.05	<0.1	<0.05	<0.5

Appendix D - Coffey (2020) Extract



200 0 200 600 1000

Scale (metres) 1:20000

drawn	ZM / AW
approved	EW
date	15/05/2020
scale	AS SHOWN
original size	A4

coffey
A TETRA TECH COMPANY

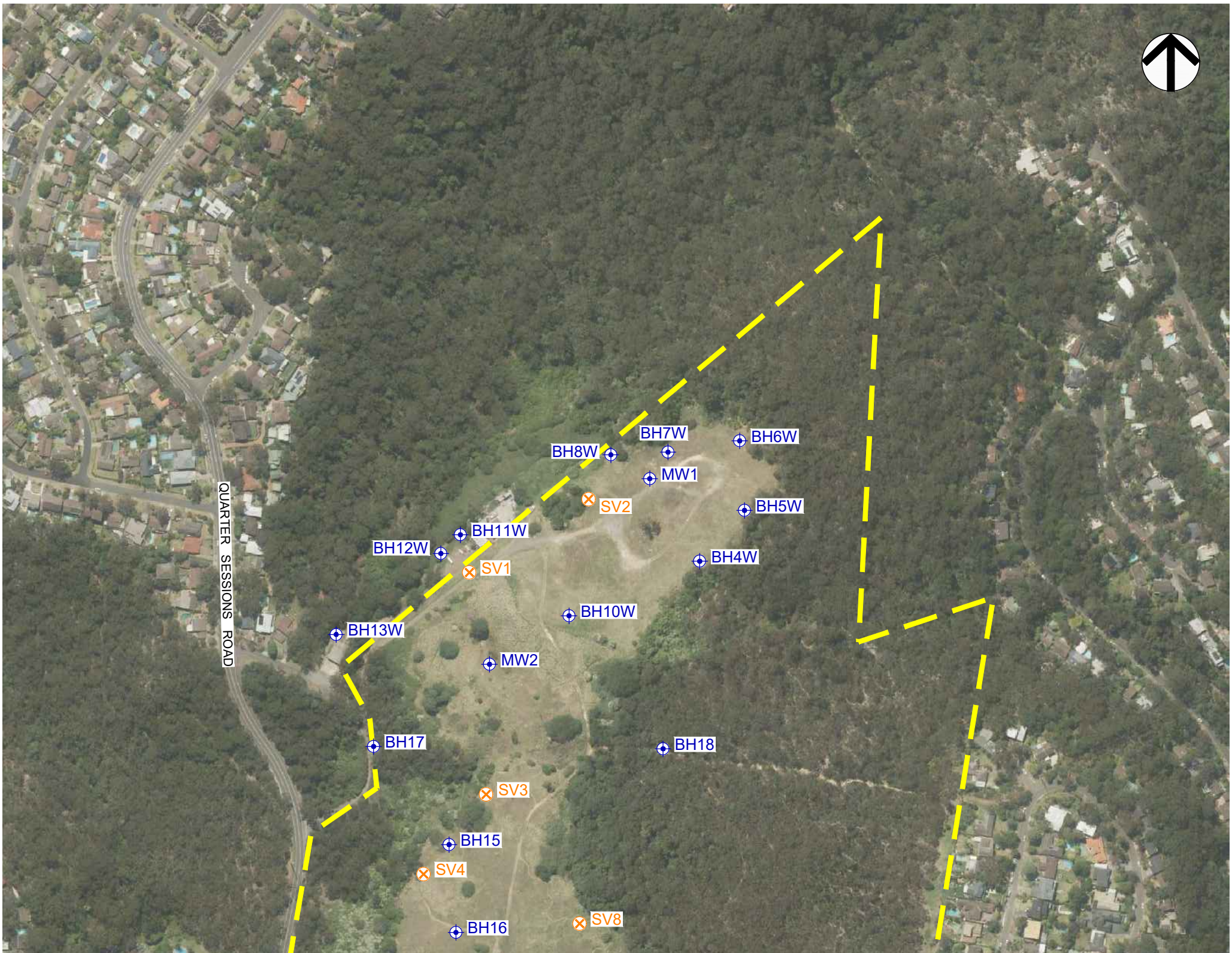
client: ENVIRONMENTAL PARTNERSHIP PTY LTD

project: WESTLEIGH LANDFILL
WARRIGAL DRIVE, WESTLEIGH, NSW

title: SITE LOCATION PLAN

project no: 754-SYDEN213135-R03 | figure no: FIGURE 1 | rev: A

PLOT DATE: 15/05/2020 5:03:08 PM DWG FILE: F:\1. PROJECTS\1. SYDENENV\2018\SYDEN213135 WESTLEIGH LANDFILL\9.CAD\754-SYDEN213135-R03.DWG



revision	no.	description	drawn	approved	date
	A	ORIGINAL ISSUE	ZM	EW	15/05/2020

LEGEND

- SITE BOUNDARY
- MONITORING WELL LOCATION
- SOIL VAPOUR SAMPLE LOCATION

50 0 50 100 150 200

Scale (metres) 1:4000

drawn	ZM / AW
approved	EW
date	15/05/2020
scale	AS SHOWN
original size	A3

coffey
A TETRA TECH COMPANY

client: ENVIRONMENTAL PARTNERSHIP PTY LTD

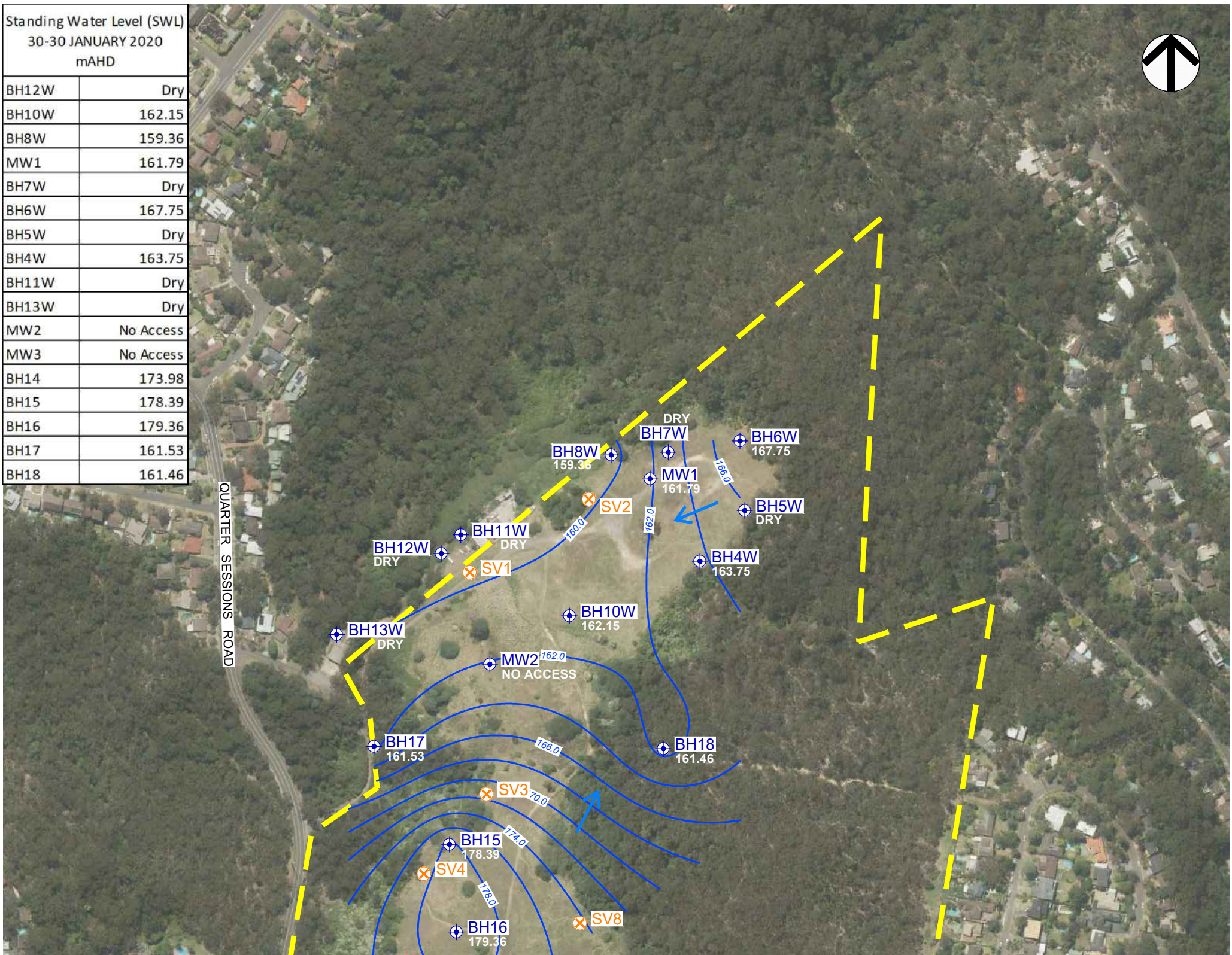
project: WESTLEIGH LANDFILL
WARRIGAL DRIVE, WESTLEIGH, NSW

title: BOREHOLE AND DCP LOCATION PLAN

project no: 754-SYDEN213135-R03 | figure no: FIGURE 2 | rev: A

PLOT DATE: 15/05/2020 5:01:47 PM DWG FILE: F:\1 PROJECTS\1. SYDENENV\2018\SYDEN213135 WESTLEIGH LANDFILL\9.CAD\754-SYDEN213135-R03.DWG

Standing Water Level (SWL) 30-30 JANUARY 2020 mAHD	
BH12W	Dry
BH10W	162.15
BH8W	159.36
MW1	161.79
BH7W	Dry
BH6W	167.75
BH5W	Dry
BH4W	163.75
BH11W	Dry
BH13W	Dry
MW2	No Access
MW3	No Access
BH14	173.98
BH15	178.39
BH16	179.36
BH17	161.53
BH18	161.46



revision	no.	description	drawn	approved	date
	A	ORIGINAL ISSUE	ZM	EW	15/05/2020

LEGEND

- SITE BOUNDARY
- MONITORING WELL LOCATION
- SOIL VAPOUR SAMPLE LOCATION
- TAR IMPACT - APPROXIMATE AREA OF SOIL CONTAMINATION
- 170.0 — GROUNDWATER ELEVATION (mAHD)
- GROUNDWATER FLOW DIRECTION
- 162.15 — WATER LEVEL (m)

50 0 50 100 150 200

Scale (metres) 1:4000

drawn	ZM / AW
approved	EW
date	15/05/2020
scale	AS SHOWN
original size	A3

coffey
A TETRA TECH COMPANY

client: ENVIRONMENTAL PARTNERSHIP PTY LTD

project: WESTLEIGH LANDFILL
WARRIGAL DRIVE, WESTLEIGH, NSW

title: GROUNDWATER ELEVATION CONTOURS

project no: 754-SYDEN213135-R03 | figure no: FIGURE 3 | rev: A

PLOT DATE: 15/05/2020 5:12:03 PM DWG FILE: F:\1 PROJECTS\1. SYDENENV\2018\SYDEN213135 WESTLEIGH LANDFILL\9.CAD\754-SYDEN213135-R03.DWG

Table 6: Summary of landfill gas monitoring data

Well ID	CH_4 (%v/v)		Flow (L/hr)	CO_2 (%v/v)	Pressure (mBa)
	Min	Max	Peak	Stabilised	
BH14[5]	0	0	0	0.4	986
BH15[6]	0	0	0	0.6	986
BH16	0	0	0	4.1	987
BH17	0	0	0	6.8	987
BH18	0	0	0	19.1	987
SV1	0	0	0	10.0	986
SV2[7]	-	-	-	-	-
SV3	0	0	0	6.3	987
SV4	0	0	0	4.0	987
SV5	0	0	0	4.3	987
SV6	0	0	0	1.2	987
SV7	0	0	0	2.4	987
SV8	0	0	0	11.3	987

[5] Groundwater level at BH14 subsequently recovered above the screen interval over time. Therefore, BH14 is not suitable for landfill gas monitoring. However, SV6 is located in the vicinity and would be considered representative of that location

[6] Groundwater level at BH16 subsequently recovered above the screen interval over time. Therefore, BH16 is not suitable for landfill gas monitoring. However, SV4 and SV5 are located in the vicinity and would be considered representative of that location.

[7] Could not be located

	Heavy Metal								Inorganic			Organic									PAH																		TPH				
	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)	Ammonia as N	Nitrate (as N)	Nitrite (as N)	F1 minus BTEX (C6-C10)	F2-Napth (C10-C16)	Naphthalene	C6 - C9	C10 - C40 (Sum of total)	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	C6-C10	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo[b+j]fluoranthene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	1,1,1,2-tetrachloroethane
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	MG/L	MG/L	MG/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.005	10	0.02	0.02	0.02	0.05	10	20	100	0.05	0.1	0.1	0.02	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	50	100	100	100	1
ANZG 2018 Freshwater DGV 95%	0.024	0.0002	0.0034	0.0014	0.0034	0.0006	0.011	0.008	900																0.1						1				16		0.6						
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**																																								
BH4W	BH4W		31/01/2020	<0.001	<0.0002	<0.001	0.024	0.005	<0.0001	0.01	0.091	20	0.05	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH6W	BH6W		31/01/2020	<0.001	<0.0002	<0.001	0.015	<0.001	<0.0001	0.006	0.041	250	0.12	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH8W	BH8W		31/01/2020	<0.001	<0.0002	<0.001	0.035	0.003	<0.0001	0.008	0.056	<10	3.1	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH10W	BH10W		31/01/2020	<0.001	<0.0002	<0.001	0.047	0.08	<0.0001	0.014	0.086	<10	6.6	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH14	BH14		31/01/2020	<0.001	0.0006	<0.001	0.1	0.035	0.0005	0.019	0.16	1400	3.5	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH15	BH15		31/01/2020	<0.001	<0.0002	<0.001	0.036	0.002	<0.0001	0.01	0.13	2900	0.35	0.05	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH16	BH16		31/01/2020	<0.001	<0.0002	<0.001	0.031	0.002	0.0003	0.012	0.091	140	0.98	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH17	BH17		31/01/2020	<0.001	<0.0002	0.007	5	0.007	<0.0001	0.032	2.4	100	3.6	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
BH18	BH18		31/01/2020	<0.001	0.0019	<0.001	0.15	0.01	<0.0001	0.15	0.92	190	0.54	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
DUP01	DUP01		31/01/2020	<0.001	0.0006	<0.001	0.096	0.009	0.0002	0.022	0.2	1300	3.5	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1
MW1	MW1		31/01/2020	<0.001	<0.0002	<0.001	0.025	0.005	<0.0001	0.009	0.094	20	<0.02	<0.02	<0.02	<0.05	<10	<20	<100	<0.05	<0.1	<0.1	<0.02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<50	<100	<100	<100	<1

				VOC																																																
				1,1,1-trichloroethane	**Total MAH**	**1,1,2,2-tetrachloroethane**	**1,1,2-trichloroethane**	**1,1-dichloroethane**	**1,1-dichloroethene**	**1,2,3-trichloropropane**	**1,2,4-trimethylbenzene**	**1,2-dibromoethane**	**1,2-dichlorobenzene**	**1,2-dichloroethane**	**1,2-dichloropropane**	**1,3,5-trimethylbenzene**	**1,3-dichlorobenzene**	**1,3-dichloropropane**	**1,4-dichlorobenzene**	**Methyl Ethyl Ketone**	**4-chlorotoluene**	**4-Methyl-2-pentanone**	**Acetone**	**Allyl chloride**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon disulfide**	**Carbon tetrachloride**	**Chlorobenzene**	**Chlorodibromomethane**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis-1,2-dichloroethene**	**cis-1,3-dichloropropene**	**Dibromomethane**	**Dichlorodifluoromethane**	**Dichloromethane**	**Iodomethane**	**Isopropylbenzene**	**Styrene**	**Trichloroethene**	**Tetrachloroethene**	**Toluene**	**Ethylbenzene**	**trans-1,2-dichloroethene**	**trans-1,3-dichloropropene**	**Trichlorofluoromethane**	**Vinyl chloride**
				µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	0.003	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.001	0.001	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ANZG 2018 Freshwater DGV 95%																																																				
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**																																																	
BH4W	BH4W		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH6W	BH6W		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH8W	BH8W		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH10W	BH10W		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH14	BH14		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH15	BH15		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH16	BH16		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH17	BH17		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH18	BH18		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
DUP01	DUP01		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
MW1	MW1		31/01/2020	<1	<0.003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

						Volatile					
						Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total
	Xylene (o)	Xylene Total	Vic EPA IWRG 621 CHC (Total)*	Vic EPA IWRG 621 Other CHC (Total)*							
	µg/L	µg/L	MG/L	MG/L		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	3	0.005	0.005		1	1	1	2	1	3
ANZG 2018 Freshwater DGV 95%						950	180	80		350	550
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**								
BH4W	BH4W		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH6W	BH6W		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH8W	BH8W		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH10W	BH10W		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH14	BH14		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH15	BH15		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH16	BH16		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH17	BH17		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
BH18	BH18		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
DUP01	DUP01		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3
MW1	MW1		31/01/2020	<1	<3	<0.005	<0.005	<1	<1	<1	<2	<1	<3

				Field_ID	BH10W	BH14	BH15	BH16	BH17	BH18	BH4W	BH6W	BH8W	MW1
				LocCode		BH14	BH15	BH16	BH17	BH18				
				WellCode										
				Sampled_Date-Time	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020
				ANZG 2018 Freshwater DGV 95%										
Method_Type	**ChemName**	**Units**	**EQL**											
Heavy Metal	Arsenic (Filtered)	mg/L	0.001	0.024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Cadmium (Filtered)	mg/L	0.0002	0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	0.0019	<0.0002	<0.0002	<0.0002	<0.0002
	Chromium (III+VI) (Filtered)	mg/L	0.001	0.0034	<0.001	<0.001	<0.001	<0.001	0.007	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper (Filtered)	mg/L	0.001	0.0014	0.047	0.1	0.036	0.031	5	0.15	0.024	0.015	0.035	0.025
	Lead (Filtered)	mg/L	0.001	0.0034	0.08	0.035	0.002	0.002	0.007	0.01	0.005	<0.001	0.003	0.005
	Mercury (Filtered)	mg/L	0.0001	0.0006	<0.0001	0.0005	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Nickel (Filtered)	mg/L	0.001	0.011	0.014	0.019	0.01	0.012	0.032	0.15	0.01	0.006	0.008	0.009
	Zinc (Filtered)	mg/L	0.005	0.008	0.086	0.16	0.13	0.091	2.4	0.92	0.091	0.041	0.056	0.094
Inorganic	Ammonia as N	µg/L	10	900	<10	1400	2900	140	100	190	20	250	<10	20
	Nitrate (as N)	mg/L	0.02		6.6	3.5	0.35	0.98	3.6	0.54	0.05	0.12	3.1	<0.02
	Nitrite (as N)	mg/L	0.02		<0.02	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Organic	F1 minus BTEX (C6-C10)	mg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	F2-Napth (C10-C16)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Naphthalene	µg/L	10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	C6 - C9	µg/L	20		<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C40 (Sum of total)	µg/L	100		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH >C10-C16	MG/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	TRH >C16-C34	MG/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	TRH >C34-C40	MG/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	C6-C10	mg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PAH	Acenaphthene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthylene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Anthracene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Benz(a)anthracene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Benzo(a) pyrene	µg/L	1	0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Benzo(g,h,i)perylene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Benzo(k)fluoranthene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chrysene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Benzo[b+j]fluoranthene	ug/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dibenz(a,h)anthracene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Fluoranthene	µg/L	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Fluorene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Indeno(1,2,3-c,d)pyrene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Naphthalene	µg/L	1	16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	PAHs (Sum of total)	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Phenanthrene	µg/L	1	0.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pyrene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TPH	C10 - C14	µg/L	50		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15 - C28	µg/L	100		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C29-C36	µg/L	100		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	+C10 - C36 (Sum of total)	µg/L	100		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
VOC	1,1,1,2-tetrachloroethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1,1-trichloroethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Total MAH	mg/L	0.003		<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	1,1,2,2-tetrachloroethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1,2-trichloroethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloroethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloroethene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,3-trichloropropane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,4-trimethylbenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dibromoethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dichlorobenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dichloroethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dichloropropane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,3,5-trimethylbenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,3-dichlorobenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

				Field_ID	BH10W	BH14	BH15	BH16	BH17	BH18	BH4W	BH6W	BH8W	MW1
				LocCode		BH14	BH15	BH16	BH17	BH18				
				WellCode										
				Sampled_Date-Time	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020	1/31/2020
				ANZG 2018 Freshwater DGV 95%										
Method_Type	**ChemName**	**Units**	**EQL**											
	1,3-dichloropropane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,4-dichlorobenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Methyl Ethyl Ketone	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	4-chlorotoluene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	4-Methyl-2-pentanone	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acetone	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Allyl chloride	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Bromobenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromochloromethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromodichloromethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromoform	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromomethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Carbon disulfide	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Carbon tetrachloride	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chlorobenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chlorodibromomethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chloroethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chloroform	µg/L	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Chloromethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	cis-1,2-dichloroethene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	cis-1,3-dichloropropene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dibromomethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dichlorodifluoromethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dichloromethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Iodomethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Isopropylbenzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Styrene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Trichloroethene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Tetrachloroethene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Toluene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	-	<1	<1
	Ethylbenzene	µg/L	1		-	<1	<1	<1	<1	<1	<1	-	<1	<1
	trans-1,2-dichloroethene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	trans-1,3-dichloropropene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Trichlorofluoromethane	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Vinyl chloride	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Xylene (o)	µg/L	1		-	-	-	-	-	-	<1	-	<1	-
	Xylene Total	µg/L	3		-	<3	<3	<3	-	-	-	-	<3	-
	Vic EPA IWRG 621 CHC (Total)*	MG/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Vic EPA IWRG 621 Other CHC (Total)*	MG/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Volatile	Benzene	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Toluene	µg/L	1	180	-	-	-	-	-	-	-	<1	-	-
	Ethylbenzene	µg/L	1	80	<1	-	-	-	-	-	-	<1	-	-
	Xylene (m & p)	µg/L	2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	1	350	<1	<1	<1	<1	<1	<1	-	<1	-	<1
	Xylene Total	µg/L	3	550	<3	-	-	-	<3	<3	<3	<3	-	<3

Statistical Summary

Method_Type	ChemName	Units	EQL	Number of	Number	Minimum	Minimum	Maximum	Maximum	Average	Median	Standard
Heavy Metal	Arsenic (Filtered)	mg/L	0.001	10	0	<0.001	ND	<0.001	ND	0.0005	0.0005	0
	Cadmium (Filtered)	mg/L	0.0002	10	2	<0.0002	0.0006	0.0019	0.0019	0.00033	0.0001	0.00057
	Chromium (III+VI) (Filtered)	mg/L	0.001	10	1	<0.001	0.007	0.007	0.007	0.0012	0.0005	0.0021
	Copper (Filtered)	mg/L	0.001	10	10	0.015	0.015	5	5	0.55	0.0355	1.6
	Lead (Filtered)	mg/L	0.001	10	9	<0.001	0.002	0.08	0.08	0.015	0.005	0.025
	Mercury (Filtered)	mg/L	0.0001	10	2	<0.0001	0.0003	0.0005	0.0005	0.00012	0.00005	0.00015
	Nickel (Filtered)	mg/L	0.001	10	10	0.006	0.006	0.15	0.15	0.027	0.011	0.044
	Zinc (Filtered)	mg/L	0.005	10	10	0.041	0.041	2.4	2.4	0.41	0.0925	0.75
Inorganic	Ammonia as N	µg/L	10	10	8	<10	20	2900	2900	503	120	941
	Nitrate (as N)	mg/L	0.02	10	9	<0.02	0.05	6.6	6.6	1.9	0.76	2.2
	Nitrite (as N)	mg/L	0.02	10	1	<0.02	0.05	0.05	0.05	0.014	0.01	0.013
Organic	F1 minus BTEX (C6-C10)	mg/L	0.02	10	0	<0.02	ND	<0.02	ND	0.01	0.01	0
	F2-Napth (C10-C16)	mg/L	0.05	10	0	<0.05	ND	<0.05	ND	0.025	0.025	0
	Naphthalene	µg/L	10	10	0	<10	ND	<10	ND	5	5	0
	C6 - C9	µg/L	20	10	0	<20	ND	<20	ND	10	10	0
	C10 - C40 (Sum of total)	µg/L	100	10	0	<100	ND	<100	ND	50	50	0
	TRH >C10-C16	MG/L	0.05	10	0	<0.05	ND	<0.05	ND	0.025	0.025	0
	TRH >C16-C34	MG/L	0.1	10	0	<0.1	ND	<0.1	ND	0.05	0.05	0
	TRH >C34-C40	MG/L	0.1	10	0	<0.1	ND	<0.1	ND	0.05	0.05	0
	C6-C10	mg/L	0.02	10	0	<0.02	ND	<0.02	ND	0.01	0.01	0
PAH	Acenaphthene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Acenaphthylene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Anthracene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Benz(a)anthracene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Benzo(a) pyrene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Benzo(g,h,i)perylene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Benzo(k)fluoranthene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Chrysene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Benzo[b+j]fluoranthene	ug/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Dibenz(a,h)anthracene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Fluoranthene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Fluorene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Indeno(1,2,3-c,d)pyrene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Naphthalene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	PAHs (Sum of total)	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Phenanthrene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Pyrene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
TPH	C10 - C14	µg/L	50	10	0	<50	ND	<50	ND	25	25	0
	C15 - C28	µg/L	100	10	0	<100	ND	<100	ND	50	50	0
	C29-C36	µg/L	100	10	0	<100	ND	<100	ND	50	50	0
	+C10 - C36 (Sum of total)	µg/L	100	10	0	<100	ND	<100	ND	50	50	0
VOC	1,1,1,2-tetrachloroethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,1,1-trichloroethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Total MAH	mg/L	0.003	10	0	<0.003	ND	<0.003	ND	0.0015	0.0015	0
	1,1,2,2-tetrachloroethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,1,2-trichloroethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,1-dichloroethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,1-dichloroethene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,2,3-trichloropropane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,2,4-trimethylbenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,2-dibromoethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,2-dichlorobenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,2-dichloroethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,2-dichloropropane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,3,5-trimethylbenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,3-dichlorobenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0

Statistical Summary

Method_Type	ChemName	Units	EQL	Number of	Number	Minimum	Minimum	Maximum	Maximum	Average	Median	Standard
	1,3-dichloropropane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	1,4-dichlorobenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Methyl Ethyl Ketone	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	4-chlorotoluene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	4-Methyl-2-pentanone	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Acetone	mg/L	0.001	10	0	<0.001	ND	<0.001	ND	0.0005	0.0005	0
	Allyl chloride	mg/L	0.001	10	0	<0.001	ND	<0.001	ND	0.0005	0.0005	0
	Bromobenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Bromochloromethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Bromodichloromethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Bromoform	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Bromomethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Carbon disulfide	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Carbon tetrachloride	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Chlorobenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Chlorodibromomethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Chloroethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Chloroform	µg/L	5	10	0	<5	ND	<5	ND	2.5	2.5	0
	Chloromethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	cis-1,2-dichloroethene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	cis-1,3-dichloropropene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Dibromomethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Dichlorodifluoromethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Dichloromethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Iodomethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Isopropylbenzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Styrene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Trichloroethene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Tetrachloroethene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Toluene	µg/L	1	9	0	<1	ND	<1	ND	0.5	0.5	0
	Ethylbenzene	µg/L	1	8	0	<1	ND	<1	ND	0.5	0.5	0
	trans-1,2-dichloroethene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	trans-1,3-dichloropropene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Trichlorofluoromethane	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Vinyl chloride	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Xylene (o)	µg/L	1	2	0	<1	ND	<1	ND		0.5	
	Xylene Total	µg/L	3	4	0	<3	ND	<3	ND	1.5	1.5	0
	Vic EPA IWRG 621 CHC (Total)*	MG/L	0.005	10	0	<0.005	ND	<0.005	ND	0.0025	0.0025	0
	Vic EPA IWRG 621 Other CHC (Total)*	MG/L	0.005	10	0	<0.005	ND	<0.005	ND	0.0025	0.0025	0
Volatile	Benzene	µg/L	1	10	0	<1	ND	<1	ND	0.5	0.5	0
	Toluene	µg/L	1	1	0	<1	ND	<1	ND		0.5	
	Ethylbenzene	µg/L	1	2	0	<1	ND	<1	ND		0.5	
	Xylene (m & p)	µg/L	2	10	0	<2	ND	<2	ND	1	1	0
	Xylene (o)	µg/L	1	8	0	<1	ND	<1	ND	0.5	0.5	0
	Xylene Total	µg/L	3	6	0	<3	ND	<3	ND	1.5	1.5	0

Appendix E - EPA Letter & Arcadis (2018) Extract

DOC19/154992

John Parnaby
Director, Assets and Infrastructure
NSW Rural Fire Service
Locked Bag 17
Granville NSW 2142

Attn: Raju Divakarla

Dear Mr Parnaby

Per- and poly-fluoroalkyl substance Investigations - NSW Rural Fire Service

The NSW Environment Protection Authority (EPA) leads the state-wide investigation program to identify the prevalence of legacy contamination from per and poly-fluoroalkyl substances (PFAS), and to provide the community with advice to reduce exposure to PFAS.

Closure of PFAS investigations into RFS Westleigh and St. Columba's Catholic College

From August 2016 to December 2017, the EPA commenced investigations into legacy PFAS contamination by the NSW Rural Fire Service (RFS) from the use of PFAS-containing firefighting foams at the following two sites:

- Westleigh RFS Training Site (12 Warrigal Drive, Westleigh NSW 2120)
- St Columba's Catholic College (168 Hawkesbury Road, Springwood NSW 2777)

Based on the investigation findings, the EPA has determined that PFAS exposure pathways to sensitive human health receptors at both sites are either incomplete or pose a low and acceptable risk. It is understood the RFS has removed PFAS-impacted soil at both sites as a precautionary measure.

The EPA wishes to advise that the PFAS investigations into the Westleigh RFS Training Site and St Columba's Catholic College have now been finalised, and that no further management, monitoring or remediation actions are required in relation to legacy PFAS contamination.

Please note this assessment is based on the current understanding of risks posed to human health and the environment. If new information arises, the NSW EPA may require these sites be reconsidered for investigation.

The EPA looks forward to continuing to support RFS in its assessment and management of PFAS contamination from RFS sites. The EPA appreciates the co-operative and proactive approach by RFS, to date, in gathering information and assisting the EPA's PFAS Investigation Program. If you have any questions, please contact Daniel Burchmore on (02) 9995 5995 or daniel.burchmore@epa.nsw.gov.au.

Yours sincerely,

25 February 2019

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7/09/2018

10018854_Westleigh_Excavation

Subject: Excavation Report, RFS Training Facility, Westleigh NSW

Dear Raju,

Introduction

Arcadis Australia Pacific Pty Ltd (Arcadis) was engaged by the NSW Rural Fire Service (RFS) to supervise soil excavation at the RFS training facility located at 12 Warrigal Drive, Westleigh NSW. The location of the site is shown in Figure 1, Appendix A.

The site is known as Lot 68 DP 752053 and Lot 101 DP 1217395. This assessment is only applicable to subject sections of the site as displayed within Figure 2, Appendix A.

Objective

The objective of the works was to remove soil from two areas of the site where elevated concentrations of PFAS compounds were identified during the Detailed Site Investigation (Senversa, 2018). The PFAS concentrations at the two areas were less than the human health criteria for the site. As such the purpose of the works was to reduce the PFAS load in soil in the two areas.

Scope of Works

The following scope of work was undertaken by Arcadis to meet the objectives:

- Insitu waste classification – reported under separate cover, see Appendix B;
- Supervision of excavation works; and
- Completion of a brief factual letter report detailing the validation works.

Excavation Extent, Waste Classification and Tracking

The areas of excavation centred around two PFAS hotspots identified during the Detailed Site Investigation (Senversa, 2018). These were:

- HA03 located within the RFS training compound, and
- HA26 located in an area of open grassland to the north-northeast of the RFS training compound.

The extend of excavation was determined during insitu was classification sampling completed by Arcadis in October 2018 (see Appendix B). Prior to excavation works commencing, the horizontal extent of excavation required was marked out. The vertical extent of excavation was based on previous sampling completed by Senversa (2018) and was limited to 0.3m below surface or to refusal on bedrock, whichever was shallower.

Excavation works were completed by the RFS engaged civil contractor Flamezone under supervision of Arcadis.

Photographs of the excavation works and completed excavations are included in Appendix D.

The material was classified insitu by Arcadis as:

- Restricted solid waste (HA03), and
- General solid waste (HA26).

The waste classification reports are included in Appendix B.

Tip dockets issued by the receiving facility are included in Appendix C. It can be seen that a total of

- 57.96 tonnes of material went to SUEZ Elizabeth Drive Waste Management Centre as General Solid Waste, and
- 9.4 tonnes of material went to the same facility as Restricted Solid Waste.

As the purpose of the works was for mass removal, not to reduce PFAS concentrations to below the human health and ecological assessment criteria, validation samples were not analysed.

Material was not imported to site to backfill the excavations.

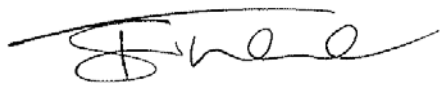
Concluding Statements

Based on the works completed the following statements can be made:

- The elevated PFAS hotspots at HA03 and HA26 have been removed to the extent required.
- The amount of material disposed to landfill as general solid waste and restricted solid waste matches the volume estimated insitu.

This assessment is only applicable to the subject areas and is not indicative of the condition of the greater site.

Yours sincerely



Toby Scrivener
Principal Environmental Engineer
(02) 8907 9000 / 0477 882 907

Westleigh

Legend

- Senversa Sampling Location
- Arcadis Sampling Location

1:684 at A3

ARCADIS Design & Consultancy for natural and built assets

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: August 23, 2018

Figure 1 - Sampling Location Overview

0 5 10 20 30 40
m

Date: 23/08/2018 Path: C:\Users\rwaz3923\Documents\Westleigh\Figure 1.mxd
Created by : Environmental Restoration
QA by : Environmental Restoration

Westleigh

Legend

- Senversa Sampling Location
- Arcadis Sampling Location
- RSW Excavation Extent

1:38 at A3

ARCADIS Design & Consultancy for natural and built assets

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: August 23, 2018

Figure 2 - HA03 - Proposed Excavation Area

0 0.375 0.75 1.5 2.25 3
m

Date: 23/08/2018 Path: C:\Users\rwaz3923\Documents\Westleigh\Figure 2 - HA03 - Proposed Excavation Area.mxd
Created by : Environmental Restoration
QA by : Environmental Restoration

Westleigh

Legend

- Senversa Sampling Location
- Arcadis Sampling Location
- GSW Excavation Extent
- RSW Excavation Extent

1:60 at A3

ARCADIS Design & Consultancy for natural and built assets

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: August 23, 2018

Figure 3 - HA26 - Proposed Excavation Area

0 0.5 1 2 3 4
m

Date: 23/08/2018 Path: C:\Users\rwaz3923\Documents\Westleigh\Figure 3 - HA26 - Proposed Excavation Area.mxd
Created by : Environmental Restoration
QA by : Environmental Restoration

Plate 01	
HA03 area prior to excavation. Pink outline shows the extent of excavation required	

Plate 02

HA03 area following excavation. Natural ground surface can be seen at the base of the excavation.

Plate 03	
HA26 area during excavation.	

Plate 04	
HA26 nearing completion of excavation.	

Appendix F – Senversa (2018 and 2018a) Extract

Path: Y:\16_GIS\01_Jobs\1NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\1_Working MXDS\DS\S13978_002_F003A_Previous Inv Locs - Soil GW.mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Groundwater Monitoring Well, Arcadis (2017)
- Soil Bore Location, NSW EPA (2016)
- Previously Unidentified Monitoring Well
- Previously Unidentified Soil Vapour Well
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	19/02/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:1,250 (A3)
File:	S13978_002_F003A_Previous Inv Locs - Soil GW		

0 10 20 40 60 80 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 3A

Title: Previous Investigation Sample Locations (Soil and Groundwater)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

Aerial imagery sourced from Nearmap Pty Ltd

Legend

- Surface Water Sample Location, Arcadis (2017)
- Watercourse
- Primary NSW EPA Investigation Area Boundary
- Indicative Site Boundary

senversa

Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Designed:	I. Batterley	Date:	19/02/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:4,000 (A3)
File:	S13978_002_F003B_Previous Inv Locs - SW SED		

0 30 60 120 180 240 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 3B

Title: Previous Investigation Sample Locations (Surface Water and Sediment)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

Path: Y:\16_GIS\01_Jobs\1.NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXD\s1_Working MXD\S\NS13978_002_F004A_Sample Locs Senversa - Soil GW.mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Previously Installed Monitoring Well Location Sampled by Senversa (2018)
- Groundwater Monitoring Well Location, Senversa (2018)
- Previously Unidentified Groundwater Well
- Soil Sample Location, Senversa (2018)
- Concrete Sample Location, Senversa (2018)
- Drain Sample Location, Senversa (2018)
- Tank Water Sample Location, Senversa (2018)
- Tap Water Sample Location, Senversa (2018)
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	19/02/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:1,250 (A3)
File:	S13978_002_F004A_Sample Locs Senversa - Soil GW		

0 5 10 20 30 40 Metres

Datum GDA 1994, Projection MGA Zone 56

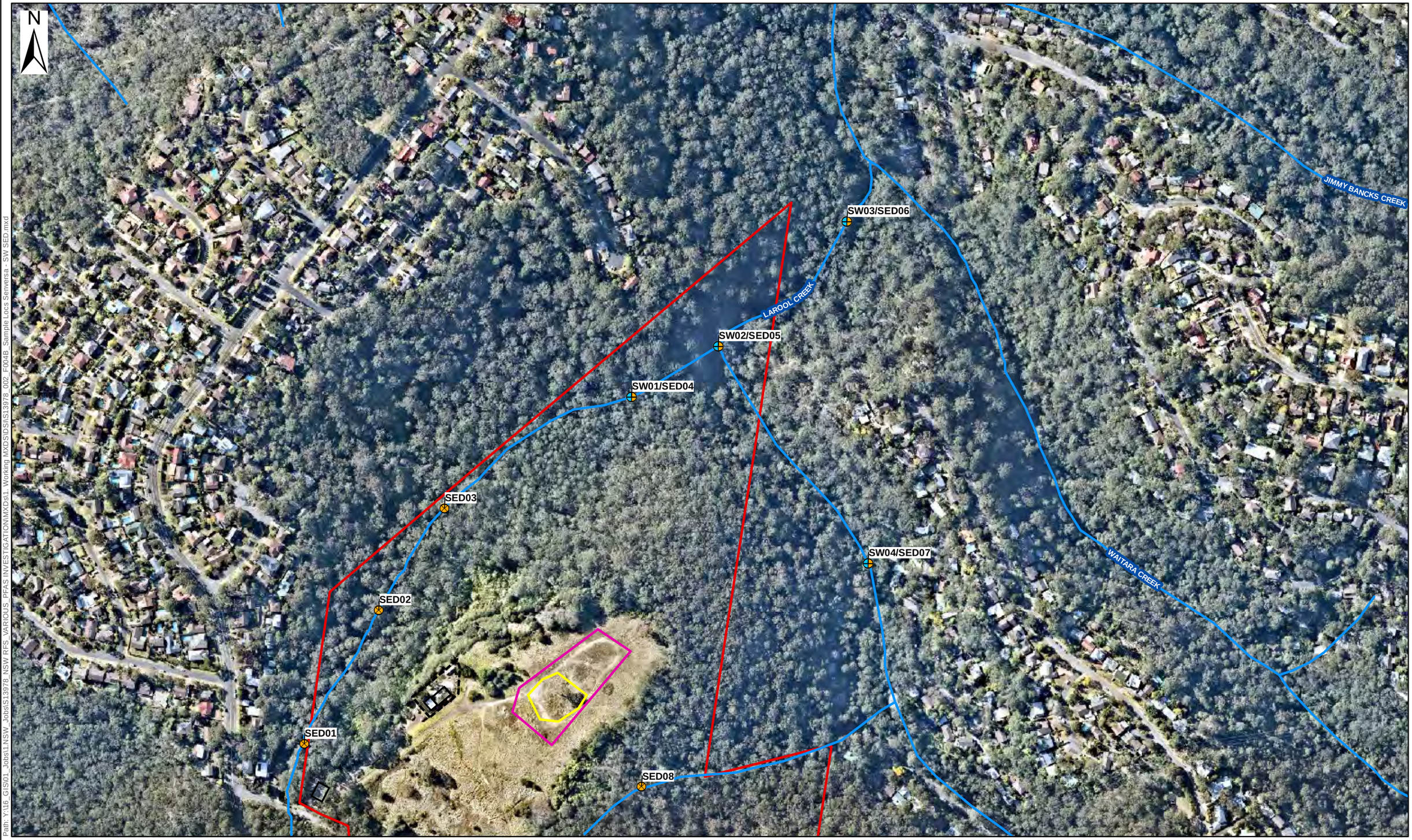
Figure No: 4A

Title: Senversa (2018) Sample Locations (Soil, Groundwater Concrete, Tap and Tank Water)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service



Path: Y:\16_GIS\01_Jobs\1.NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\1. Working MXDS\DS\S13978_002_F004B_Sample Locs Senversa - SW SED.mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Surface Water/Sediment Sample Location, Senversa (2018)
- Sediment Sample Location, Senversa (2018)
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Watercourse
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	19/02/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:4,000 (A3)
File:	S13978_002_F004B_Sample Locs Senversa - SW SED		

0 20 40 80 120 160 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 4B

Title: Senversa (2018) Sample Locations (Surface Water and Sediment)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

Path: Y:\16_GIS\01_Jobs\1.NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\DSI\S13978_002_F005_Soil Exceedences (Total PFAS).mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Groundwater Monitoring Well Location, Senversa (2018)
- Soil Sample Location, Senversa (2018)
- Concrete Sample Location, Senversa (2018)
- Drain Sample Location, Senversa (2018)
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training
- RFS Training Compound
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	21/03/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:1,000 (A3)
File:	S13978_002_F005_Soil Exceedences (Total PFAS)		

0 5 10 20 30 40 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 5

Title: Soil, Drain and Concrete Exceedances (Total PFAS)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

Path: Y:\16_GIS\01_Jobs\1.NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\1. Working MXDs\S13978_002_F006_Soil Exceedences (ASLP PFAS).mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Groundwater Monitoring Well Location, Senversa (2018)
- Soil Sample Location, Senversa (2018)
- Concrete Sample Location, Senversa (2018)
- Drain Sample Location, Senversa (2018)
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	21/03/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:1,250 (A3)
File:	S13978_002_F006_Soil Exceedences (ASLP PFAS)		

0 10 20 40 60 80 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 6

Title: ASLP Exceedances (PFAS)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

Path: Y:\16_GIS\01_Jobs\1 NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\1_Working\MXDs\S13978_002_F007_GW Exceedences.mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Groundwater Monitoring Well Location, Senversa (2018)
- Groundwater Monitoring Well, Arcadis (2017)
- Previously Unidentified Monitoring Well
- Tank Water Sample Location, Senversa (2018)
- Tap Water Sample Location, Senversa (2018)
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	21/03/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:1,250 (A3)
File:	S13978_002_F007_GW Exceedences		

0 10 20 40 60 80 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 7

Title: Groundwater, Tap Water and Tank Water Exceedances (Total PFAS)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

Path: Y:\16_GIS\01_Jobs\1.NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\1. Working\MXDs\DSIS13978_002_F008_SED and SW Exceedences.mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Surface Water/Sediment Sample Location, Senversa (2018)
- Sediment Sample Location, Senversa (2018)
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Watercourse
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	21/03/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:3,932 (A3)
File:	S13978_002_F008_SED and SW Exceedences		

0 20 40 80 120 160 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 8

Title: Surface Water and Sediment Exceedances (Total PFAS)

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

Path: Y:\16_GIS\01_Jobs\1.NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\1. Working MXDs\S13978_002_F009_GW Contours.mxd

senversa
Address: Level 5, 201 Kent Street, Sydney NSW 2000
Phone: (02) 9994 8016
Website: www.senversa.com.au

Legend

- Groundwater Monitoring Well - Gauged
- Groundwater Monitoring Well
- Estimated Groundwater Contours
- Inferred Groundwater Contours
- Groundwater Flow Direction
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Indicative Site Boundary

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	19/03/2018
Drawn:	M. Byrne	Revision:	0
Checked:	E. Liddle	Scale:	1:1,250 (A3)
File:	S13978_002_F009_GW Contours		

0 10 20 40 60 80 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 9

Title: Groundwater Contours

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

- Light brown to brown, gravelly fine to coarse sands containing sub-rounded sandstone / mudstone.

Natural yellow / orange fine to coarse graded clayey sand materials were identified to a maximum depth of 1.0 m bgl within the western and central portions of the Site. Natural sandstone materials were identified at depths ranging from 0.1 m bgl to 1.0 m bgl and extended to the maximum depth of excavation 35 m bgl.

During investigation works no visual or olfactory indicators of contamination were identified within any collected soil, sediment or concrete samples.

Groundwater gauging indicated groundwater beneath the site was comprised of moderately acidic freshwater at depths ranging from 6.355 m bgl to 29.517 m bgl located within the underlying fractured bedrock.

- During gauging and subsequent sampling works BH3W and BH11W located within the western portion of the Site were noted to be dry.

Senversa notes that as the site is located on the top of a ridge line, groundwater is likely to be a result of rainwater infiltration with subsequent flow directions following local topographical features and fractures within the underlying bedrock.

Groundwater flow directions were calculated to be following local topography in the direction of gullies / valleys adjacent to the Site.

Laboratory analysis of samples collected as part of this DSI indicated the following:

Media	Comment
Concrete	• PFAS was identified within concrete sample CS02 collected from the training compound with identified concentration of 0.0576 mg/kg. • Leachable concentrations of PFAS ranged from 0.5 µg/L (CS01) to 8.25 µg/L (CS02) indicating highly leachable PFAS within on-Site concrete materials.
Tank / Tap Water	• PFAS was detected within water tank 1 (TW01) with PFOS concentrations of 0.02 µg/L.
Soils	• Total PFAS exceeding the laboratory LOR was identified within surface soils across the areas sampled within the Site (88 of 89 collected samples). • PFAS compounds were not found to exceed the adopted human health PFAS assessment criteria within any collected soil samples. • PFAS compounds exceeding the adopted ecological PFAS assessment criteria identified within: ▪ DS01 located within an on-Site drain within the training compound area; ▪ BH11W, BH12W, HA1 and HA2 located within the training compound area to a maximum depth of 4.4 m bgl; ▪ HA8, HA10, HA17, HA26 and HA21 located within the former AFFF training area to a maximum depth of 1.0 m bgl; and ▪ BH13W located adjacent to the vehicle parking garage area to a maximum depth of 0.5 m bgl. • ASLP laboratory analysis for PFAS reported concentrations exceeding the adopted assessment criteria for soils within DS01, BH6W, BH10W, BH11W, HA17 and HA26 indicating that PFAS within surface soils may pose a risk to underlying groundwater aquifers and / or surface waters.
Groundwater	• PFAS compounds exceeding the adopted PFAS assessment criteria were identified within groundwater monitoring wells throughout the Site including in BH2W, BH6W, BH8W and BH13W. • PFOS was detected in groundwater at concentrations in excess of the adopted ecological assessment criteria in BH2W (0.14 µg/L) and BH8W (0.65 µg/L).

Media	Comment
Surface Water and Sediment (Off-Site)	• Previous investigations undertaken by Arcadis identified concentrations of PFOS+PFHxS ranging from 0.011 µg/L to 0.065 µg/L exceeding ecological assessment criteria within 4 samples collected from the Waitara Creek and Larool Creek. • Laboratory analysis of samples collected from the creeks and drainage lines immediately adjacent to the west of the site returned concentrations less than the adopted ecological assessment criteria indicating that surface run off from the training area is not significantly impacting the adjacent waterway. • PFAS was identified within surface water sample SW02, SW03 and SW04 located to the east and north east of the Site. • Based on the local topography it is assumed that surface run off from the Site would be entering the surrounding creeks and streams. • Senversa notes that while no sediment samples exceeded the adopted assessment criteria, the majority of collected sediment samples were identified to contain concentrations of PFAS exceeding the LOR.

Based on the project objectives, DQOs and results, and subject to limitations presented in Section 10, the conclusions of this DSI are as follows:

- PFAS compounds were not found to exceed the adopted human health PFAS assessment criteria within any collected soil samples.
    - PFAS was identified to exceed the adopted ecological assessment criteria within two surface sample locations located within the northern and western portion of the Site.
- PFAS exceeding the adopted assessment criteria were identified within samples collected from a stormwater drain located within the training compound area indicating a potential risk to the surrounding environment through surface water migration.
- PFAS compounds within groundwater were found to exceed the adopted human health PFAS assessment criteria within BH2W, BH6W, BH8W and BH13W, however as the site and surrounding area is supplied by reticulated water the risk to human health is considered to be low.
- PFAS compounds exceeding the ecological assessment criteria were identified within two groundwater wells located within the central and western portions of the Site indicating potential risk to offsite ecological receptors.
- Tank water within the Site is utilised for training / operational purposes and is not utilised for drinking. However, as PFAS was identified in water tank 1, located within the training compound, the use of this water for training purposes may result in contamination to the ground surface.
    - As such Senversa recommends that water within water tank 1 should be resampled and tested for PFAS.
    - Senversa further notes that the water reticulation system feeding water tank 1 should be investigated to determine the potential source of PFAS.
- PFAS exceeding the adopted assessment criteria was identified within concrete materials located within the training compound with ASLP analysis indicating a significant leaching potential. As such impacted concrete materials have the potential to impact the underling aquifer.
- Senversa notes that due to identified PFAS within off-Site creek / streams and the associated potential risk to off-Site ecological receptors, additional off-Site assessment of offsite streams / creeks should be undertaken to delineate the potential extent.
    - Senversa notes the potential for other sources of PFAS contamination within the surrounding area and as such, recommends that additional upstream sampling be undertaken to determine the potential for other sources of PFAS to be contributing / causing the identified PFAS impact within the Waitara and Larool Creeks.

Table 1: Soil Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

senversa

Sample Location							BH4W		BH5W		BH6W		BH7W		BH8W		BH10W			
Sample Name							BH4W_0.1-0.2	BH4W_3.0-3.1	BH5W_0.2-0.3	BH5W_4.0-4.1	BH6W_0.0-0.05	BH6W_1.0-1.1	BH7W_0.0-0.05	BH7W_3.0-3.1	BH8W_0.2-0.3	BH8W_4.0-4.1	BH10W_0.0-0.05	BH10W_2.0-2.1	BH11W_0.0-0.05	BH11W_0.3-0.4
Date							16/01/2018	16/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	12/01/2018	12/01/2018	16/01/2018	16/01/2018	11/01/2018	11/01/2018
Depth (m bgl)							0.1 - 0.2	3 - 3.1	0.2 - 0.3	4 - 4.1	0 - 0.05	1 - 1.1	0 - 0.05	3 - 3.1	0.2 - 0.3	4 - 4.1	0 - 0.05	2 - 2.1	0 - 0.05	0.3 - 0.4
Sample Type							Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Report Number							ES1802500	ES1802500	ES1802204	ES1802204	ES1802204	ES1802204	ES1802204	ES1802204	ES1802785	ES1802785	ES1802500	ES1802500	ES1801917	ES1801917
	Unit	EQL	*Interim soil – ecological direct exposure - Public open space*	Interim soil – ecological indirect exposure - Industrial / commercial	**Human health - Industrial / commercial**	Human health - Public open space														
Inorganics																				
Moisture Content	%	1					28.5	3.7	35.2	26.4	38.7	32.4	43.2	34.8	25.6	18.0	42.3	3.6	11.1	26.4
pH (Final)	pH Units	0.1					-	-	-	-	6.3	-	-	-	-	-	9.9	-	-	-
BTEX																				
Benzene	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total BTEX	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons																				
C6-C9 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C14 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C15-C28 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C29-C36 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C36 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Recoverable Hydrocarbons																				
C6-C10 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C6-C10 Fraction minus BTEX (F1)	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C16-C34 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C34-C40 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C40 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAHs																				
Naphthalene	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
(n:2) Fluorotelomer Sulfonic Acids																				
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroalkane Carboxylic Acids																				
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0004
Perfluorobutanoic acid (PFBA)	mg/kg	0.001					<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002	*10* [#1]		**50** [#3]	10 [#3]	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroalkane Sulfonic Acids																				
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	*1* [#1]	0.14 [#2]			<0.0002	<0.0002	0.0004	<0.0002	0.0009	<0.0002	0.0013	<0.0002	<0.0002	<0.0002	0.0015	<0.0002	0.0023	0.0109
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	mg/kg	0.0002			**20** [#3]	1 [#3]	<0.0002	<0.0002	0.0004	<0.0002	0.0009	<0.0002	0.0015	<0.0002	<0.0002	<0.0002	0.0015	<0.0002	0.0023	0.0113
Perfluoroalkyl Sulfonamides																				
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS																				
Sum of PFAS	mg/kg	0.0002					<0.0002	<0.0002	0.0004	<0.0002	0.0019	<0.0002	0.0015	<0.0002	<0.0002	<0.0002	0.0015	<0.0002	0.0028	0.0120
Sum of PFAS (WA DER List)	mg/kg	0.0002					<0.0002	<0.0002	0.0004	<0.0002	0.0009	<0.0002	0.0015	<0.0002	<0.0002	<0.0002	0.0015	<0.0002	0.0028	0.0120
													-	-	-	-	-	-		

Notes

#1 Human health screening value for Public open space be used as an interim value.
#2 Canadian Federal Environment Quality Guidelines (Feb 2017)
#3 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
0.23 Exceedance of ecological screening critera
0.0322 Exceedance of human health screening criteria
RPD relative percent difference
m bgl metres below ground level
< Less than
N/A not applicable
mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil
- no analysed/ not applicable
LOR Limit of Reporting

Table 1: Soil Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

Sample Location							BH11W							BH12W						
Sample Name							BH11W_1.0-1.1	BH11W_4.0-4.1	BH11W_5.0-5.1	BH11W_9.0-9.1	BH11W_16.0-16.1	QC200_20180111	RPD (%)	BH12W_0.0-0.5	BH12W_0.5-0.6	BH12W_2.0-2.1	BH12W_5.0-5.1	BH12W_10.0-10.1	BH12W_15.0-15.1	BH12W_20.0-20.1
Date							11/01/2018	11/01/2018	11/01/2018	11/01/2018	11/01/2018	1/01/2018		11/01/2018	11/01/2018	11/01/2018	11/01/2018	11/01/2018	11/01/2018	11/01/2018
Depth (m bgl)							1 - 1.1	4 - 4.1	5 - 5.1	9 - 9.1	16 - 16.1	0 - 0.05		0 - 0.5	0.5 - 0.6	2 - 2.1	5 - 5.1	10 - 10.1	15 - 15.1	20 - 20.1
Sample Type							Normal	Normal	Normal	Normal	Normal	Interlab_D		Normal	Normal	Normal	Normal	Normal	Normal	Normal
Report Number							ES1801917	ES1801917	ES1801917	ES1801917	ES1801917	581700		ES1801917	ES1801917	ES1801917	ES1801917	ES1801917	ES1801917	ES1801917
	Unit	EQL	*Interim soil – ecological direct exposure - Public open space*	Interim soil – ecological indirect exposure - Industrial / commercial	**Human health - Industrial / commercial**	Human health - Public open space														
Inorganics																				
Moisture Content	%	1					14.2	15.4	17.9	15.4	23.6	25	**77**	43.4	12.7	27.1	22.2	19.3	22.4	21.8
pH (Final)	pH Units	0.1					-	-	-	6.3	6.8	-	-	-	-	-	-	-	5.2	6.1
BTEX																				
Benzene	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total BTEX	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons																				
C6-C9 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C14 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C15-C28 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C29-C36 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C36 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Recoverable Hydrocarbons																				
C6-C10 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C6-C10 Fraction minus BTEX (F1)	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C16-C34 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C34-C40 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C40 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAHs																				
Naphthalene	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
(n:2) Fluorotelomer Sulfonic Acids																				
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.01	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroalkane Carboxylic Acids																				
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002					0.0010	0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002					0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002					0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanoic acid (PFBA)	mg/kg	0.001					<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002	*10*[#1]		**50**[#3]	10[#3]	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroalkane Sulfonic Acids																				
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	*1*[#1]	0.14[#2]			0.0162	0.0163	0.0008	<0.0002	0.0002	0.017	**152**	0.0199	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002					0.0011	0.0018	<0.0002	<0.0002	<0.0002	<0.005	0	0.0011	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002					<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	mg/kg	0.0002			**20**[#3]	1[#3]	0.0173	0.0181	0.0008	<0.0002	0.0002	0.017	**152**	0.0210	0.0012	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroalkyl Sulfonamides																				
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS																				
Sum of PFAS	mg/kg	0.0002					0.0196	0.0186	0.0008	<0.0002	0.0002	<0.05	0	0.0238	0.0012	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	mg/kg	0.0002					0.0196	0.0183	0.0008	<0.0002	0.0002	0.017	**143**	0.0220	0.0012	0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Notes

#1 Human health screening value for Public open space be used as an interim value.
#2 Canadian Federal Environment Quality Guidelines (Feb 2017)
#3 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
0.23 Exceedance of ecological screening critera
0.0322 Exceedance of human health screening criteria
RPD relative percent difference
m bgl metres below ground level
< Less than
N/A not applicable
mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil
- no analysed/ not applicable
LOR Limit of Reporting

Table 1: Soil Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

senversa

Sample Location							BH13W											CS01	CS02	CS03	DS01
Sample Name	BH12W_27.0-27.1	QC100_20180111		BH13W_0.0-0.05	BH13W_3.0-3.1	BH13W_7.0-7.1	BH13W_13.0-13.1	BH13W_20.0-20.1	BH13W_25.0-25.1	BH13W_34.0-34.1	CS01_20180117	CS02_20180119	CS03_20180119	DS01_20180116									
Date	16/01/2018	11/01/2018	RPD (%)	16/01/2018	16/01/2018	18/01/2018	18/01/2018	18/01/2018	18/01/2018	18/01/2018	16/01/2018	19/01/2018	19/01/2018	16/01/2018									
Depth (m bgl)	27 - 27.1	0 - 0.5		0 - 0.05	3 - 3.1	7 - 7.1	13 - 13.1	20 - 20.1	25 - 25.1	34 - 34.1													
Sample Type	Normal	Field_D		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal									
Report Number	ES1802500	ES1801917		ES1802500	ES1802500	ES1802481	ES1802481	ES1802481	ES1802481	ES1802481	ES1802500	ES1802512	ES1802512	ES1802494									
	Unit	EQL	*Interim soil – ecological direct exposure - Public open space*	Interim soil – ecological indirect exposure - Industrial / commercial	**Human health - Industrial / commercial**	Human health - Public open space																	
Inorganics																							
Moisture Content	%	1					20.5	19.5	**76**	40.5	36.4	9.0	37.2	40.4	32.6	28.4	7.5	7.0	2.5	53.1			
pH (Final)	pH Units	0.1					7.7	-	-	-	-	8.3	7.9	8.3	6.3	6.2	10.6	11.0	11.1	8.1			
BTEX																							
Benzene	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Toluene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Ethylbenzene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Xylene (m & p)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Xylene (o)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Total Xylene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Total BTEX	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Total Petroleum Hydrocarbons																							
C6-C9 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
C10-C14 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
C15-C28 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
C29-C36 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
C10-C36 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Total Recoverable Hydrocarbons																							
C6-C10 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
C6-C10 Fraction minus BTEX (F1)	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
>C10-C16 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
>C16-C34 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
>C34-C40 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
>C10-C40 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
PAHs																							
Naphthalene	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-			
(n:2) Fluorotelomer Sulfonic Acids																							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0152	0.0208	<0.0005	0.0018			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0062	0.0033	<0.0005	0.0006			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	<0.0005	<0.0005	<0.0005			
Perfluoroalkane Carboxylic Acids																							
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002					<0.0002	<0.0002	40	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0088	0.0089	0.0071	0.0039			
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0017	0.0002	0.0014			
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	0.0005			
Perfluorononanoic acid (PFNA)	mg/kg	0.0002					<0.0002	0.0006	15	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0012	<0.0002	0.0016			
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002					<0.0002	<0.0002	40	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0067	0.0075	0.0044	<0.0002			
Perfluorobutanoic acid (PFBA)	mg/kg	0.001					<0.001	<0.001	0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	0.001	0.002	0.003			
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002					<0.0002	0.0003	29	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0013	0.0006	<0.0002	0.0012			
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002					<0.0002	0.0006	15	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0009	<0.0002	0.0034			
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	0.0009			
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002	*10* [#1]		**50** [#3]	10 [#3]	<0.0002	0.0003	29	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0010	0.0030	<0.0002	0.0023			
Perfluoroalkane Sulfonic Acids																							
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	0.0018	0.0010	0.0012			
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	*1* [#1]	0.14 [#2]			<0.0002	0.0166	18	0.0095	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0070	0.0576	0.0008	0.203			
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002					<0.0002	0.0008	32	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0010	0.0079	0.0007	0.0170			
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0015	<0.0002	0.0022			
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0006	<0.0002	<0.0002			
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0025	0.0027	0.0074	0.0013			
Sum of PFHxS and PFOS	mg/kg	0.0002			**20** [#3]	1 [#3]	<0.0002	0.0174	19	0.0103	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0080	0.0655	0.0015	0.220			
Perfluoroalkyl Sulfonamides																							
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005					<0.0005	<0.0005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0004	<0.0002	0.0077			
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
PFAS																							
Sum of PFAS	mg/kg	0.0002					<0.0002	0.0192	21	0.0111	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0578	0.121	0.0236	0.253			
Sum of PFAS (WA DER List)	mg/kg	0.0002					<0.0002	0.0177	22	0.0108	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0532	0.114	0.0226	0.234			

Notes

#1 Human health screening value for Public open space be used as an interim value.
#2 Canadian Federal Environment Quality Guidelines (Feb 2017)
#3 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
0.23 Exceedance of ecological screening critera
0.0322 Exceedance of human health screening criteria
RPD relative percent difference
m bgl metres below ground level
< Less than
N/A not applicable
mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil
- no analysed/ not applicable
LOR Limit of Reporting

Table 1: Soil Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

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Sample Location							DS02	DS03	GS01	HA1		HA2		HA3		HA6	HA7		HA8	
Sample Name							DS02_20180124	DS03_20180124	GS01_20180119	HA1_0.0-0.1	HA1_0.2-0.3	HA2_0.0-0.5	HA2 0.15-0.25	HA3 0.0-0.05	HA3 0.25-0.35	HA6 0.3-0.4	HA7 0.0-0.05	HA7 0.2-0.3	HA8_0.0-0.1	HA9_0.0-0.1
Date							24/01/2018	24/01/2018	19/01/2018	12/01/2018	12/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018	15/01/2018	15/01/2018	15/01/2018	12/01/2018	12/01/2018
Depth (m bgl)										0 - 0.1	0.2 - 0.3	0 - 0.5	0.15 - 0.25	0 - 0.05	0.25 - 0.35	0.3 - 0.4	0 - 0.05	0.2 - 0.3	0 - 0.1	0 - 0.1
Sample Type							Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Report Number							ES1803075	ES1803075	ES1802512	ES1802785	ES1802785	ES1802494	ES1802494	ES1802494	ES1802494	ES1802205	ES1802205	ES1802205	ES1802785	ES1802785
	Unit	EQL	*Interim soil – ecological direct exposure - Public open space*	Interim soil – ecological indirect exposure - Industrial / commercial	**Human health - Industrial / commercial**	Human health - Public open space														
Inorganics																				
Moisture Content	%	1					1.7	5.1	<1.0	15.7	14.6	24.8	18.0	69.9	28.0	14.4	41.2	7.0	8.3	14.4
pH (Final)	pH Units	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
BTEX																				
Benzene	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total BTEX	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons																				
C6-C9 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C14 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C15-C28 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C29-C36 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C36 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Recoverable Hydrocarbons																				
C6-C10 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C6-C10 Fraction minus BTEX (F1)	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C16-C34 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C34-C40 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C40 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAHs																				
Naphthalene	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
(n:2) Fluorotelomer Sulfonic Acids																				
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005					0.0006	0.0035	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.265	0.0168	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005					0.0008	0.0038	<0.0005	0.0013	0.0006	0.0007	<0.0005	0.0692	0.0065	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0887	0.0019	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroalkane Carboxylic Acids																				
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002					<0.0002	0.0017	<0.0002	0.0016	0.0012	0.0031	0.0014	0.0263	0.0021	<0.0002	<0.0002	<0.0002	0.0006	<0.0002
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002					<0.0002	0.0004	<0.0002	0.0018	0.0013	0.0026	0.0012	0.0075	0.0007	<0.0002	<0.0002	<0.0002	0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002					0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0116	0.0005	<0.0002	<0.0002	0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	0.0037	0.0030	0.0032	0.0020	0.0033	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0159	0.0049	0.0176	0.0031	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanoic acid (PFBA)	mg/kg	0.001					<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0062	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002					0.0007	<0.0002	<0.0002	0.0005	<0.0002	0.0159	0.0014	0.0068	0.0082	<0.0002	0.0003	0.0014	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002					0.0005	0.0003	<0.0002	0.0013	0.0008	0.0638	0.0224	0.0096	0.0075	<0.0002	0.0004	0.0008	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002					0.0003	<0.0002	<0.0002	0.0004	<0.0002	0.0011	0.0004	0.0094	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002	*10*[#1]		**50**[#3]	10[#3]	<0.0002	0.0004	<0.0002	0.0013	0.0009	0.0024	0.0010	0.0197	0.0012	<0.0002	<0.0002	<0.0002	0.0021	<0.0002
Perfluoroalkane Sulfonic Acids																				
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0003	0.0114	0.0008	<0.0002	<0.0002	<0.0002	0.0005	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	*1*[#1]	0.14[#2]			0.0022	0.0031	<0.0002	0.0405	0.0154	0.0637	0.0512	0.856	0.0891	<0.0002	0.0018	0.0009	0.0316	0.0006
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002					<0.0002	0.0005	<0.0002	0.0014	0.0010	0.0062	0.0023	0.0746	0.0058	<0.0002	0.0004	<0.0002	0.0152	0.0002
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	0.0002	0.0234	0.0009	<0.0002	<0.0002	<0.0002	0.0015	<0.0002
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0032	0.0008	0.0153	0.0038	<0.0002	<0.0002	0.0002	<0.0002	<0.0002
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002					<0.0002	0.0007	<0.0002	0.0003	<0.0002	0.0002	<0.0002	0.0089	0.0006	<0.0002	<0.0002	<0.0002	0.0002	<0.0002
Sum of PFHxS and PFOS	mg/kg	0.0002			**20**[#3]	1[#3]	0.0022	0.0036	<0.0002	0.0419	0.0164	0.0699	0.0535	0.931	0.0949	<0.0002	0.0022	0.0009	0.0468	0.0008
Perfluoroalkyl Sulfonamides																				
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0019	0.0006	0.0549	0.0113	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0016	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS																				
Sum of PFAS	mg/kg	0.0002					0.0056	0.0144	<0.0002	0.0541	0.0242	0.186	0.0901	1.59	0.162	<0.0002	0.0029	0.0035	0.0519	0.0008
Sum of PFAS (WA DER List)	mg/kg	0.0002					0.0036	0.0141	<0.0002	0.0482	0.0204	0.0958	0.0620	1.35	0.126	<0.0002	0.0022	0.0009	0.0499	0.0008

Notes

#1 Human health screening value for Public open space be used as an interim value.
#2 Canadian Federal Environment Quality Guidelines (Feb 2017)
#3 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
0.23 Exceedance of ecological screening critera
0.0322 Exceedance of human health screening criteria
RPD relative percent difference
m bgl metres below ground level
< Less than
N/A not applicable
mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil
- no analysed/ not applicable
LOR Limit of Reporting

Table 1: Soil Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

Sample Location							HA9						HA10	HA11		HA13		HA14		
Sample Name							HA9_0.2-0.3	HA9_0.5-0.6	QC101_20180112	RPD (%)	QC201_20180112	RPD (%)	HA10_0.0-0.1	HA11_0.0-0.1	HA11_0.2-0.3	HA13 0.2-0.3	HA13 0.4-0.5	HA14 0.0-0.1	HA14 0.4-0.5	QC103_20180115
Date							12/01/2018	12/01/2018	12/01/2018		12/01/2018		12/01/2018	12/01/2018	12/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018
Depth (m bgl)							0.2 - 0.3	0.5 - 0.6	0 - 0.1		0 - 0.1		0 - 0.1	0 - 0.1	0.2 - 0.3	0.2 - 0.3	0.4 - 0.5	0 - 0.1	0.4 - 0.5	0 - 0.1
Sample Type							Normal	Normal	Field_D		Interlab_D		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Field_D
Report Number							ES1802785	ES1802785	ES1802785		581518		ES1802785	ES1802785	ES1802785	ES1802205	ES1802205	ES1802205	ES1802205	ES1802205
	Unit	EQL	*Interim soil – ecological direct exposure - Public open space*	Interim soil – ecological indirect exposure - Industrial / commercial	**Human health - Industrial / commercial**	Human health - Public open space														
Inorganics																				
Moisture Content	%	1					26.7	24.0	20.4		**34**		20	33	13.5	14.2	11.6	41.6	28.4	4.1	8.0	4.8
pH (Final)	pH Units	0.1					-	-	-		-		-	-	-	-	-	-	-	-	-	-
BTEX																						
Benzene	mg/kg	0.2					-	-	-		-		-	-	-	<0.2	-	-	-	-	-	-
Toluene	mg/kg	0.5					-	-	-		-		-	-	-	<0.5	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.5					-	-	-		-		-	-	-	<0.5	-	-	-	-	-	-
Xylene (m & p)	mg/kg	0.5					-	-	-		-		-	-	-	<0.5	-	-	-	-	-	-
Xylene (o)	mg/kg	0.5					-	-	-		-		-	-	-	<0.5	-	-	-	-	-	-
Total Xylene	mg/kg	0.5					-	-	-		-		-	-	-	<0.5	-	-	-	-	-	-
Total BTEX	mg/kg	0.2					-	-	-		-		-	-	-	<0.2	-	-	-	-	-	-
Total Petroleum Hydrocarbons																						
C6-C9 Fraction	mg/kg	10					-	-	-		-		-	-	-	<10	-	-	-	-	-	-
C10-C14 Fraction	mg/kg	50					-	-	-		-		-	-	-	<50	-	-	-	-	-	-
C15-C28 Fraction	mg/kg	100					-	-	-		-		-	-	-	<100	-	-	-	-	-	-
C29-C36 Fraction	mg/kg	100					-	-	-		-		-	-	-	<100	-	-	-	-	-	-
C10-C36 Fraction (Sum)	mg/kg	50					-	-	-		-		-	-	-	<50	-	-	-	-	-	-
Total Recoverable Hydrocarbons																						
C6-C10 Fraction	mg/kg	10					-	-	-		-		-	-	-	<10	-	-	-	-	-	-
C6-C10 Fraction minus BTEX (F1)	mg/kg	10					-	-	-		-		-	-	-	<10	-	-	-	-	-	-
>C10-C16 Fraction	mg/kg	50					-	-	-		-		-	-	-	<50	-	-	-	-	-	-
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50					-	-	-		-		-	-	-	<50	-	-	-	-	-	-
>C16-C34 Fraction	mg/kg	100					-	-	-		-		-	-	-	<100	-	-	-	-	-	-
>C34-C40 Fraction	mg/kg	100					-	-	-		-		-	-	-	<100	-	-	-	-	-	-
>C10-C40 Fraction (Sum)	mg/kg	50					-	-	-		-		-	-	-	<50	-	-	-	-	-	-
PAHs																						
Naphthalene	mg/kg	1					-	-	-		-		-	-	-	<1	-	-	-	-	-	-
(n:2) Fluorotelomer Sulfonic Acids																						
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.01	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroalkane Carboxylic Acids																						
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanoic acid (PFBA)	mg/kg	0.001					<0.001	<0.001	<0.001		0		<0.005	0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	0.0046	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002	*10* [#1]		**50** [#3]	10 [#3]	<0.0002	<0.0002	<0.0002		0		<0.005	0	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroalkane Sulfonic Acids																						
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	*1* [#1]	0.14 [#2]			<0.0002	<0.0002	<0.0002		100		<0.005	0	0.0144	0.0013	0.0005	0.0027	0.0002	0.0004	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	0.0006	<0.0002	<0.0002	0.0003	0.0004	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	mg/kg	0.0002			**20** [#3]	1 [#3]	<0.0002	<0.0002	<0.0002		120		<0.005	0	0.0150	0.0013	0.0005	0.0030	0.0006	0.0004	<0.0002	<0.0002
Perfluoroalkyl Sulfonamides																						
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005					<0.0005	<0.0005	<0.0005		0		<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		0		<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS																						
Sum of PFAS	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		120		<0.05	0	0.0210	0.0015	0.0005	0.0030	0.0011	0.0004	<0.0002	<0.0002
Sum of PFAS (WA DER List)	mg/kg	0.0002					<0.0002	<0.0002	<0.0002		120		<0.01	0	0.0153	0.0013	0.0005	0.0030	0.0011	0.0004	<0.0002	<0.0002

Notes

#1 Human health screening value for Public open space be used as an interim value.
#2 Canadian Federal Environment Quality Guidelines (Feb 2017)
#3 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
0.23 Exceedance of ecological screening critera
0.0322 Exceedance of human health screening criteria
RPD relative percent difference
m bgl metres below ground level
< Less than
N/A not applicable
mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil
- no analysed/ not applicable
LOR Limit of Reporting

Table 1: Soil Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

senversa

Sample Location		HA15		HA16	HA17		HA18	HA19		HA20				HA21
Sample Name	RPD (%)	HA15_0.0-0.05	HA15_0.1-0.2	HA16 0.0-0.1	HA17_0.0-0.1	HA17_0.2-0.3	HA18_0.0-0.1	HA19 0.0-0.05	HA19 0.15-0.25	HA20 0.0-0.05	HA20 0.3-0.4	HA21 0.0-0.05	HA21 0.5-0.6	HA21 0.9-1.0
Date		12/01/2018	12/01/2018	15/01/2018	12/01/2018	12/01/2018	12/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018
Depth (m bgl)		0 - 0.05	0.1 - 0.2	0 - 0.1	0 - 0.1	0.2 - 0.3	0 - 0.1	0 - 0.05	0.15 - 0.25	0 - 0.05	0.3 - 0.4	0 - 0.05	0.5 - 0.6	0.9 - 1
Sample Type		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Report Number		ES1802785	ES1802785	ES1802205	ES1802785	ES1802785	ES1802785	ES1802205	ES1802205	ES1802205	ES1802205	ES1802205	ES1802205	ES1802205

	Unit	EQL	*Interim soil – ecological direct exposure - Public open space*	Interim soil – ecological indirect exposure - Industrial / commercial	**Human health - Industrial / commercial**	Human health - Public open space													
Inorganics																			
Moisture Content	%	1					16	37.0	7.4	16.1	24.7	10.2	11.6	12.6	5.1	46.6	8.5	17.3	49.0	10.6
pH (Final)	pH Units	0.1					-	-	-	-	-	8.2	-	-	-	-	-	-	-	-
BTEX																			
Benzene	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total BTEX	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons																			
C6-C9 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C14 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C15-C28 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C29-C36 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10-C36 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Recoverable Hydrocarbons																			
C6-C10 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
C6-C10 Fraction minus BTEX (F1)	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C16-C34 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C34-C40 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-	-	-	-
>C10-C40 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAHs																			
Naphthalene	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
(n:2) Fluorotelomer Sulfonic Acids																			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroalkane Carboxylic Acids																			
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	0.0003	0.0022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0021
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0012
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0024
Perfluorobutanoic acid (PFBA)	mg/kg	0.001					0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002					0	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002	*10* [#1]		**50** [#3]	10 [#3]	0	<0.0002	<0.0002	<0.0002	0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004
Perfluoroalkane Sulfonic Acids																			
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	*1* [#1]	0.14 [#2]			67	0.0004	0.0044	0.0022	0.0275	0.0148	0.0035	0.0004	0.0005	0.0010	<0.0002	0.0020	<0.0002	0.0760
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002					0	<0.0002	0.0007	<0.0002	0.0024	0.0066	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0016
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	0.0004	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	mg/kg	0.0002			**20** [#3]	1 [#3]	67	0.0004	0.0051	0.0022	0.0299	0.0214	0.0035	0.0004	0.0005	0.0010	<0.0002	0.0020	<0.0002	0.0776
Perfluoroalkyl Sulfonamides																			
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005					0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002					0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS																			
Sum of PFAS	mg/kg	0.0002					67	0.0004	0.0054	0.0022	0.0308	0.0253	0.0041	0.0004	0.0005	0.0010	<0.0002	0.0030	<0.0002	0.0846
Sum of PFAS (WA DER List)	mg/kg	0.0002					67	0.0004	0.0051	0.0022	0.0304	0.0247	0.0035	0.0004	0.0005	0.0010	<0.0002	0.0020	<0.0002	0.0837

Notes

#1 Human health screening value for Public open space be used as an interim value.
#2 Canadian Federal Environment Quality Guidelines (Feb 2017)
#3 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
0.23 Exceedance of ecological screening critera
0.0322 Exceedance of human health screening criteria
RPD relative percent difference
m bgl metres below ground level
< Less than
N/A not applicable
mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil
- no analysed/ not applicable
LOR Limit of Reporting

Table 1: Soil Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

Sample Location			HA23			HA26		HA27		HA28	
Sample Name	QC202_20180115		HA23 0.0-0.05	HA23 0.3-0.4	HA23 0.5-0.6	HA26 0.0-0.05	HA26 0.1-0.15	HA27 0.0-0.05	HA27 0.1-0.2	HA28 0.0-0.05	HA28 0.2-0.3
Date	15/01/2018		15/01/2018	15/01/2018	15/01/2018	15/01/2018	15/01/2018	16/01/2018	16/01/2018	16/01/2018	16/01/2018
Depth (m bgl)	0.5 - 0.6	RPD (%)	0 - 0.05	0.3 - 0.4	0.5 - 0.6	0 - 0.05	0.1 - 0.15	0 - 0.05	0.1 - 0.2	0 - 0.05	0.2 - 0.3
Sample Type	Interlab_D		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Report Number	581525		ES1802205	ES1802205	ES1802205	ES1802205	ES1802205	ES1802494	ES1802494	ES1802494	ES1802494

	Unit	EQL	*Interim soil – ecological direct exposure - Public open space*	Interim soil – ecological indirect exposure - Industrial / commercial	**Human health - Industrial / commercial**	Human health - Public open space										
Inorganics																
Moisture Content	%	1					14	**111**	9.3	9.5	15.1	4.9	6.3	33.2	6.4	13.4	28.4
pH (Final)	pH Units	0.1					-	-	-	-	-	9.0	-	-	-	-	-
BTEX																	
Benzene	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-
Total Xylene	mg/kg	0.5					-	-	-	-	-	-	-	-	-	-	-
Total BTEX	mg/kg	0.2					-	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons																	
C6-C9 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-
C10-C14 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-
C15-C28 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-
C29-C36 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-
C10-C36 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-
Total Recoverable Hydrocarbons																	
C6-C10 Fraction	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-
C6-C10 Fraction minus BTEX (F1)	mg/kg	10					-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-
>C10-C16 Fraction minus naphthalene (F2)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-
>C16-C34 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-
>C34-C40 Fraction	mg/kg	100					-	-	-	-	-	-	-	-	-	-	-
>C10-C40 Fraction (Sum)	mg/kg	50					-	-	-	-	-	-	-	-	-	-	-
PAHs																	
Naphthalene	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-
(n:2) Fluorotelomer Sulfonic Acids																	
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005					<0.01	0	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	0.0005	0.0017	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroalkane Carboxylic Acids																	
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002					<0.005	0	<0.0002	0.0004	0.0006	0.0011	0.0071	<0.0002	0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	0.0018	0.0041	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002					<0.005	0	0.0003	<0.0002	<0.0002	0.0054	0.0008	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002					<0.005	0	0.0002	0.0003	0.0012	0.0595	0.473	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	0.0003	0.0017	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanoic acid (PFBA)	mg/kg	0.001					<0.005	0	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002					<0.005	0	0.0005	<0.0002	<0.0002	0.0442	0.0196	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002					<0.005	0	0.0005	<0.0002	<0.0002	0.0843	0.0251	0.0004	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	0.0011	0.0069	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002	*10*[#1]		**50**[#3]	10[#3]	<0.005	0	<0.0002	<0.0002	<0.0002	0.0020	0.0032	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroalkane Sulfonic Acids																	
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	0.0006	0.0014	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	*1*[#1]	0.14[#2]			<0.005	0	0.0066	0.0068	0.0087	0.0432	0.347	0.0073	0.0089	0.0033	0.0005
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002					<0.005	0	<0.0002	0.0017	0.0013	0.0109	0.0152	<0.0002	0.0004	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	0.0004	0.0034	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	0.0002	0.0010	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	mg/kg	0.0002			**20**[#3]	1[#3]	<0.005	0	0.0066	0.0085	0.0100	0.0541	0.362	0.0073	0.0093	0.0033	0.0005
Perfluoroalkyl Sulfonamides																	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005					<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002					<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002					<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002					<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS																	
Sum of PFAS	mg/kg	0.0002					<0.05	0	0.0101	0.0092	0.0118	0.257	0.912	0.0077	0.0095	0.0033	0.0005
Sum of PFAS (WA DER List)	mg/kg	0.0002					<0.01	0	0.0086	0.0089	0.0106	0.0600	0.382	0.0073	0.0095	0.0033	0.0005

Notes

#1 Human health screening value for Public open space be used as an interim value.
#2 Canadian Federal Environment Quality Guidelines (Feb 2017)
#3 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
0.23 Exceedance of ecological screening critera
0.0322 Exceedance of human health screening criteria
RPD relative percent difference
m bgl metres below ground level
< Less than
N/A not applicable
mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil
- no analysed/ not applicable
LOR Limit of Reporting

Table 2: Groundwater and Tank Water Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

					Location Code	BH2W	BH2W				BH4W	BH5W	BH6W	BH8W	BH10W	BH12W
					Sample Name	BH2W_20180125	QC105		QC207		BH4W_20180125	BH5W_20180125	BH6W_20180125	BH8W_20180125	BH10W_20180125	BH12W_20180125
					Date	25/01/2018	25/01/2018		24/01/2018		25/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018	25/01/2018
					Sample Type	Normal	Field_D		Interlab_D		Normal	Normal	Normal	Normal	Normal	Normal
					Report Number	ES1803075	ES1803075	RPD (%)	581935	RPD (%)	ES1803075	ES1803075	ES1803075	ES1803075	ES1803075	ES1803075
	Unit	EQL	Human health – Drinking water	*Freshwater - 95% species protection – slightly to moderately disturbed systems*	Freshwater - 99% species protection – high conservation value systems											
(n:2) Fluorotelomer Sulfonic Acids																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01				<0.05	<0.05	0	<0.01	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05				<0.05	<0.05	0	<0.05	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01				<0.05	<0.05	0	<0.01	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01				<0.05	<0.05	0	<0.01	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluoroalkane Carboxylic Acids																
Perfluorohexanoic acid (PFHxA)	µg/L	0.01				0.15	0.16	6	0.14	7	<0.02	0.03	0.75	1.04	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01				0.03	0.02	40	0.02	40	<0.02	<0.02	0.06	0.20	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01				<0.02	<0.02	0	<0.01	0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.01				<0.02	<0.02	0	<0.01	0	<0.02	<0.02	<0.02	0.18	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.01				<0.02	<0.02	0	0.06	100	<0.02	<0.02	0.36	0.20	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.05				<0.1	<0.1	0	<0.05	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01				<0.05	<0.05	0	<0.01	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01				<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01				<0.02	<0.02	0	<0.01	0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.01				<0.02	<0.02	0	<0.01	0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.56[#2]	*220*[#1]	19[#1]	0.03	0.03	0	0.02	40	<0.01	<0.01	<0.01	0.22	<0.01	<0.01
Perfluoroalkane Sulfonic Acids																
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01				0.12	0.11	9	0.13	8	<0.02	<0.02	0.47	0.50	<0.02	<0.02
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01		*0.13*[#1]	0.00023[#1]	*0.14*	0.13	7	*0.14*	0	<0.01	<0.01	<0.01	*0.65*	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01				0.97	0.92	5	1.00	3	<0.02	0.14	0.42	3.76	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01				0.02	0.02	0	0.02	0	<0.02	<0.02	<0.02	0.09	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01				<0.02	<0.02	0	<0.01	0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01				0.15	0.15	0	0.13	14	<0.02	<0.02	0.56	0.51	<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	0.01	0.07[#2]			1.11	1.05	6	1.14	3	<0.01	0.14	0.42	4.41	<0.01	<0.01
Perfluoroalkyl Sulfonamides																
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05				<0.05	<0.05	0	<0.05	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05				<0.05	<0.05	0	<0.05	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05				<0.05	<0.05	0	<0.05	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05				<0.05	<0.05	0	<0.05	0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02				<0.02	<0.02	0	<0.05	0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	0.02				<0.02	<0.02	0	<0.05	0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	0.02				<0.02	<0.02	0	<0.05	0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFAS																
Sum of PFAS	µg/L	0.01				1.61	1.54	4	1.66	3	<0.01	0.17	2.65	7.35	<0.01	<0.01

Notes

#1 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.

0.23 Exceedance of drinking water guideline

0.23 Exceedance of 95% protection ecological screening criteria for freshwater

0.23 Exceedance of 99% protection ecological screening criteria for freshwater

< Less than

µg/L micrograms per litre. Results from ASLP (neutral leach testing)☐

LOR Limit of Reporting

RPD relative percent difference

Table 2: Groundwater and Tank Water Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

					Location Code	BH13W	BHX	TAP1	TW01	TW02
					Sample Name	BH13W_20180125	BHX_20180125	TAP1_20180112	TW01_20180117	TW02_20180117
					Date	25/01/2018	25/01/2018	12/01/2018	17/01/2018	17/01/2018
					Sample Type	Normal	Normal	Normal	Normal	Normal
					Report Number	ES1803075	ES1803075	ES1801917	ES1802500	ES1802500
	Unit	EQL	Human health – Drinking water	*Freshwater - 95% species protection – slightly to moderately disturbed systems*	Freshwater - 99% species protection – high conservation value systems					
(n:2) Fluorotelomer Sulfonic Acids										
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01				<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05				<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01				<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01				<0.05	<0.05	<0.05	<0.05	<0.05
Perfluoroalkane Carboxylic Acids										
Perfluorohexanoic acid (PFHxA)	µg/L	0.01				0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.05				<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01				<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.56[#2]	*220*[#1]	19[#1]	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroalkane Sulfonic Acids										
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01				0.03	<0.02	<0.02	<0.02	<0.02
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01		*0.13*[#1]	0.00023[#1]	<0.01	<0.01	<0.01	0.02	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01				0.16	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01				<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01				0.03	<0.02	<0.02	<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	0.01	0.07[#2]			0.16	<0.01	<0.01	0.02	<0.01
Perfluoroalkyl Sulfonamides										
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05				<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05				<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05				<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05				<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02				<0.02	<0.02	<0.02	<0.02	<0.02
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	0.02				<0.02	<0.02	<0.02	<0.02	<0.02
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	0.02				<0.02	<0.02	<0.02	<0.02	<0.02
PFAS										
Sum of PFAS	µg/L	0.01				0.24	<0.01	<0.01	0.02	<0.01

Notes

#1 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.

0.23 Exceedance of drinking water guideline

0.23 Exceedance of 95% protection ecological screening criteria for freshwater

0.23 Exceedance of 99% protection ecological screening criteria for freshwater

< Less than

µg/L micrograms per litre. Results from ASLP (neutral leach testing)☐

LOR Limit of Reporting

RPD relative percent difference

Table 4: Surface Water Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

				Location Code	SED01	SED02	SED03					SED04	SED05	SED06	SED07	SED08
				Sample Name	SED01_0.1	SED02_0.1	SED03_0.1	QC103		QC205		SED04_0.1	SED05_0.1	SED06_0.1	SED07_0.1	SED08_0.1
				Date	24/01/2018	24/01/2018	24/01/2018	24/01/2018		24/01/2018		24/01/2018	24/01/2018	24/01/2018	24/01/2018	24/01/2018
				Depth (m bgl)	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	RPD (S)		RPD (S)	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1
				Sample Type	Normal	Normal	Normal	Field_D		Interlab_D		Normal	Normal	Normal	Normal	Normal
				Report Number	ES1803075	ES1803075	ES1803075	ES1803075		581935		ES1803075	ES1803075	ES1803075	ES1803075	ES1803075
	Unit	EQL	Interim soil – ecological indirect exposure - Residential	Human health - Residential with garden/accessible soil												
Inorganics																
Moisture Content	%	1			11.0	11.0	26.9	29.2	8	42	**44**	25.6	39.0	33.6	37.4	11.9
(n:2) Fluorotelomer Sulfonic Acids																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.01	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroalkane Carboxylic Acids																
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002			<0.0002	<0.0002	0.0003	0.0003	0	<0.005	0	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanoic acid (PFBA)	mg/kg	0.001			<0.001	<0.001	<0.001	<0.001	0	<0.005	0	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	mg/kg	0.0002		0.1[#2]	<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroalkane Sulfonic Acids																
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	0.01[#1]		0.0023	0.0022	0.0021	0.0010	**71**	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	0.0008
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002			<0.0002	<0.0002	0.0003	<0.0002	40	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	0.0002
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	mg/kg	0.0002		0.009[#2]	0.0023	0.0022	0.0024	0.0010	**82**	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	0.0010
Perfluoroalkyl Sulfonamides																
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.005	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	0	<0.01	0	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS																
Sum of PFAS	mg/kg	0.0002			0.0023	0.0022	0.0027	0.0013	**70**	<0.05	0	0.0002	<0.0002	<0.0002	<0.0002	0.0010

Notes

#1 Canadian Federal Environment Quality Guidelines (Feb 2017)

#2 Based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.

0.23 Exceedance of ecological screening critera

0.0322 Exceedance of human health screening criteria

< Less than

N/A not applicable

mg/kg milligrams per kilogram. Results for total solid PFAS concentrations in soil

LOR Limit of Reporting

Table 4: Surface Water Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

				Location Code	SW01	SW02						SW03	SW04
				Field ID	SW01	SW02	QC104	RPD (%)	QC206	RPD (%)		SW03	SW04
				Date	24/01/2018	24/01/2018	24/01/2018		24/01/2018			24/01/2018	24/01/2018
				Sample Type	Normal	Normal	Field_D		Interlab_D			Normal	Normal
				Lab Report Number	ES1803075	ES1803075	ES1803075		581935			ES1803075	ES1803075
	Unit	EQL	*Freshwater - 95% species protection – slightly to moderately disturbed systems*	Freshwater - 99% species protection – high conservation value systems									
(n:2) Fluorotelomer Sulfonic Acids													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01			<0.05	<0.05	<0.05	0	<0.01	0		<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05			<0.05	<0.05	<0.05	0	<0.05	0		<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01			<0.05	<0.05	<0.05	0	<0.01	0		<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01			<0.05	<0.05	<0.05	0	<0.01	0		<0.05	<0.05
Perfluoroalkane Carboxylic Acids													
Perfluorohexanoic acid (PFHxA)	µg/L	0.01			0.21	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.05			<0.1	<0.1	<0.1	0	<0.05	0		<0.1	<0.1
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.01			<0.05	<0.05	<0.05	0	<0.01	0		<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorooctanoic acid (PFOA)	µg/L	0.01	*220*[#1]	19[#1]	<0.01	<0.01	<0.01	0	<0.01	0		0.02	0.02
Perfluoroalkane Sulfonic Acids													
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01			0.06	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	*0.13*[#1]	0.00023[#1]	<0.01	<0.01	<0.01	0	0.01	0		0.02	0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01			0.10	<0.02	<0.02	0	0.02	0		<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01			<0.02	<0.02	<0.02	0	<0.01	0		<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01			0.14	<0.02	<0.02	0	0.02	0		<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	0.01			0.10	<0.01	<0.01	0	0.03	100		0.02	0.01
Perfluoroalkyl Sulfonamides													
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05			<0.05	<0.05	<0.05	0	<0.05	0		<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05			<0.05	<0.05	<0.05	0	<0.05	0		<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05			<0.05	<0.05	<0.05	0	<0.05	0		<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05			<0.05	<0.05	<0.05	0	<0.05	0		<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02			<0.02	<0.02	<0.02	0	<0.05	0		<0.02	<0.02
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02	0	<0.05	0		<0.02	<0.02
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02	0	<0.05	0		<0.02	<0.02
PFAS													
Sum of PFAS	µg/L	0.01			0.51	<0.01	<0.01	0	<0.1	0		0.04	0.03

Notes

[#1] Draft Commonwealth Environmental Management Guidance, 2016

*RPDs have only been considered where a concentration is greater than 1 times the LOR.

**High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 1000 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))

0.23 Exceedance of 95% protection ecological screening criteria for freshwater

0.23 Exceedance of 99% protection ecological screening criteria for freshwater

< Less than

µg/L micrograms per litre. Results from ASLP (neutral leach testing)☐

LOR Limit of Reporting

RPD relative percent difference

Table 5: ASLP Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

senversa

Location Code					BH6W	BH10W	BH11W	BH11W	BH12W	BH12W	BH12W	BH13W	BH13W	BH13W	BH13W	BH13W
Sample Name					BH6W_0.0-0.05	BH10W_0.0-0.05	BH11W_9.0-9.1	BH11W_16.0-16.1	BH12W_15.0-15.1	BH12W_20.0-20.1	BH12W_27.0-27.1	BH13W_7.0-7.1	BH13W_13.0-13.1	BH13W_20.0-20.1	BH13W_25.0-25.1	BH13W_34.0-34.1
Date					15/01/2018	16/01/2018	11/01/2018	11/01/2018	11/01/2018	11/01/2018	16/01/2018	18/01/2018	18/01/2018	18/01/2018	18/01/2018	18/01/2018
Depth (m bgl)					0 - 0.05	0 - 0.05	9 - 9.1	16 - 16.1	15 - 15.1	20 - 20.1	27 - 27.1	7 - 7.1	13 - 13.1	20 - 20.1	25 - 25.1	34 - 34.1
Sample Type					Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Report Number					ES1802204	ES1802500	ES1801917	ES1801917	ES1801917	ES1801917	ES1802500	ES1802481	ES1802481	ES1802481	ES1802481	ES1802481
	Unit	EQL	*Freshwater - 95% species protection – slightly to moderately disturbed systems*	Freshwater - 99% species protection – high conservation value systems												
(n:2) Fluorotelomer Sulfonic Acids																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluoroalkane Carboxylic Acids																
Perfluorohexanoic acid (PFHxA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	µg/L	0.01	*220*[#1]	19[#1]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroalkane Sulfonic Acids																
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	*0.13*[#1]	0.00023[#1]	0.04	0.06	0.02	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	0.01			0.04	0.06	0.02	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroalkyl Sulfonamides																
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFAS																
Sum of PFAS	µg/L	0.01			0.04	0.06	0.02	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Comments

#1 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.

0.23 Exceedance of 95% protection ecological screening criteria for freshwater

0.23 Exceedance of 99% protection ecological screening criteria for freshwater

N/A not applicable

m bgl metres below ground level

< Less than

µg/L micrograms per litre. Results from ASLP (neutral leach testing)☐

LOR Limit of Reporting

Table 5: ASLP Laboratory Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

				Location Code	CS01	CS02	CS03	DS01	HA17	HA26
				Sample Name	CS01_20180117	CS02_20180119	CS03_20180119	DS01_20180116	HA17_0.2-0.3	HA26 0.0-0.05
				Date	16/01/2018	19/01/2018	19/01/2018	16/01/2018	12/01/2018	15/01/2018
				Depth (m bgl)					0.2 - 0.3	0 - 0.05
				Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
				Report Number	ES1802500	ES1802512	ES1802512	ES1802494	ES1802785	ES1802205
	Unit	EQL	*Freshwater - 95% species protection – slightly to moderately disturbed systems*	Freshwater - 99% species protection – high conservation value systems						
(n:2) Fluorotelomer Sulfonic Acids										
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05			2.13	3.28	<0.05	0.13	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05			0.4	0.43	<0.05	0.05	<0.05	0.06
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluoroalkane Carboxylic Acids										
Perfluorohexanoic acid (PFHxA)	µg/L	0.02			1.36	1.18	0.62	0.37	0.16	0.06
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02			0.09	0.28	<0.02	0.12	<0.02	0.07
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02			<0.02	0.11	<0.02	0.27	<0.02	2.04
Perfluoropentanoic acid (PFPeA)	µg/L	0.02			0.63	0.95	0.32	0.14	<0.02	0.03
Perfluorobutanoic acid (PFBA)	µg/L	0.1			0.4	0.2	0.3	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02			<0.02	0.04	<0.02	0.06	<0.02	0.79
Perfluorodecanoic acid (PFDA)	µg/L	0.02			0.03	<0.02	<0.02	0.09	<0.02	0.04
Perfluorooctanoic acid (PFOA)	µg/L	0.01	*220*[#1]	19[#1]	0.08	0.42	0.02	0.37	0.03	0.15
Perfluoroalkane Sulfonic Acids										
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02			0.12	0.28	0.08	0.2	<0.02	0.04
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	*0.13*[#1]	0.00023[#1]	*0.5*	*8.25*	0.05	*26.3*	*0.71*	*1.41*
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.02			0.18	1.51	0.06	3.43	0.28	0.78
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02			<0.02	0.23	<0.02	0.6	0.04	0.03
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02			<0.02	0.02	<0.02	0.04	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02			0.34	0.37	0.64	0.14	<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	0.01			0.68	9.76	0.11	29.7	0.99	2.19
Perfluoroalkyl Sulfonamides										
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02			0.03	0.04	<0.02	0.11	<0.02	<0.02
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFAS										
Sum of PFAS	µg/L	0.01			6.29	17.6	2.09	32.4	1.22	5.5

Comments

#1 Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values.

0.23 Exceedance of 95% protection ecological screening criteria for freshwater

0.23 Exceedance of 99% protection ecological screening criteria for freshwater

N/A not applicable

m bgl metres below ground level

< Less than

µg/L micrograms per litre. Results from ASLP (neutral leach testing)☐

LOR Limit of Reporting

Table 6: QA/QC Analytical Results
Project: Westleigh DSI
Client: NSW Rural Fire Services
Site Address: 12 Warrigal Drive, Westleigh, NSW

		Rinsate Samples											
	Field ID	QC300_20180111	QC301_20180112	QC302_20180112	QC303_20180115	QC304_20180115	QC304_20180119	QC305_20180116	QC306_20180116	QC307_20180117	QC308-20180117	QC310	QC311
	Date	11/01/2018	12/01/2018	12/01/2018	15/01/2018	15/01/2018	19/01/2018	16/01/2018	16/01/2018	17/01/2018	18/01/2018	24/01/2018	25/01/2018
	Lab Report	ES1801917	ES1801896	ES1802785	ES1802204	ES1802205	ES1802512	ES1802494	ES1802500	ES1802500	ES1802481	ES1803075	ES1803075
	Unit												
(n:2) Fluorotelomer Sulfonic Acids													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluoroalkane Carboxylic Acids													
Perfluorohexanoic acid (PFHxA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroalkane Sulfonic Acids													
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanesulfonic acid (PFOS)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroalkyl Sulfonamides													
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
PFAS													
Sum of PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Notes
< Less than
µg/L micrograms per litre.

Revised Conceptual Site Model (CSM) detailing pathways to be assessed further in preliminary HRA

Receptor	Exposure pathway	Discussion	Potentially complete and to be assessed further in preliminary HRA?
Site users Potential future Site users - Recreational users of the open space areas of the site (excluding the RFS fire training compound). Commercial and intrusive workers carrying out installation or maintenance works within the Site (fire training compound and open space areas)	Potential incidental contact with groundwater	This is assessed in the DSI as a potentially complete SPR linkage as a number of the measured concentrations exceed the recreational screening levels conservatively adopted to assess this pathway. However, given the depth to groundwater at >6 m below ground level (bgl) the direct contact pathway is considered incomplete for all site users. If significant excavation work is conducted that intersects groundwater then this pathway would require revaluation.	No
	Potential incidental contact surface run-off including leachate from concrete	This is assessed in the DSI as a potentially complete SPR linkage as a number of the measured concentrations exceed the recreational screening levels conservatively adopted to assess this pathway. This pathway is relevant for areas within the RFS training compounds. Incidental water contact includes incidental skin contact with and ingestion of water during site activities.	Yes
	Potential contact with tank water	The measured concentrations of PFAS in the rainwater tanks were below drinking water and recreational screening levels, as such risks are assessed to be low and acceptable. It is furthermore understood that this water is not used for drinking.	No
	Potential incidental soil contact	None of the measured concentrations in soil exceeded the adopted screening levels for the protection of site users, and the risks associated with soil contact (dermal contact and incidental ingestion) were therefore assessed to be low and acceptable within the DSI.	No
	Use of groundwater for drinking water	While a number of the measured concentrations exceeded drinking water guidelines, information provided to Senversa indicates that the Site utilises reticulated water for drinking water purposes and as such the potential risk to Site users via this pathway is likely to be low.	No
Recreational users of creeks in the surrounding area Creeks and streams directly adjacent to the Site are not suitable for swimming / fishing, however they are tributaries to larger waterways where fishing and other recreational activities occur.	Consumption of fish recreationally caught from creeks in the wider area	Recreational users may fish from creeks in the wider area and consume these fish; no screening levels were identified for this pathway; as such based on the presence of PFAS in surface water (creek) samples collected down-gradient of the site, this SPR linkage is identified as potentially complete.	Yes
	Recreational water contact in creeks in the wider area	None of the measured concentrations in surface water (creek) samples exceeded the recreational screening levels; in addition, none of the measured concentrations in creek sediments exceeded the adopted screening levels for the protection of human health. As such, based on the measured concentrations the risks via this pathway are assessed to be low and acceptable. It is noted that during investigation works limited surface waters were present in the immediate vicinity of the site; while PFAS concentrations in surface water in this area have not been assessed, it is noted that sediment concentrations were below screening levels for the protection of human health and that access to surface waters in this area is unlikely.	No

Receptor	Exposure pathway	Discussion	Potentially complete and to be assessed further in preliminary HRA?
Residents in the surrounding area	Utilisation of groundwater	The closest residential areas are located to the north of the site beyond the creek. There is considered to be limited potential for local residents to utilise PFAS-impacted groundwater (e.g. for drinking water or domestic purposes) given the depth to groundwater within the bedrock and, in addition, Senversa understands that residences in the surrounding area are supplied by reticulated water. Given the distance to the residences the risk to these receptors is likely to be low as it is considered likely that groundwater impacts migrating from the site will be intercepted by the creek and are unlikely to extend beneath residential areas however the assessment of the off site residential areas is beyond the scope of this preliminary assessment.	No
	Recreational creek water use (see above)	Residents in the surrounding area may recreationally use creeks; these pathways are discussed above.	No
Terrestrial ecosystems	Direct exposure to lower-order terrestrial biota	All of the measured soil concentrations were below the adopted screening level for direct exposure to terrestrial ecosystems, indicating that the potential risks to lower order biota (e.g. plants, soil organisms and invertebrates) are low and acceptable.	No
	Exposure to tank water	One tank water sample returned a concentration on the limit of reporting, the concentration was below the 95 % species protection value however it is above the 99% protection value (re-test the tank).	Yes
	Bioaccumulation through the food web, and exposure to higher order biota	Based on comparison to screening levels in the DSI, a number of the measured concentrations in soil exceed the adopted screening level. This pathway is therefore assessed as potentially complete in the DSI, and has been assessed further in the HRA.	Yes
Aquatic ecosystems	Direct exposure to lower-order terrestrial biota	Based on comparison to screening levels in the DSI, a number of the measured concentrations in surface water exceed the adopted screening levels. This pathway is therefore assessed as potentially complete in the DSI, and has been assessed further in the HRA.	Yes
	Bioaccumulation through the food web, and exposure to higher order biota		Yes

Path: Y:\16_GIS\01_Jobs\1.NSW_Jobs\S13978_NSW RFS_VARIOUS_PFAS INVESTIGATION\MXDs\1. Working MXDs\DSI\S13978_002_F002_site layout.mxd

senversa

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Legend

- Potential AFFF use
- Buildings
- Primary NSW EPA Investigation Area Boundary
- Potential AFFF Training Area
- RFS Training Compound
- Indicative Site Boundary

1. Classroom
2. Smoke "cold fire" training room
3. Former AFFF drum storage
4. Open training area
5. Hot fire training area
6. Septic tank
7. Gas/service pits
8. Car park
9. Westleigh Fire Brigade Station
10. Disused IBCs

Aerial imagery sourced from Nearmap Pty Ltd

Designed:	I. Batterley	Date:	19/02/2018
Drawn:	S. Koroblitsas	Revision:	0
Checked:	E. Liddle	Scale:	1:2,000 (A3)
File:	S13978_002_F002_site layout		

0 10 20 40 60 80 Metres

Datum GDA 1994, Projection MGA Zone 56

Figure No: 2

Title: Site Layout

Project: NSW RFS Westleigh PFAS Investigation

Location: 12 Warringal Drive, Westleigh NSW

Client: NSW Rural Fire Service

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